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## **4.13 HAZARDS AND HUMAN HEALTH**

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### 4.13.1 INTRODUCTION

This section describes the potential adverse impacts on human health due to exposure to hazards that could result from the Proposed Project. Hazards evaluated include those associated with existing identified or suspected contaminated sites, potential exposure to hazardous materials used, generated, stored, or transported in or immediately adjacent to the Lower Lagoon Valley Specific Plan area (Specific Plan area), and potential hazards associated with previous contamination of soil and groundwater. Included in the discussion is a summary of applicable hazardous materials laws and regulations and agencies responsible for their implementation. Potential hazards and associated impacts related to toxic air contaminant emissions are discussed in Section 4.6, Air Quality, of this EIR. Issues related to proximity to airport safety zones are addressed in Section 4.2, Land Use and Agricultural Resources.

Sources of information to describe existing conditions and for the analysis are identified in the endnotes. These sources include a variety of City planning documents, agency and provider correspondence (e.g. the Specific Plan), consultation with City staff, and published technical information available through various websites. Primary sources reviewed during preparation of this section include ENGEО's *Phase One [I] Environmental Site Assessment Phase, Lagoon Valley, (hereafter referred to as Residential Portion)* and *Phase One [I] Environmental Site Assessment Phase, Lagoon Valley Commercial and Utility Corridors, (hereafter referred to as Business Portion)* (September 30, 2003) for the Proposed Project. Both documents are included as Appendix K of this EIR.

Information referenced in the endnotes in this section is available for review at the City of Vacaville, Community Development Department, Planning Division, 650 Merchant Street, Vacaville, California.

Comments received in response to the NOP (see Appendix B) for this project expressed concern about the potential anthrax contamination associated with previous domestic farm animal operations (carcasses and/or soil contamination) at the Specific Plan area. Other comments were directed at potential wildland fire hazard. All of these issues are addressed in this section.

### 4.13.2 ENVIRONMENTAL SETTING

The presence of hazardous materials or other safety hazards is a part of everyday urban life that could affect residents, workers, and visitors within and adjacent to the Proposed Project. Some of these activities can pose a risk of exposure to people or the environment due to accidental releases, such as spills, or as a result of soil or groundwater contamination related to past uses of properties within and adjacent to the Specific Plan area. Transportation of hazardous materials through or near the Specific Plan area could also present hazards.

The following section discusses existing and Proposed Project land uses that have the potential to result in accidental releases of hazardous materials or present other health risks and

identifies existing and proposed hazardous materials management programs applicable to the Proposed Project. For purposes of this EIR, the term “hazardous materials” refers to both hazardous substances and hazardous wastes.<sup>1</sup>

### **Specific Plan Area**

Existing and past uses of the Specific Plan area, including Hines Nursery, an automobile wrecking yard, and former gliderport, could have resulted in the use and storage of hazardous materials and/or wastes, which could have resulted in the release of hazardous compounds into the soil or groundwater.

Phase I Environmental Site Assessments (ESAs) are used to assess whether potentially hazardous materials are located on a property. Standards for Phase I ESAs have been developed by the American Society for Testing and Materials (ASTM) and are used routinely to determine 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, onto the surface or into the ground, groundwater or surface water of the property. If a Phase I ESA finds that hazardous materials found on the property may have been released, then a Phase II ESA is usually recommended. A Phase II investigation typically includes collection and analysis of soil and water samples. Based on the results, the Phase II ESA may recommend additional testing, remediation, or other controls to address contamination. Two Phase I ESAs were completed for the Specific Plan area (see Appendix K) and are discussed in detail below.

### **Results of Phase I Environmental Site Assessments**

Two Phase I ESAs were completed for the Specific Plan area by ENGEIO Incorporated in September 2003; one for the residential and golf club portions of the Proposed Project; the other for the business village portion. These Phase I ESAs included historical information, an environmental database search, aerial photography, topographic maps, and a site visit to determine 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, onto the surface or into the ground, groundwater or surface water of the property. Neither Phase I ESA found that the Specific Plan area was listed on the Cortese list, or list of hazardous sites, pursuant to California Government Code Section 65962.5.

### **Specific Plan Area**

The following summarizes information from the ESA for the Specific Plan area.

#### **Hines Nursery Property**

Hines Nursery occupies approximately 168 acres of land in the central eastern portion of the Specific Plan area and is currently used for nursery operations. Hines Nursery has been in operation in this location since approximately 1977, and since that time has been using a wide variety of pesticides and fertilizers in its routine operations. The western portion of the Hines Nursery parcel has been used in the past for limited dry land farming and cattle grazing. The western half of the Hines Nursery property is currently fallow farmland and a few cattle were observed grazing along the southern boundary of the nursery property. Former homestead sites were once located in Solano County Assessors' Parcel Numbers (APNs) 167-020-120,

167-020-110, and 128-040-180.<sup>2</sup> The Hines Nursery was identified in several of the state and local environmental databases for the presence of active or inactive underground storage tanks (USTs) and as a California Water Resources Control Board Waste Discharge System (WDS) facility.

Several above ground storage tanks (ASTs) were observed on the property, including one 5,000-gallon AST, with a partition, that holds diesel and gasoline, and two ASTs that contained, separately, liquid ammonium nitrate and liquid potassium nitrate. These ASTs were located adjacent to the Hines Nursery maintenance and operation buildings. The ground surface and soil directly beneath or surrounding these tanks was observed to have staining, indicating past spills and/or leaks from these tanks. In the case of the liquid fertilizers, the staining was observed as "heavily stained."<sup>3</sup> No further ground or soil staining was observed in the Hines Nursery property.<sup>4</sup> Four USTs on the property were removed between 1997 and 1998: one 12,000-gallon diesel fuel UST; one 12,000-gallon gasoline UST; one 250-gallon waste oil UST; and one 8,000-gallon pesticide rinsate UST.<sup>5</sup> This latter UST was used to store the liquid from rinsing of equipment used to fertilize plants at the nursery.

After removal of the fuel USTs, a letter from the Solano County Department of Environmental Management (SCDEM) regarding the removal of the tanks showed that there were no "significant contamination...found in the tank excavation" pit or soil around them. The letter also stated that there was no further action required for these USTs. In addition, the SCDEM authorized the closure of groundwater monitoring wells that were used for monitoring leaks from the USTs.<sup>6</sup>

Potential areas for groundwater contamination were investigated by the ESA. Two previous ESAs for the Hines Nursery property were reviewed and both previous ESAs identified elevated levels of nitrates in the groundwater and on the property. One previous ESA recommended that groundwater monitoring wells be installed to investigate the magnitude of the nitrate contamination. The extent of the contamination was not indicated in the ESA or the previous ESAs.

The Deputy Commissioner of the Solano County Agricultural Commissioners Office reported that it was likely that pesticide usage, most likely methyl parathion, would have been limited to the historical walnut orchards, located on the eastern portion of the Hines property and that it was unlikely that pesticides were used on the rest of the property.<sup>7</sup> The pesticide methyl parathion has a half-life ranging from 1 to 30 days and belongs to a family of pesticides called organophosphates.<sup>8</sup> Half-life is the term used to describe the amount of time it takes for a compound, in this case methyl parathion, to be reduced in concentration by half.

### Harr Property

The Harr Property (APNs 167-030-080 and 167-030-020) is currently used for grazing land, a single dwelling, one maintenance shop, one barn, and two corrals, and, according to the ESA, is consistent with past historical use.<sup>9</sup> Three empty ASTs are located on the property with no indication of leaks on the ground surrounding the tanks. These ASTs, located on APN 167-030-080, and were used to store diesel and gasoline, but are no longer used. A total of 25 empty 55-gallon drums were stored throughout the buildings on the property, however no indication of staining from these drums was observed.

### The Jamerson Property

The Jamerson parcels (APNs 167-030-050, 167-030-060, 167-030-030, and 167-030-040) are currently an unkempt walnut orchard with two single-family dwellings, one garage, and two sheds, and that these uses are consistent with historical uses on the property.<sup>10</sup> Evidence of oil staining on the ground around the waste oil storage area was observed in the barn.

### Business Village Property

The business village portion of the Specific Plan area encompasses approximately 81 to 88 acres of dry seasonal grasses, which has been used in the past for sheep and cattle grazing, walnut orchards, and an airstrip. This portion of the Proposed Project includes APNs 128-020-040, 128-020-110, 128-020-050, 128-020-120, 128-010-080, 128-010-090, 128-010-070, 128-010-060, 128-030-130, 128-030-120, 128-030-100, 128-030-110, 127-020-040, 17-030-080, 127-030-090, 127-030-070, 128-030-020, and 128-030-050.

The business village portion of the Proposed Project, the parcels that comprise this portion of the Specific Plan area are currently unoccupied and contain no structures. However, concrete foundations (or slabs) and debris were observed within the southeastern portion of this area. The debris consisted of corrugated metal sheeting, automobile tires, household appliances, wood waste, and paper waste. More debris containing broken concrete, loose pipes, and paper and wood waste was observed in the northern portion of this area. No staining of soil was observed throughout all parcels. The Solano County Agricultural Commissioners Office reported that it was likely that pesticide usage, most likely methyl parathion, would have been limited to the historical walnut orchards. The ESA concluded that there was no evidence to suggest a previous release of hazardous materials.

### Transmission Lines

Polychlorinated biphenyl oils (PCBs) are associated with older transmission lines and can be found on pole-mounted electrical transformers. PCBs are considered hazardous materials due to their toxicity and their tendency to accumulate in animal tissues. The Toxic Substance Control Act of 1976 banned the manufacture, processing, distribution and use of PCBs in totally enclosed systems. Sixteen pole-mounted transformers were observed on the Specific Plan area, and no staining was observed around them. Pacific Gas and Electric (PG&E) confirmed that these pole-mounted transformers contain no PCBs.<sup>11,12</sup>

In addition, structures on the Specific Plan area observed on the Harr and Jamerson properties appear to have been built at a time when construction could have used asbestos containing building material (ACBM) and/or lead-based paint. The ESA concluded that without proper testing and analysis, there could be no conclusion on the status of these hazardous materials.

### Landscape Buffer Area

Three small parcels (APN's 128-010-030, 128-010-040, and 128-010-050) situated between Rivera Road and I-80, immediately northeast of the Cherry Glen Road/Lagoon Valley Road entrance to the Specific Plan area, are proposed to be developed as a landscaped buffer or incorporated into the Business Village area. One of the parcels is an automobile repair business. An ESA has not been prepared for these parcels, so it is uncertain if there is the potential for past and current uses to have adversely affected soil or groundwater at this location.

### Other Potential Hazards

One comment letter received in response to the NOP included an anecdotal reference to the potential for anthrax to be present in the area proposed for residential and golf course development. The commentor noted that the reports of an “anthrax outbreak” that resulted in cattle having to be destroyed “years ago” were unconfirmed.<sup>13</sup> The ESA incorporated documentation previously developed in response to this issue. According to the California Department of Health Services, there have been no reports in the United States of anthrax transmission to humans or pets in communities or parks that have been developed on land previously inhabited by grazing animals such as cattle, or where outbreaks of anthrax in animals had occurred.<sup>14</sup> Furthermore, current government information on anthrax indicates that the number of human anthrax cases in the U.S. contracted through soil exposure is nonexistent, and that total number of cases of anthrax in the U.S. was at most two per year prior to the deliberate exposure of people to weaponized anthrax.<sup>15,16,17</sup>

### Off-Site Utility Line Option Alignments

The alignments for the off-site extensions of sewer options 1 and 2, and other utilities, pass through commercial, rural residential, and regional park land uses, including the Peña Adobe historic site. There is the potential for historic and unidentified USTs, septic systems, and old wells to be present in those locations, which could contain hazardous materials.

### Transportation of Hazardous Materials

The transportation of hazardous materials in and adjacent to the Proposed Project could result in potential harm to construction workers and occupants on the Specific Plan area. The Proposed Project land uses do not include light industrial or industrial use. The land use in the Specific Plan area is limited to open space, residential, and business village, which are land use types that do not use large quantities of industrial strength hazardous materials. At most, these land use types would require the use of household cleaning and maintenance supplies and fertilizers and pesticides for landscaping. Therefore, traffic in the Specific Plan area would not include large deliveries of hazardous materials. However, I-80 is a large corridor for traffic between the Bay Area and Sacramento. The segment of I-80 adjacent to the Specific Plan area is not listed in either ESA as being listed on any of the environmental databases for hazardous materials spills.

### Wildland Fires

Fire hazard zones have been delineated in the Vacaville General Plan to plan for the potential impact of fires from the dry grasslands that are part of the natural environment within the City and from those wildlands bordering the City. The Proposed Project is located within areas designated by the Vacaville General Plan as moderate to extreme fire hazard zone.<sup>18</sup>

## **4.13.3 REGULATORY SETTING**

The following discussion summarizes federal, State, and local regulations pertaining to hazardous materials management and fire hazards.

## **Federal**

Several federal agencies regulate hazardous materials. These include the U.S. Environmental Protection Agency (EPA), the Occupational Safety and Health Administration (OSHA), and the Department of Transportation (DOT). Federal regulations which regulate the handling (including transportation), storage, work-place safety, and disposal of hazardous materials and wastes are contained primarily in Titles 10, 29, 40, and 49 of the Code of Federal Regulations (CFR).

## **State**

The California Environmental Protection Agency (Cal/EPA) and the Office of Emergency Services (OES) establish regulations governing the use of hazardous materials in the State. The California Highway Patrol (CHP) and the California Department of Transportation (Caltrans) are the enforcement agencies for hazardous materials transportation regulations. Hazardous materials and waste transporters are responsible for complying with all applicable packaging, labeling, and shipping regulations.

Within Cal/EPA, the Department of Toxic Substance Control (DTSC) has primary regulatory responsibility for hazardous waste management. Enforcement of regulations has been delegated to local jurisdictions that enter into agreements with DTSC for the generation, transport, and disposal of hazardous materials under the authority of the Hazardous Waste Control Law. State regulations applicable to hazardous materials are contained in Title 22 of the California Code of Regulations (CCR). Title 26 of the CCR is a compilation of those sections or titles of the CCR that are applicable to hazardous materials management.

In January 1996, Cal/EPA adopted regulations implementing a “Unified Hazardous Waste and Hazardous Materials Management Regulatory Program” (Unified Program). The six program elements of the Unified Program are hazardous waste generators and hazardous waste on-site treatment, underground storage tanks, above-ground storage tanks, hazardous material release response plans and inventories, risk management and prevention program, and Uniform Fire Code hazardous materials management plans and inventories. The program is implemented at the local level by a local agency – the Certified Unified Program Agency (CUPA). The CUPA that serves the Proposed Project is the SCDEM. The SCDEM is responsible for consolidating the administration of the six program elements within its jurisdiction.

## **School Siting**

### **Contaminated Sites**

The California Education Code (Section 17210 et seq.) outlines the requirements of siting school facilities near or on known or suspected hazardous materials sites, or near facilities that emit hazardous air emissions, handle hazardous or acutely hazardous materials, substances, or waste. The code requires that, prior to commencing the acquisition of property with State Funds for a new school site, an environmental site investigation be completed to determine the health and safety risks (if any) associated with a site. Recent legislation and changes to the Education Code identify DTSC’s role in the assessment, investigation, and cleanup of proposed schoolsites. All proposed schoolsites that will receive State funding for acquisition and/or construction must go through a comprehensive investigation and/or cleanup process under DTSC oversight. DTSC is required to be involved in the environmental review process to ensure that selected properties are free of contamination, or if the property is contaminated, that

it is cleaned up to a level that is protective of students and faculty who will occupy the new school. All proposed schoolsites must be suitable for residential land use, which is DTSC's most protective standard for children.

Prior to acquiring a schoolsite or engaging in a construction project, school districts must contract for the preparation of a Phase I ESA, which must be reviewed by DTSC according to established timelines. The Phase I ESA, which must be prepared by a qualified professional, can be used to support a conclusion that no recognized environmental conditions are present, or a Preliminary Endangerment Assessment (PEA) is necessary. Although the methodology for conducting Phase I ESAs is the ASTM Industry Standard E-1527 (previously described), DTSC has developed regulations that supplement the ASTM E-1527 standard that more specifically addresses schoolsites.<sup>19</sup>

If the Phase I concludes, or DTSC determines, that a PEA be conducted, the school district can either proceed with the PEA or drop the schoolsite from further consideration. If the district chooses to proceed with a PEA, it will be required to enter into an Environmental Oversight Agreement with DTSC to oversee preparation of the PEA, which must be submitted to DTSC for review and approval. If the approved PEA concludes the property would not pose a threat, DTSC will issue a "No Further Action" determination and will not require additional investigation or cleanup. If the PEA concludes the property is contaminated, the district must clean up the site, or it can choose not to proceed with development of the school project. When all necessary cleanup activities are completed according to DTSC-approved plans, DTSC will certify the site cleanup is complete.<sup>20</sup>

If a previous Phase I ESA has been conducted for the proposed schoolsite and is more than 180 days old, DTSC recommends an addendum be prepared to verify the site conditions or describe changes in site conditions.<sup>21</sup>

In conjunction with the Phase I and PEA process, DTSC has also developed specific sampling guidance for schools proposed on land historically used for agriculture where pesticides have been routinely applied ("Interim Guidance for Sampling Agricultural Fields for School Sites," August 2002). DTSC recommends that school districts and their hazardous materials consultant coordinate with DTSC to determine the applicability of the Interim Guidance to a specific location and the need for testing.<sup>22</sup>

### **Location Relative to Source of Hazardous Emissions**

In addition to an evaluation of potential site contamination issues, Public Resources Code Sections 21151.4, 21151.8, and 21151.2 require that no EIR be approved for a project involving the construction or alteration of a facility that might reasonably be anticipated to result in hazardous air emissions within one-quarter mile of a school unless the lead agency has consulted with the school district having jurisdiction regarding the potential impact of the project on the school, or the school has been given written notification of the project not less than 30 days prior to approval of the EIR. Section 4.6 (Air Quality) includes additional information about hazardous emissions.

## Local

### **Solano County**

The SCDEM is the CUPA for all cities and unincorporated areas within Solano County. The SCDEM issues permits to and conducts inspections of businesses that use, store, or handle quantities of hazardous materials and/or waste greater than or equal to 55 gallons, 500 pounds, or 200 cubic feet of a compressed gas at any time. The SCDEM also implements the Hazardous Material Management Plans (Business Plans) that include an inventory of hazardous materials used, handled, or stored at any business in the County. The SCDEM also permits and inspects businesses that handle acutely hazardous materials, such as those used in R&D facilities, that require a Risk Management and Prevention Program. The SCDEM also helps local fire departments respond to emergencies involving hazardous materials.

Furthermore, regulated activities (e.g., businesses) are managed by the SCDEM in accordance with applicable regulations such as Hazardous Materials Release Response Plans and Inventories (Business Plans), the California Accidental Release Prevention (CalARP) Program, and the California Uniform Fire Code: Hazardous Material Management Plans and Hazardous Material Inventory Statements.

### **City of Vacaville**

The City regulates hazardous materials in coordination with other State and local agencies (e.g. DTSC and SCDEM). The City enforces Title 26, Division 6, of the CCR to reduce impacts associated with accidental release from transportation of hazardous materials on roads in the City and the potential for an increased demand for incident emergency response.

In addition, the City Fire Department, in coordination with the SCDEM, enforces workplace regulations addressing the use, storage, and disposal of flammable and hazardous materials, pursuant to Title 8 of the CCR, which apply to businesses and public facilities. The Vacaville Fire Department is also responsible for oversight on all fire safety regulations as they pertain to fire safety hazards to people and structures in the City, including fire sprinkler installation, flammable materials storage, emergency response and evacuation procedures, and other fire prevention measures.

### General Plan

Consistency of the Proposed Project with relevant City of Vacaville General Plan goals and policies is presented in Appendix C. As shown in Appendix C, the Proposed Project is consistent with applicable parks and recreation goals and policies.

### City Ordinances

The City of Vacaville has adopted ordinances that govern health and safety through the management of hazardous waste. These ordinances, which are included in Chapter 8.08 of the Municipal Code, address proper hazardous waste disposal and transportation and mechanisms for ensuring compliance.

#### 4.13.4 IMPACTS AND MITIGATION MEASURES

##### **Method of Analysis**

The analysis of the potential hazardous materials-related impacts and impacts from wildland fires is based on the following: *Phase I Environmental Site Assessment, Residential Portion* and *Phase I Environmental Site Assessment, Office/Commercial Portion*, ENGEO Inc. (August 15, 2003) (see Appendix K); and documents and information provided to EIP by the City of Vacaville. The information obtained from these sources was reviewed and summarized to establish existing conditions and to identify potential environmental effects at a qualitative level, based on the standards of significance presented in this section.

The general types of businesses and the range and types of uses that would be located in the Specific Plan area are identified in the Specific Plan. Because the specific uses that could occur in the Business Village portion of the Proposed Project are unknown at this time, this analysis assumes and evaluates a broad range of potential uses that could generate or handle hazardous materials in the Proposed Project. Allowable uses in the Business Village could include biotechnology companies, R&D, and laboratories, all of which have the potential to use, store, transport, and generate hazardous materials and/or wastes, which would all be subject to applicable federal, State, and local laws.

In determining the level of significance, the analysis assumes that development in the Proposed Project would comply with relevant federal, State, and local ordinances and regulations. In most cases, the laws and regulations pertaining to hazardous materials management and public safety are sufficient to ensure worker, public, and environmental health and safety. The discussion below identifies areas where impacts related to wildland fires and hazardous materials could, nonetheless, be significant or potentially significant because the enforcement of existing laws and regulations alone does not necessarily ensure that health and safety would be adequately protected.

##### **Standards of Significance**

For the purposes of this EIR, a significant impact would occur if the Proposed Project would:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials, or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- Emit hazardous emission or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;
- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result create a significant hazard to the public or environment;
- Be located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would result in a safety hazard for people residing or working in the project area;
- Be located within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area;
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan

- Create an increased risk of adverse health effects to the public or cause increased environmental hazard resulting from known or unidentified soil or groundwater contamination that could be encountered during construction or be present during occupancy of the project; or
- Expose people of structures to a significant risk of loss, injury, or death involving wildland fires.

### **Effects Determined to Have No Impact**

The following discussion describes impacts that would not occur as a result of project implementation.

As stated in the Environmental Setting in this Chapter, the Specific Plan area is not located on a site listed as a hazardous materials site, as compiled pursuant to Government Code Section 65962.5.

The Specific Plan area is located in the Travis Airport Land Use Compatibility Plan (ALUCP), an airport land use plan, but is not within two miles of an airport. In addition, the Specific Plan area is not in the vicinity of a private airstrip. See Chapter 4.2, Land Use for analysis of land use compatibility of the project and the Travis ALUCP.

The proposed Specific Plan would not interfere with adopted emergency response plan or emergency evacuation plan. Please refer to Section 4.9, Public Services for further discussion of police and fire protection services.

### **Project Impacts and Mitigation Measures**

#### **4.13-1 Construction and occupancy of the Proposed Project would result in the routine transport, use, or disposal of hazardous materials.**

Hazardous materials would be used in varying amounts during construction and occupancy of the Proposed Project. Products and materials typically used during construction that could contain hazardous substances include paints, solvents, cements, glues, and fuels. Exposure of construction workers or site occupants to hazardous materials would occur in the following manner: improper handling or use of hazardous materials or hazardous wastes during construction or occupancy of the Proposed Project, particularly by untrained personnel; transportation accident; environmentally unsound disposal methods; or fire, explosion or other emergencies.

Construction workers and future site residents would be exposed to hazards associated with accidental releases of hazardous materials, which would result in adverse health effects. Hazardous materials that could be present during occupancy of the residential, open space (e.g. golf course) and business village areas in the Specific Plan area are expected to include, for example, household-type and maintenance products (e.g., paints, solvents, pool chemicals, pesticides/herbicides). R&D and biotechnology activities that could occur in the Business Village would likely use the largest amounts and types of hazardous materials, which could include, but would not be limited to, inorganic and organic chemicals, radioactive materials, and biohazardous substances. Office and commercial activities could use a variety of products such as cleaning agents, solvents, paints, materials used in printing, pesticides, and chemicals for landscaping. The types and amounts of hazardous materials would vary according to the location and nature of the activity. However, all allowable uses would be subject to code

requirements, as necessary, which would ensure compliance with applicable permits and inspections.

During the first phases (approximately 3 years) of the Proposed Project development, the Hines nursery would continue to operate in conjunction with residential occupation, as described in Section 4.2, Land Use and Agricultural Resources. This could expose workers and occupants adjacent to the nursery to pesticides, fertilizers, and other hazardous materials used, transported, and stored at the nursery. However, the SCDEM and City would be responsible for ensuring the nursery complies with all applicable health and safety measures through permitting and inspection.

Hazardous materials regulations, which are codified in Titles 8, 22, and 26 of the CCR, and their enabling legislation set forth in Chapter 6.95 of the California Health and Safety Code, were established at the State level to ensure compliance with federal regulations to reduce the risk to human health and the environment from the routine use of hazardous substances. These regulations must be implemented by employers/businesses, as appropriate, and are monitored by the State (e.g., Cal OSHA in the workplace or DTSC for hazardous waste) and/or local jurisdictions (e.g., the Vacaville Fire Department and SCDEM).

By ensuring that businesses in or adjacent to the Specific Plan area comply with the Unified Program, the City would reduce impacts associated with the potential for accidental release of hazardous materials during occupancy of the Proposed Project that would result in increased risk of exposure to accidental release of hazardous materials, and the potential for an increased demand for incident emergency response. This would be accomplished by ensuring that regulated activities (e.g., businesses) are managed in accordance with applicable regulations such as Hazardous Materials Release Response Plans and Inventories (Business Plans), the California Accidental Release Prevention (CalARP) Program, and the California Uniform Fire Code: Hazardous Material Management Plans and Hazardous Material Inventory Statements. Off-site activities (e.g., utility corridor construction and operations) would also be required to comply with these regulations.

Compliance with Title 26, Division 6, of the CCR, which would be monitored by the City, would reduce impacts associated with potential for accidental release during construction or occupancy in the Specific Plan area and the potential for an increased demand for incident emergency response. Compliance with this regulation would ensure that businesses and public facilities where hazardous materials are used or stored near well sites (e.g., groundwater) adhere to regulations designed to prevent leakage and spills of material in transit and provide detailed information to clean-up crews in the event of an accident.

Workplace regulations addressing the use, storage, and disposal of hazardous materials in Title 8 of the CCR would apply to businesses and public facilities in and adjacent to the Specific Plan area. Compliance with these regulations would be monitored by the Vacaville Fire Department and the SCDEM when they perform inspections for flammable and hazardous materials storage. Other mechanisms in place to enforce the Title 8 regulations include compliance audits and reporting to local and State agencies. Implementation of the workplace regulations would further reduce the potential for hazardous materials releases.

Implementation of Title 49, Parts 171-180, of the Code of Federal Regulations would reduce any impacts associated with the potential for accidental release during construction or occupancy of the Proposed Project or by transporters delivering hazardous materials to the Specific Plan area

or picking up hazardous waste. These regulations establish standards by which hazardous materials will be transported, within and adjacent to the Proposed Project.

Implementation of existing General Plan Policy 9.4-G1 and -G2, which addresses hazardous materials disclosure, and compliance with applicable federal and State laws and regulations that are administered and enforced by the CUPA (SCDEM), and Vacaville Fire Department standards (the local agency that implements applicable hazardous materials-related sections of the Uniform Fire Code and Uniform Building Code) would reduce impacts associated with the routine use, storage, and transportation of hazardous materials in the Proposed Project to a ***less-than-significant level***.

### **Mitigation Measures**

4.13-1 *None required.*

#### **4.13-2 Implementation of the Proposed Project would result in the use, transportation, storage, and disposal of hazardous materials within ¼ mile from a proposed school site.**

Implementation of the Proposed Project may place new industrial and commercial uses, that use, store, and dispose of hazardous materials within ¼-mile of school sites. Schools are considered sensitive receptors. The exact use, intensity, or nature of development of the Proposed Project is not certain at this time. Implementation of the Proposed Project would include the construction of a new school within the Specific Plan area, at approximately 600 to 900 feet from the proposed Business Village area. Proposed uses of the Business Village include biotechnology research and development, which would involve the storage, use, and disposal of acutely hazardous materials. Section 15186 of the CEQA Guidelines establishes requirements for school projects, as well as projects near schools, to ensure that potential health impacts resulting from exposure to hazardous materials, wastes, and substances are examined and disclosed in an environmental document. Section 15186 of the CEQA Guidelines states that hazardous materials that must be considered a risk are those which may impose a health or safety hazard to persons who would attend or would be employed at the school.

Specifically, when a project located within ¼-mile of a school involves the construction or alteration of a facility that might reasonably be anticipated to emit hazardous materials or a mixture containing acutely hazardous materials in a quantity equal to or greater than that specified in Section 25534 of the California Health and Safety Code, the Lead Agency must: (1) consult with the affected school district regarding the potential impact of the project when circulating the environmental document; and (2) notify the affected school district in writing prior to approval and certification of the environmental document. The proposed school would be located on the south side of Lagoon Valley Road, and across the street from the proposed Fire Station. As such, educational structures (classrooms and teaching facilities) would be located within ¼-mile of the Business Village. The one-fourth mile criterion for notification and consultation is required by CEQA and relates to any source of hazardous materials.

Due to the use, transport, storage, and disposal of potentially hazardous materials at new proposed research and commercial business village land uses, adjacent sensitive receptors would be exposed to greater risk of exposure to hazardous materials, waste, or emissions. Accidental release or combustion of hazardous materials at developments would endanger students in the surrounding community. Given that the location of the proposed school site is

within ¼-mile from the Business Village, the potential exists for the schools to be located near hazardous materials.

The applicant has discussed the proposed school location with local school districts and has agreed to notify the districts in writing in the form of this EIR prior to approval and certification of the environmental document.

Although hazardous materials used and waste generated from new developments may pose a health risk to sensitive land uses nearby, all businesses that handle or have on-site transportation of hazardous materials would be required to comply with the provisions of applicable federal, State, and local regulations. However, as specific project impacts are currently unknown, it cannot be confirmed that applicable regulations would reduce potential impacts from hazardous materials to a less-than-significant level. Thus, impacts would be ***significant and unavoidable***.

### **Mitigation Measures**

4.13-2 *None available.*

### **4.13-3 Construction and occupancy of the Proposed Project could create a health hazard to workers, the public and the environment due to previously unidentified contaminated soil and groundwater.**

The Specific Plan area has historically been used for agricultural purposes, including walnut orchards, a nursery, sheep and cattle grazing, dry land farming, operations and maintenance shops, rural residences, barns, and an airstrip. Therefore, there is the potential that soil and groundwater in the Proposed Project area has been contaminated by the on-site storage of fuels, the ongoing application of pesticides, herbicides and other agricultural chemicals, or illicit debris disposal. The Phase I ESAs reported several areas where there were debris piles and stained soils, indicating potential contamination of soil in those areas (see Environmental Setting, above). According to the ESAs, the debris found on the Specific Plan area contained a variety of wastes, including pipes, concrete blocks, paper and wood waste, and other wastes associated with previous historical use of the site. One of the ESAs observed areas of heavily stained soil, which could indicate soil and/or groundwater contamination. These areas were found on the parcel where the Hines Nursery is located.<sup>23</sup> In addition, the ESA reported that groundwater beneath the Hines Nursery has elevated levels of nitrates and recommended that this contamination be further investigated.<sup>24</sup> The ESAs found no evidence of PCBs, sewage treatment facilities, waste management facilities, or Superfund sites on or within 1 mile of the Specific Plan area.<sup>25</sup> In addition, as described in the Environmental Setting section, a report of cattle destroyed on-site as a result of an anthrax outbreak is unconfirmed. In addition, current government information on anthrax indicates that the number of human anthrax cases in the U.S. contracted through soil contamination is nonexistent.

However, as of publication of this EIR, there have been no soil or groundwater samples collected for the Specific Plan area that have been analyzed for hazardous constituents, other than groundwater sampling done on the Hines Nursery property. There are no plans to use groundwater for the Proposed Project. Based on the information presented in the ESAs, some locations could contain elevated levels of contaminants in soil or groundwater. Depending on the concentration and extent, soil or groundwater contaminated with hazardous substances would present a human health risk during construction activities. Further, it is possible that not all septic tanks, wells, or other underground storage devices or conveyance systems have been

identified, because these would have been installed prior to permitting requirements, or additional information would have become available in agency files prior to the construction of the Specific Plan area.

In addition, several areas within the Specific Plan were not investigated for potential soil and groundwater contamination from previous uses. These areas include the Lagoon Valley Regional Park, the proposed landscape buffer just north of the Cherry Glen Road/Lagoon Valley Road, and the proposed utility corridors east and north of I-80.

Soil-disturbing activities could expose construction workers and residents to contaminated debris, elevated levels of chemicals that would be hazardous, or hazardous substances that would be inadvertently spread, resulting in a greater aerial extent of contamination. Soil or groundwater containing elevated levels of contaminants, if left unmanaged, would pose a health risk to site workers and occupants. Implementation of applicable regulations in the CCR and Title 40 of the CFR by the Applicant, under the oversight of the City, RWQCB, and/or DTSC would ensure that soil and/or groundwater contamination as a result of past uses, if any, is remediated according to established protocols. However, because the extent, if any, of soil or groundwater contamination is unknown, there is the potential that construction workers or occupants of the site could be exposed, and this is considered a ***potentially significant impact***.

### **Mitigation Measures**

Implementation of the following mitigation measures would reduce this impact to a *less-than-significant level*.

4.13-3 (a) *Prior to, or concomitantly with construction activities to implement the Specific Plan, the project Applicant shall implement all recommendations from the two ESAs completed by ENGE0 Inc. on August 15, 2003. Specifically, the Proposed Project shall:*

- *Conduct further evaluations of soil and groundwater impacts at the Hines Nursery facility through a Phase II ESA and remediate, as necessary, to all federal, State, and local standards;*
- *Collect and dispose of identified stained soil according to federal, state, and local laws;*
- *Collect and dispose of all abandoned tanks according to federal, state, and local laws;*
- *Conduct a survey for lead-based paints and ABCM prior to demolition and remediate, as necessary, to all applicable federal, State, and local standards;*
- *Collect and dispose of all abandoned pesticide containers according to federal, state, and local laws;*
- *Demolish all observed equipment wash pads and collect and dispose of any stained soil according to federal, state, and local laws;*
- *Collect and dispose of all abandoned farm equipment, debris and machinery according to federal, state, and local laws; and,*
- *Abandon all agriculture and domestic water wells, and septic systems under permit by the SCDEM.*

(b) *If, during site preparation and construction activities, evidence of hazardous materials contamination is observed or suspected through either obvious or*

*implied measures (i.e., stained or odorous soil, or oily or discolored water), construction activities shall cease and an environmental professional shall assess the situation. If necessary, the environmental professional shall prepare a sampling plan to collect soil and/or groundwater samples to determine whether or not the site has been adversely affected by past activities. The samples shall be analyzed for the contaminants determined to be a potential health concern by the environmental professional. Depending on the nature of the contamination (if any), the SCDM, or the current designated CUPA, shall be contacted for further direction, which could include further investigation or remediation to all applicable federal, State, and local levels.*

- (c) *If any required remediation has not yet been completed for contaminated soils or groundwater identified during construction, the project applicant shall perform a human health risk assessment, in accordance with the guidelines from USEPA and DTSC, to determine health risks to construction workers and future site occupants. The results of the human health risk assessment may indicate that added protection for construction workers and/or requirements for vapor barriers in structures would be required to prevent adverse effects on indoor air quality. The human health risk assessment shall be submitted to the SCDM for review and approval, and engineering controls, if required to reduce health risks to acceptable levels for future site users, shall be incorporated into the project design.*
- (d) *If remediation of soil and/or groundwater has not been completed by the time site development occurs, the remediation systems shall be designed so that the systems can be effectively installed, operated, and removed without substantial conflict with planned land uses. The design of project improvements in the areas of the know soil and/or groundwater contamination locations shall be submitted to the SCDM for concurrence prior to building permit issuance.*

And

- (e) *Prior to any ground-disturbing activities on either Lagoon Valley Regional Park or the proposed utility corridor north of I-80, or any other off-site utility corridor, the Applicant shall conduct a Phase I ESA for each of these sites and follow the recommendation(s) within each Phase I ESA, as well as Mitigation Measures 4.13-3(b) through (d).*

Mitigation Measures 4.13-3(a) through (e) would ensure that previously unidentified, residual or potential hazards are remediated and an evaluation of locations not previously investigated is prepared.

**4.13-4 Construction and occupancy of the proposed elementary school could create a health hazard to school children and school workers due to previously unidentified contaminated soils.**

A Phase 1 ESA was conducted for the Proposed Project, which included an assessment of the APNs where the proposed school site would be located. The ESA did not observe evidence of a potential release of hazardous materials from past uses on the Proposed Project site. The site where the school would be located was used as pastureland and/or dry farming but was never developed with urban uses. Although it is unlikely that residual contaminants from past

uses remain, the California Education Code mandates a process for identifying hazards associated with historic agricultural uses at proposed school sites for which State funding is used. It is currently unknown whether the school would be a publicly or privately funded facility. While the process is specifically intended to address State-funded school site development for a public school district, the process would be appropriate for a privately funded school site. Privately funded schools typically conduct the same process due to potential liabilities. This process includes obtaining approval from the DTSC that a proposed school site is free of contaminants and hazardous materials that would pose a risk to students and faculty. Although an ESA has been completed for the APNs where the school would be located, all the DTSC requirements for siting public schools has not been met. If the school site were developed with a private school, the Education Code requirements would not be prescriptive. Therefore, under either scenario, it is conservatively assumed potential impacts from exposure to unidentified contaminated soils or hazardous materials at the proposed school site would be **potentially significant**.

### Mitigation Measures

Implementation of the following mitigation measures would reduce this impact to a *less-than-significant level*.

4.13-4 (a) *Prior to the construction of the proposed school site, the project applicant shall conduct a Preliminary Endangerment Assessment (PEA) of the proposed school site, pursuant to Title 22 of the CCR, Chapter 51.5, Section 69107(c), where the PEA shall include sampling to determine one or more of the following:*

- *If a release of hazardous material has occurred and, if so, the extent of the release;*
- *If there is the threat of a release of hazardous materials; and*
- *If a naturally occurring hazardous material is present.*

(b) *Implementation of Mitigation Measures 4.13-2(a) through (d).*

Mitigation Measures 4.13-4(a) and (b) would ensure that previously unidentified or potential hazards are investigated and/or remediated prior to building the school. Mitigation Measure 4.13-4(a) is highly recommended, but not necessary if the school is privately funded.

### **4.13-5 Implementation of the Proposed Project could expose people or structures to a significant risk of loss, injury, or death involving wildland fires.**

The Proposed Project would construct residences within areas identified by the Vacaville General Plan as moderate to extreme fire hazard zones. Currently, a major portion of the site is grassland, which is a natural fuel for wildland fires. The Proposed Project would construct residences on a large portion of the existing grassland areas, thus reducing on-site natural fuel for fires. However, the areas surrounding the Specific Plan area are mostly comprised of dry grassland and oak woodlands, and are classified as high to extreme fire zones. Wildland fires can be initiated by natural phenomena, such as lightning or from extremely dry and hot conditions. However, wildland fires can also be started by human activities, such as smoking, use of highly flammable fuels, and malfunctioning electrical equipment.

Because the Specific Plan area is located in a high-risk fire zone and there would be an increase in the population in this area, people and structures could be exposed to a significant

risk of loss, injury, or death as a result of wildland fires. The City of Vacaville General Plan Policies 9.3-G1, -G2, -I1, -I2, -I3, and -I4 are used by the City to provide a safe environment for residents of the City, decrease the risk from fires (including wildland fires), and to provide a level of service sufficient for emergency response times. The City enforces the Uniform Building Code (UBC) and Uniform Fire Code (UFC) through the issuance of building permits and conditions of approval. Further, prior to the construction of any structures or communities, the City reviews project plans for conformance with the UBC and UFC to reduce risk of fires originating from within the City. As described in Section 4.9, Public Services, the Proposed Project includes a requirement to develop Permanent Fire Protection Standards with the Master Tentative Map approval to minimize the risk of exposure to wildland fires. The standards are incorporated into the Specific Plan and would be in compliance with the City's fire Code, the 2003 Standards of Coverage Study, and the City Council's Performance Standards for the Fire Department, as determined by the Fire Chief. Standards shall include, at a minimum: (1) emergency vehicle ingress/egress routes and procedures; (2) use of non-combustible construction materials for structures adjoining the open space areas; (3) setback requirements for structures adjoining the open space areas; (4) fire break standards, including managed vegetation buffer zones with fire resistive landscaping between the developed and open space areas, and (5) long-term maintenance programs for the developed/open space interface. In addition, certain perimeter residential units and all structures over 5,000 sf would be required to install sprinklers. During construction activities, all developers would be required to consult with the City of Vacaville Fire Department in order to implement fire prevention measures at sites adjacent to natural areas. All of these measures would be directed by the Fire Chief and in compliance with City of Vacaville Land Use and Development Code, Chapter 14.20. Furthermore, the Proposed Project would construct a new fire station on the Specific Plan area in order to serve the entire Specific Plan area and adjacent properties in the event of fires and other emergencies. Section 4.9 Public Services describes in detail impacts of project development on fire protection levels of service. Therefore, impacts from wildland fires would be ***less than significant***.

### **Mitigation Measures**

4.13-5 *None required.*

## ENDNOTES

1. This EIR uses the definition stated in the California Health and Safety Code (CHSC) §25501: "A hazardous material is any material that, because of its quantity, concentration, or physical, chemical characteristics poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. 'Hazardous materials' include, but are not limited to, hazardous substances, hazardous waste, and any material which a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment."
2. EN GEO Incorporated, *Phase One Environmental Site Assessment, Lagoon Valley, Residential Portion*, September 30, 2003, p.17.
3. EN GEO Incorporated, *Phase One Environmental Site Assessment, Lagoon Valley, Residential Portion*, September 30, 2003, p.17.
4. EN GEO Incorporated, *Phase One Environmental Site Assessment, Lagoon Valley, Residential Portion*, September 30, 2003, p.18.
5. EN GEO Incorporated, *Phase One Environmental Site Assessment, Lagoon Valley, Residential Portion*, September 30, 2003, p.21.
6. EN GEO Incorporated, *Phase One Environmental Site Assessment, Lagoon Valley, Residential Portion*, September 30, 2003, p.23.
7. EN GEO Incorporated, *Phase One Environmental Site Assessment, Lagoon Valley, Residential Portion*, September 30, 2003, p.19.
8. EN GEO Incorporated, *Phase One Environmental Site Assessment, Lagoon Valley, Residential Portion*, September 30, 2003, p.19.
9. EN GEO Incorporated, *Phase One Environmental Site Assessment, Lagoon Valley, Residential Portion*, September 30, 2003, p.18.
10. EN GEO Incorporated, *Phase One Environmental Site Assessment, Lagoon Valley, Residential Portion*, September 30, 2003, p.18.
11. EN GEO Incorporated, *Phase One Environmental Site Assessment, Lagoon Valley, Residential Portion*, September 30, 2003, p. 26.
12. EN GEO Incorporated, *Phase One Environmental Site Assessment, Lagoon Valley, Business Portion*, September 30, 2003, p. 17.
13. Tom Reyes, "Comments Regarding Scope of EIR Lower Lagoon Valley Development," letter to Fred Buderl, City of Vacaville, April 10, 2003.
14. California Department of Health Services, Disease Control Section, Infectious Disease Branch, Letter from Dr. Ronald, M. Roberto, Chief, to Dr. Thomas L. Charron, Health Officer, Solano County Health Department, dated July 11, 1991.

15. "Clinical and Epidemiological Principals of Anthrax," Theodore J. Cieslak and Edward M. Eitzen, Jr., *Emerging Infectious Diseases*, Vol.5, No. 4, July-August 1999, pages 552-555.
16. United States Department of Agriculture, Fact Sheet on Anthrax, <http://www.usda.gov/homelandsecurity/anthraxfs.htm>, Accessed on October 01, 2003.
17. United States Center for Disease Control (CDC), Disease Information on Anthrax, [http://www.cdc.gov/ncidod/dbmd/diseaseinfo/anthrax\\_t.htm](http://www.cdc.gov/ncidod/dbmd/diseaseinfo/anthrax_t.htm), Accessed on October 1, 2003.
18. City of Vacaville, *Vacaville General Plan, Volume One: Plan Policies*, November 1999, Chapter 9, Figure 9-4, p. 14.
19. California Environmental Protection Agency, Department of Toxic Substances Control, California Code of Regulations, Title 22, Division 4.5, Chapter 51.5 Phase I Environmental Site Assessments (Schools), Effective February 10, 2003.
20. California Environmental Protection Agency, Department of Toxic Substances Control, School Property Evaluation and Cleanup Division, *Fact Sheet: New Environmental Requirements for Proposed Schoolsites (Assembly Bill 387 and Senate Bill 162)*, April 2001.
21. California Environmental Protection Agency, Department of Toxic Substances Control, California Code of Regulations, Title 22, Division 4.5, Chapter 51.5 Phase I Environmental Site Assessments (Schools), Effective February 10, 2003.
22. California Environmental Protection Agency, Department of Toxic Substances Control, "interim Guidance for Sampling Agricultural Fields for School Sites, 2nd Revision, August 26, 2002.
23. ENGEO Inc., *Phase I Environmental Site Assessment, Residential Portion*, August 15, 2003, pages 17 to 18.
24. ENGEO Inc., *Phase I Environmental Site Assessment, Residential Portion*, August 15, 2003, pages 21 to 22 and 23 to 24.
25. ENGEO Inc., *Phase I Environmental Site Assessment, Residential Portion*, August 15, 2003, pages 11 through 25, and *Phase I Environmental Site Assessment, Office/Commercial Portion*, August 15, 2003, pages 10 through 17.

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## **4.14 CULTURAL RESOURCES**

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## 4.14 CULTURAL RESOURCES

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### 4.14.1 INTRODUCTION

This section describes the cultural (historical, archaeological, and paleontological) resources present or potentially present in the Specific Plan area, identifies the significance of these resources, and evaluates the potential effects of implementation of the Proposed Project on those resources. Cultural resources that may be present on the project site include structures that may be eligible for listing on the National Register of Historic Places (NRHP) or the California Register of Historical Resources (CRHR); significant archaeological resources, including the potential presence of human burials; and potential paleontological resources.

Two technical studies were prepared as part of this EIR to identify potential prehistoric, historic-era archaeological, and historical resources at the Specific Plan area and at off-site sewer alignments to determine potential impacts: *Archaeological Survey for the Lower Lagoon Valley Project, Vacaville, Solano County, California* (Far Western Anthropological Research Group, Inc., September 2003) and *Historic Resources Evaluation Report: Lagoon Valley Project, Vacaville, Solano County, California* (JRP Historical Consulting Services, October 2003). These reports are available for review at the City of Vacaville, Community Development Department, Planning Division, 650 Merchant Street, Vacaville, California.

Comments received in response to the NOP (included in Appendix B) for this project expressed concern about the potential for Native American artifacts and human remains to be present in the Specific Plan area. As noted above, archaeological and historic resource evaluations were prepared to address this issue, and the results of these studies are presented and evaluated in this section.

### 4.14.2 ENVIRONMENTAL SETTING

#### Archaeological Resources

##### **Archaeological Context — Central California Archaeology**

Lagoon Valley is located in western Solano County and lies at the very southern end of the North Coast Ranges, located between two of the most studied archaeological districts in central California: San Francisco Bay and the Sacramento-San Joaquin Delta (Bay-Delta). Many of the earliest and most influential studies in central California archaeology occurred in these neighboring regions. Although the record of prehistoric human occupation in Lagoon Valley is not well understood, at least two important excavations have occurred in the valley.

The following summary focuses on cultural assemblages from a sequence of five time periods in Solano and neighboring counties to the south. These time periods range from the Lower Archaic, beginning 10,000 years before present (BP), to the Emergent Period (200 BP). A brief summary of the cultural history of the region surrounding Suisun Bay is provided for context to aid in the discussion of the proposed Specific Plan area.

The Lower Archaic period (10,000 to 6,000 BP) is the oldest archeological component found so far in the Bay-Delta region of central California and derives from the Los Vaqueros Reservoir area in eastern Contra Costa County, south of Solano County. Extensive early Initial Middle Archaic period deposits (6,000 to 4,500 BP) were not encountered in the Bay-Delta region until 1996 when they were identified during the Los Vaqueros Reservoir project. The site deposit discovered was contained in a buried soil and included a diverse assortment of habitation debris, several human burials, and residential and processing features. A number of buried sites in Contra Costa and Solano counties date to the Terminal Middle Archaic period (4,500 to 2,500 BP), including sites at Los Vaqueros Reservoir, in the San Ramon Valley, and in Green Valley, several miles west of Lagoon Valley. All of the Terminal Middle Archaic sites in Solano and Contra Costa counties have produced human remains, and most contain intact burials. A variety of artifacts are associated with this time period including side-notched and stemmed projectile points, rectangular abalone ornaments, shaped and unshaped mortars and pestles, and rectangular Olivella shell beads. The Upper Archaic (2,500 to 1,300 BP) deposits are found throughout the lowland valleys of the Coast Ranges and along the shores of San Francisco and Suisun bays. Upper Archaic sites are typically composed of well-developed midden deposits containing hundreds of human burials and residential features, reflecting long-term residential villages. Emergent Period (1,300 to 200 BP) deposits have been documented from most interior valleys and bayshore locations, as well as from upland contexts, where habitation and task-specific sites have been reported. Typically these sites are well-developed midden deposits containing both cremated and intact human burials, and residential features, including house floors. It was also during the Emergent Period that bedrock mortar milling stations were first established in the Bay Area, beginning around 1,300 years ago. Portable mortars and pestles continued to be used, although smaller specimens were preferred.

### **Ethnography**

Several ethnohistorical and ethnographic accounts provide descriptions of the native inhabitants of the southern Sacramento Valley. When Europeans first entered central California, the area west of the Sacramento River and north of Suisun Bay (including the entire valley as far north as Princeton, Colusa County) was occupied by a series of linguistically and culturally related tribelets. These groups had no common name, collective identity, or political unity, but did speak dialects of the same historically related language. This linguistic similarity led Powers (1877) to call the groups "Patwin," a term each group used in reference to themselves. The Patwin are Wintuan speakers, along with their neighbors, the Nomlaki and Wintu. The Wintuan language is part of the larger Penutian language family, which also includes Miwok, Maidu, Coastanoan, and Yokuts.

Lagoon Valley was under control of the *Malacas* tribelet, whose principal village may have been located at the present site of the Peña Adobe, recorded as archaeological site CA-SOL-30/H (see below). Mission register data show that *Malaca* natives were baptized at Mission San Francisco de Asis (San Francisco) in 1815-1821, at Mission San Francisco Solano (Sonoma) in 1823-1824, and at Mission San Jose in 1826-1832. Mission records show the *Malaca* were intermarried with the *Ululato* of Ulatis Creek, the *Tolenas* of upper Suisun Valley, and the *Suisun* who dwelt along Suisun Bay, which were all closely related southern Patwin tribelets speaking similar dialects.

## Archaeological Context – Lagoon Valley

### Records Search Results

An archaeological records search was conducted at the Northwest Information Center of the California Historical Resources Information System in May 2003. No sacred sites or other traditional cultural properties were identified.

Sixteen archaeological studies have occurred within Lagoon Valley. These include 11 inventories ranging in size from less than one acre to more than 2,000 acres, four test excavations, and two substantial data recovery excavations. As a result of this work, a total of 26 archaeological sites have been identified within Lagoon Valley, including 21 prehistoric sites (81 percent), 2 historical sites (8 percent), and 3 sites with both prehistoric and historical components (11 percent). Of the prehistoric sites, the most common are isolated bedrock mortar outcrops lacking associated archaeological deposits. Habitation middens are the next most frequent prehistoric site type, with and without associated bedrock mortars. One isolated human burial, a petroglyph panel, and a lithic scatter with associated bedrock mortar, make up the remainder of the prehistoric sites.

The three sites with historical and prehistoric materials include an isolated bedrock mortar associated with historical structures and debris (CA-SOL-326/H), a lithic scatter also associated with historical structures and debris (CA-SOL-331/H), and the site of Juan Peña's Adobe (CA-SOL-30/H), which includes a prehistoric habitation midden and associated bedrock mortar outcrop. The only historical sites identified in the records search include an abandoned National Guard shooting range (P-422) and structural remains associated with a small domestic dump (P-423), both located on the slopes east of the valley.

In addition, the remains of two nineteenth century adobes likely occur in or adjacent to the project area. The site of Manuel Peña's residence is thought to lie just north of I-80 and Laguna Creek, while the site of Demetrio Peña's adobe is in the general vicinity of the modern Ranchotel.<sup>1</sup>

### Previous Archaeological Investigations

Virtually the entire Lagoon Valley has been previously studied. Much of the southern half of Lagoon Valley was investigated in 1977 by a University of California, Davis (UC Davis) graduate student. Although no survey report was prepared for this work, site records and a map of the survey area are on file at the Northwest Information Center. In addition, in conjunction with the then-proposed 1990 Policy Plan, Lower Lagoon Valley south and east of I-80, encompassing almost the entire proposed residential and business village use areas, as well as most of the area crossed by the current sewer and utility corridors, was surveyed.

These studies identified six prehistoric sites, and one prehistoric and one historical site, the Peña Adobe (CA-SOL-30/H). No archaeological sites were recorded in the Specific Plan area, but the proposed sewer and utility corridors encroach or are adjacent to several archaeological sites. These include prehistoric sites: CA-SOL-270 and SOL-324 near I-80, the historic and prehistoric site of CA-SOL-30/H, and an additional prehistoric occupation site, CA-SOL-43, recorded on a low knoll along the eastern shore of Lagoon Reservoir. In addition, three bedrock milling stations (CA-SOL-39, CA-SOL-40, and CA-SOL-42) are recorded at the base of the hill, north of the Lagoon Valley reservoir, and east of Peña Adobe Park.<sup>2</sup> The following describes the prehistoric sites identified as being located in or adjacent to the Specific Plan area.

### CA-SOL-30/H

Site CA-SOL-30/H is the site of the standing Peña Adobe and also includes a substantial Late Prehistoric occupation midden. Sewer option 2 crosses through the eastern side of the recorded site boundary. I-80 lies immediately northwest of the adobe, while the area to the south and east is covered in lawn and a paved parking area.

The northern portion of the prehistoric midden at CA-SOL-30/H was investigated in 1963-64, prior to widening of then-Highway 40 (now I-80). This portion was either destroyed or remains partially intact beneath the roadway. The work was conducted by members of the Central California Archaeological Foundation (CCAF), in cooperation with the state Division of Highways and the State Division of Beaches and Parks. A total of 29 five-foot-by-five-foot units were excavated. The main prehistoric deposit was originally a low, two- to three-foot-high-mound located just southeast of the Adobe. The excavations however, focused on an area to the northwest, now under I-80. No human remains were discovered at CA-SOL-30/H, but four residential features, extensive dietary remains, and a rich artifact assemblage was identified. A brief reconnaissance of the park revealed obsidian debitage, burnt bone, and a small comer-notched, obsidian arrowpoint in a planter just north of the Adobe. A large sandstone boulder with two mortar cups is located in the lawn area in front of the adobe (apparently moved from another location) and a small garden on the grounds of the park incorporates several bowl mortars and mortar fragments, as well as other groundstone pieces. Materials recovered from these excavations suggest CA-SOL-30/H dates predominantly to the Emergent Period, Phase 2, or post-AD 1600. It has been suggested that the site may be the location of the ethnographic village of Malacas. Although a portion of this site has previously been investigated, no attempt has yet been made to identify the full extent of the prehistoric deposit.<sup>3</sup>

A series of other test excavations have also taken place in the vicinity of CA-SOL-30/H and CA-SOL-270. As a follow-up to pedestrian survey, a series of hand- and power-auger borings along then-proposed utility and sewer corridors (some of which follow the same routes proposed for the current project) that passed near the recorded boundaries of these sites were excavated in the early 1990s. Auger borings placed along the southern edge of CA-SOL-30/H identified prehistoric and historical material, while borings placed along the eastern edge of this site revealed no cultural debris. These latter auger holes follow the same corridor as the currently proposed route of sewer option 2. Although augering east of the CA-SOL-30/H boundary revealed no prehistoric cultural debris, an auger hole drilled in the lawn south of Peña Adobe produced cultural materials to a depth of three feet, but the investigators concluded the material was likely redeposited.<sup>4</sup>

During restoration activities at the Peña Adobe, archaeological excavations took place to document the Peña occupation. Artifacts recovered during this work included alcoholic beverage containers, toys, clothing fasteners, kitchen goods (tablewares, cooking implements and containers, condiment bottles), medicinal and cosmetic products, and leisure activity items such as a jew's harp and tobacco pipes. These artifacts are housed on site in a museum adjacent to the adobe. The location of the excavations is unknown, but likely was centered very close to the adobe.<sup>5</sup>

### CA-SOL-270

The Cook site, CA-SOL-270, was also excavated in 1963 and 1964 by CCAF and UC Davis, in anticipation of highway widening. The site is north of I-80 and south of Laguna Creek, but

originally extended into the route of the modern highway. Much of the site appears to be naturally capped by a thin stratum of recent alluvium, disguising the full extent of the site deposit at the surface. More than 40 five-foot-by-five-foot units were excavated at CA-SOL-270, most of them in Locus A, east of a tributary to Laguna Creek. In contrast to CA-SOL-30/H, numerous human burials were excavated from CA-SOL-270, as well as a variety of residential features, dietary debris, and an abundance of other artifacts, including over 1,400 shell beads. Temporally diagnostic artifacts from the site indicate CA-SOL-270 was used at least sporadically over the last 2,000 years. Four radiocarbon dates recently obtained from Olivella shell beads collected in 1964 indicate that most of the human graves are relatively old, dating between 100 BC and AD 185.

A series of additional auger holes were also excavated on the west side of I-80 directly opposite to CA-SOL-30/H and along the western edge of CA-SOL-270, west of Laguna Creek. The borings adjacent to CA-SOL-30/H were negative, but those placed west of CA-SOL-270 encountered a significant amount of prehistoric material buried from one to six feet below the modern surface. The auger holes indicate CA-SOL-270 extends well beyond the recorded boundary and continues an undetermined distance to the west, encompassing a portion of the site referred to as Locus B. This portion of CA-SOL-270 would be bisected by the proposed route of project sewer option 2.<sup>6</sup>

#### CA-SOL-324

Site CA-SOL-324 is located south of I-80, just east of a prominent hill that forms the eastern boundary of CA-SOL-30/H-1 and the Peña Adobe Community Park. Prior to highway construction, Laguna Creek ran adjacent to or bisected the site. CA-SOL-324 was recorded in 1965 when human remains and other prehistoric materials were discovered in a bulldozer cut on the west side of an unnamed seasonal creek. Recently, a portion of the site was excavated prior to construction of a floodwater detention basin for the City of Vacaville. As with CA-SOL-270, CA-SOL-324 is buried beneath approximately six feet of culturally sterile alluvium and lacked any surface indication. Extensive backhoe trenching and one hand-excavated control unit revealed a thin occupation midden (about one foot thick), with human remains, flaked and ground stone tools, and dietary debris. Obsidian hydration measurements suggest the site dates to the Emergent Period, post-AD 1000. Previous work at the site identified the eastern and northern boundaries of the deposit, but the western boundary remains undefined. CA-SOL-324 was recommended eligible for listing on the NRHP in 2001.<sup>7</sup>

### Archaeological Sites Within the Specific Plan Area

The results of the records search and a field inventory of the Specific Plan area, conducted in May and June 2003, were used to identify archaeological sites within the project site. Methods used to conduct the research are summarized in "Method of Analysis," below. The results of the evaluation of Specific Plan area and off-site utility alignment resources is presented in this section.

Five archaeological sites and one isolated find were recorded in the proposed residential and business village use areas. Four of these sites are historical, while the fifth is an isolated boulder milling feature. Five other previously recorded prehistoric sites and one prehistoric and historical site lie on or adjacent to utility or sewer corridors. In addition, the remains of two additional nineteenth-century Peña family adobes may occur within the business village use area and one of the proposed sewer corridors, as discussed in more detail under "Historical

Resources,” below. No evidence of these resources, however were observed during the field survey.<sup>8</sup>

### Residential Subdivision, Golf Course, and Business Village Areas

#### *Historic Archaeological Sites*

Three historical archaeological sites and one prehistoric isolate were identified in the residential use area, including sites LV-3H, -LV-4H, LV-7, and Isolate 1. In the business village use area, the current survey identified two historical sites, including LV-12H and LV-13H. Based on historical research, it is also possible that remains of the Demetrio Peña Adobe and ranch complex exists within the northern portion of the business village. This area of archaeological sensitivity is discussed below as part of the resources associated with sewer and utility corridors.

#### *LV-3H*

Site LV-3H is located in the north-central portion of the residential use area. This site was part of Juan Peña’s 287 acres of the Rancho Los Putos through the second half of the nineteenth century. By 1909, it was owned by the Lawrences - Lagoon Valley fruit farmers and neighbors of the Peña’s. William Lawrence died in 1915, leaving the property to his wife. When she died in 1924, her estate was left to her daughters. One of the daughters, Mabel L. Killingsworth, built a home on the land that includes site LV-3H and continued to operate the family fruit farm with her sister, Elsie Chandler. It is unknown when the Killingsworths moved away and sold the property.

A review of the historical maps and photographs of the project indicates that this site represents the Killingsworth residence and was likely built in the mid-1920s. It is not depicted on the 1915 USGS map. A 1937 aerial photograph indicates that two structures were present at that time. USGS maps from the 1940s show four structures at this location. By 1951, the site contained two residences and a barn (USGS 1951), a configuration that continued into the 1970s.

Today there are few physical reminders on site of the Killingsworth homestead. One concrete slab foundation, rocks and concrete fragments, and a large depression were noted during the field visit. The slab foundation is only 12 feet square and may have been associated with a windmill or outbuilding. The aerial photographs dated 1937 and 1952 indicate a driveway leading to the complex, mature trees, and cultivated garden area next to the house, a barn, and several buildings; however, no evidence of these features remain on the ground. The land between the features and surrounding the site appears to have been disced and is disturbed. No artifacts were found on the surface.

#### *LV-4H*

Site LV-4H is located in the central area of the residential use area, west of an abrupt bend of Lagoon Valley Road. This property was held by the Hartleys, a prominent fruit farming family, until at least 1915. Clement Hartley, president and manager of the Vacaville Fruit Company, owned many large parcels in Lagoon and Vaca valleys, planted with orchards that were crucial for the operation of their fruit company. Based on United States Census records, he did not live on the property.

Archaeologically, the site is represented by two loci. Locus 1 consists of the remains of four structures. Two foundations are made of tile, shell, and concrete, and the other two are comprised of evenly spaced concrete and wood footings. These foundations correspond to three metal-roofed structures depicted in this location on the 1937 and 1952 aerial photographs. The buildings are not visible on the 1957 aerial photograph and appear to have been removed by that time. Based on the photographs and archaeological remains, these were likely farm-related structures (barns or packing sheds?) rather than residential dwellings. The structures were built on the north edge of a large fruit orchard and were most likely associated with the Vacaville Fruit Company venture.

Locus 2 is depicted on the aerials as a small compound with several outbuildings to the east and at least one mature tree. It is likely that this locus represents the remnants of a dwelling and associated outbuildings. Feature 1 of Locus 2 is a subterranean concrete feature with steps leading down into it. This feature is most likely a root cellar that was under a portion of the house. Based on the tanks contained inside the feature, it was last used for water storage.

#### *LV-7*

Site LV-7 is an isolated prehistoric boulder mortar in a small, flat-bottomed canyon along the southwestern margin of the subdivision area. The mortar cup is situated in a pre-existing solution cup, and is only slightly worn by grinding, clearly reflecting limited use. Oak trees are uncommon in the site vicinity, suggesting that seeds of the surrounding grassland community may have been processed in addition to or instead of acorns.

#### *LV-12H*

Site LV-12H is located along Rivera Road in the northwestern corner of the business village use area. In the early 1880s, Eliza Buckingham purchased this parcel, part of the Lagunita Rancho's 377-acre fruit farm, from the Peña family. Buckingham died in 1915 and left the land to her son, Thomas. Thomas, followed by his son, Walter, lived on a portion of the ranch into the 1940s, continuing the family fruit farming business. By the late 1940s, the property included a cafe and playground to accommodate the tourists traveling down the highway. The 1948 As-Built plan for the adjacent highway depicts the site as containing a eucalyptus windbreak, with three large structures north of the windbreak and three to the south. The three northern structures included a stucco cafe building, chicken house, and probable shed with scattered walnuts. The southern structures consisted of a fruit packing facility and two probable sheds, surrounded by a pear orchard. The Buckinghams appear to have sold the land in the early 1950s.

By 1952, the property was part of the Shady Grove Airport, a private field. By 1962, it was included in the Aircraft Owners and Pilots Association (AOPA) Airport Directory as the Vacaville Airport, listed as operated by George Kotsotas with a single, paved 2,000-foot-long runway. The airport appears on the 1967 Sacramento Sectional Chart with a 2,100-foot-long runway.

In 1971, David Williams began using the site for gliders under the name Vacaville Soaring. By 1980, the runway had lengthened to 2,700 ft and the site also had a small hangar at the west end of the northern runway. In 1982, the glider association became known as Vacaville Aeronautics, or Vac-Aero. A 1983 photograph of the Vacaville Gliderport, as it came to be known, showed at least 19 gliders and single-engine planes on the field. In 1984, the field was taken over by Dr. Mayes and renamed Lagoon Valley Soaring. The popularity of gliding at the site reached its high in the 1980s with 11,000 tows, or gliding trips, per year taking off from the

site. Dr. Mayes died in a bi-plane accident at the site in 1988, leaving his son, Rex Mayes, to operate the port. In 1991, Rex moved the operation to Williams, where it operates now under Valley Soaring Association. By 2000, the runway had deteriorated and no buildings remained at the site.

Today the most obvious remnant of the pre-airport site is the row of eucalyptus trees. No evidence remains of the fruit packing facility south of the trees. Several depressions, mature plum, walnut, rose and oleander plants, and a sparse scatter of artifacts mark the locations around the removed stucco cafe building. An asphalt area east of the mature trees likely represents the north end of the paved landing strip that was a feature of the site for nearly 40 years.

### *LV-13H*

Site LV-13H is located at the northeast corner of Rivera and Lagoon Valley roads. Until 1912, this site was part of a larger 50-acre tract of land owned by Charles H. and Anna Steinmetz. Charles passed away in 1901 and Anna remarried. After her death in 1912, the parcel was divided into three equal shares between Anna's second husband, William Richardson, and her two grown sons. The site is located on the parcel left to William Richardson. Richardson sold his land by 1925, and it remained planted in orchards until the mid-twentieth century. It appears to have become part of the Shady Grove Airport by 1952 (see discussion for LV-12H). Today, the site is characterized by a clothesline, several depressions, an old driveway, and landscaped plants including roses, agaves, and an apple tree.

### *Isolate 1*

Isolate 1 is located along the north side of Lagoon Valley Road, in imported gravel along the road shoulder. It is a chert biface margin. It is clearly out of archaeological context, and may have been brought in with gravel from Cache Creek.<sup>9</sup>

### Sewer and Utility Corridors

Six prehistoric sites and one prehistoric and historical site have been previously recorded along the route of proposed utility and sewer corridors. No new sites were identified as part of the current study. Four sites were originally recorded in 1977 and appeared to be on or adjacent to utility or sewer corridors, including CA-SOL-39, CA-SOL-40, CA-SOL-42, and CA-SOL-43. Three of these sites were relocated and re-recorded as part of the current survey (i.e., CA-SOL-40, CA-SOL-42, CA-SOL-43); CA-SOL-39 could not be found in its mapped location. In addition, the Juan Peña Adobe and prehistoric occupation site, CA-SOL-30/H, occurs along a proposed sewer corridor, as do prehistoric sites CA-SOL-270 and CA-SOL-324. As noted above, one of the sewer options also passes near or through the location of the mid-nineteenth century adobe complex associated with Manuel Peña. Although no remains of this adobe were observed during the survey, it is possible that buried structural remains or other related features could occur within the proposed sewer corridor.<sup>10</sup>

### *CA-SOL-30/H and CA-SOL-270*

The route of proposed sewer option 2 crosses through the eastern side of the recorded site boundary of CA-SOL-30/H and bisects the western edge of CA-SOL-270. As noted above, although a portion of CA-SOL-30/H has been investigated, the full extent of the prehistoric deposit is unknown. Site CA-SOL-270 includes a substantial prehistoric midden deposit

containing numerous human graves and other residential features. The boundaries of CA-SOL-270 have not been defined. Information obtained during the auger test indicates the archaeological deposit continues an undetermined distance west, beyond the recorded site boundary.

#### *CA-SOL-324*

As currently proposed, sewer option 1 would cross the western edge of this site. As noted above, the site contains a variety of prehistoric habitation debris and human remains. Previous work at the site identified the eastern and northern boundaries of the deposit, but the western boundary remains undefined.

#### *CA-SOL-40*

Site CA-SOL-40 was recorded as a bedrock milling station composed of 11 mortar cups. The site is located on a gentle slope, uphill and 30 meters east of a paved bicycle trail and rock-lined ephemeral drainage, about 325 feet northeast of two large City of Vacaville water tanks. The trail and drainage run north along the east side of the large hill east of the Peña Adobe. Current examination of the 130-foot sandstone outcrop could only locate 10 mortar cups. Three separate examinations, including the current one, failed to identify any additional cultural material at this site. The proposed route of sewer option 2 passes just west of the outcrop.

#### *CA-SOL-42*

Sewer option 2 is located just to the east of this site. Site CA-SOL-42 was recorded as a single mortar cupule in a bedrock outcrop. It is located about 163 feet southeast of the City water tanks and about 65 feet west of the bicycle trail. The mortar cupule is situated on a small sandstone boulder, shows little wear, and was probably used for a short time. Like CA-SOL-40, several site visits over the last 25 years have revealed no artifactual remains at this site, and no additional cultural materials were observed during the current study.

#### *CA-SOL-43*

Site CA-SOL-43 was recorded as an occupation site on a knoll on the east edge of Lagoon Valley Reservoir. Obsidian debitage, faunal bone, and possible hammerstones were noted in previous studies. The site is part of developed City of Vacaville park facilities, including a frisbee golf course and tree plantings. Ground surface visibility was poor, but obsidian debitage was noted during the current survey. The recorded boundaries of the site are confined to the knoll-top, which lies approximately 65 to 98 feet west of the paved access road and utility corridor for the Proposed Project. The boundaries of this site however, are poorly defined.

#### *CA-SOL-39*

Site CA-SOL-39 was recorded as a boulder mortar, with three cups, 450 feet northeast of the Peña Adobe. As with previous studies, this site could not be relocated during the field investigation for the Proposed Project. A previous researcher speculated the boulder had been moved in front of the Peña Adobe. However, only two mortar cups are present on the boulder that currently sits on the lawn east of the adobe.

### *Peña Family Adobes*

Two areas that may contain remains of former Peña family Ranch complexes. These include the locations Jose Demetrio Peña's Adobe at or near the present location of the Ranchotel and Manuel Peña's Adobe north of 1-80. Undiscovered features associated with these complexes may be found in two zones of archaeological sensitivity, one in the northern portion of the business village parcel and the other along the proposed route of sewer option 2. No evidence of these two adobes was observed during the current investigation. The area of concern for these resources is indicated as archaeologically sensitive.<sup>11</sup>

### **Evaluation of Archaeological Resources**

For private projects approved by public agencies, CEQA requires that the lead agency (in this case, the City of Vacaville) assess the effects on cultural resources. CEQA requires evaluation of project impacts only if the resource is considered significant. Historically significant resources must be listed on or eligible for listing on the CRHR. Eligibility of a resource to the CRHR is determined with reference to one or more established criteria. These criteria are identified in the Regulatory Setting, below.

The following describes the significance of prehistoric and historic archaeological resources in the Specific Plan area and off-site utility corridors.

#### Prehistoric Archaeological Sites

Four prehistoric archaeological sites located within or immediately adjacent to project utility corridors have been determined eligible or appear eligible for listing in the CRHR, including the prehistoric component at CA-SOL-30/H, CA-SOL-43, CA-SOL-270, and CA-SOL-324. Four other prehistoric sites (LV-7, CA-SOL-39, CA-SOL-40, CA-SOL-42) and one isolate (Isolate 1) do not appear to be eligible for listing in the CRHR.

The following prehistoric archeological sites: CA-SOL-30/H, CA-SOL-270, and CA-SOL-324 are all eligible for listing on the CRHR. Site CA-SOL-43 is considered potentially eligible for listing on the CRHR. Please see below for a summary of each site.

#### *Eligible Sites - CA-SOL-30/H, CA-SOL-270, CA-SOL-324*

Previous test excavations at CA-SOL-324 resulted in the site being recommended eligible to the NRHP under criterion D (see Regulatory Setting, below), and hence would also be recommended eligible to the CRHR, a finding consistent with its capacity to yield information important to the prehistory of Solano County and California. Similarly, previous excavations at sites CA-SOL-30/H and CA-SOL-270 have shown each to be substantial prehistoric residential deposits with a rich assemblage of artifacts, ecofacts, features, and in the case of CA-SOL-270, human remains. Both have clearly yielded and can continue to yield information important in local and state prehistory, and are likely eligible to the CRHR.

#### *Potentially Eligible Site – CA-SOL-43*

Very little is known about the nature of CA-SOL-43 along the eastern shore of Lagoon Valley Reservoir, but this site also appears to include a residential deposit containing stone artifacts, stone working debris, and dietary remains. The presence of diverse archaeological materials

suggests the site has the potential to yield important information in Solano County and California prehistory, and thus, may be eligible to the CRHR.

*Not Eligible Sites – CA-SOL-39, CA-SOL-40, CA-SOL-42, and LV-7*

The four bedrock milling stations (LV-7, CA-SOL-39, CA-SOL-40, CA-SOL-42) and the biface, Isolate 1 do not meet the criteria for the CRHR or would not be affected by the Proposed Project. CA-SOL-39 could not be relocated and does not appear to be within the current study area. Sites LV-7, CA-SOL-40, and CA-SOL-42 are isolated bedrock mortar outcrops. Lacking any associated prehistoric cultural material, these three sites have very little potential to contribute to an understanding of local or state prehistory (beyond that obtained as part of the current recording) and are not considered eligible for the CRHR. Similarly, Isolate 1 was found in imported gravel roadbase and thus appears to be out of its original archaeological context. Further, in the absence of associated cultural deposit, the isolated biface adds little to the understanding of local or state prehistory. Consequently, Isolate 1 is not considered eligible for the CRHR.<sup>12</sup>

Historical Archaeological Sites

The following historical archeological site: CA-SOL-30/H is considered eligible for listing on the CRHR. The Peña Adobe at CA-SOL-30/H is considered potentially eligible for listing on the CRHR. Please see below for a summary of each site.

*Eligible Site – CA-SOL-30/H*

One historical archaeological site located along sewer option 2 is likely eligible for the CRHR (CA-SOL-30/H, the Peña Adobe). Historical research also suggests other potentially eligible historical features associated with two other Peña family adobes may be present within the business village parcel and sewer option 2. Four other historical archaeological sites located within the proposed subdivision and business village are considered not eligible for the CRHR (LV-3H, LV-4H, LV-12H, and LV-13H).

*Potentially Eligible Sites - Juan Peña Adobe (CA-SOL-30/H) and Other Peña Family Residences*

The Peña Adobe at CA-SOL-30/H is a significant historical resource, listed on the NRHP (in 1972) and designated a State Historical Landmark (No. 543). Additional information on this resource is provided under “Historic Resources,” below. As such, the adobe is clearly eligible to the CRHR.

The subsurface foundations of buildings (if present) would offer limited information regarding construction details, layout and design of the Peña complex, or architectural details to add to the existing database of mid-nineteenth century ranch life by the Californios and would likely not qualify for inclusion in the National or California Registers.

Intact trash deposits contained in hollow fill features (wells, privies, etc.) or as sheet refuse could be present anywhere in the area surrounding the adobe and its outbuildings. These deposits could have great potential to address ongoing research domains regarding pre- and post-gold rush ranch life in California, interaction of the Californios with Euro-American populations in the region, self-sufficiency of the isolated pioneer family, use of Native Americans in the early ranching operations, and other topics. Given the early age and cultural association

of the ranch, it is likely that undisturbed subsurface trash deposits would qualify under Criterion D for the NRHP and under Criterion 4 of the CRHR and would be considered significant resources for the purposes of CEQA.

In addition to features associated with the Peña Adobe, there exists the possibility that unidentified archaeological resources associated with two other Peña family adobes and associated ranch complexes exist within the business village parcel or along the corridor for sewer option 2. If foundations or undisturbed subsurface trash deposits associated with these complexes are discovered in the project area they also have the potential to contribute important information on a poorly documented era in California history, and thus, would likely be eligible for the CRHR.

#### *Not Eligible Sites - LV-3H, LV-4H, LV-12H, and LV-13H*

Site LV-3H is the location of the Killingsworth ranch. The Killingsworth family was one of many local orchardists and ranchers involved in the regions' vast fruit industry during the first half of the twentieth century. The ranch, built in the 1920s, was one of many constructed in the first few decades of the twentieth century during a time when many large land holdings and estates were being subdivided into smaller parcels and developed as small ranchettes. As such, this site does not represent a unique or outstanding trend in local history, nor was the Killingsworth family exceptionally important to the development of the Vaca or Lagoon valleys. There are no intact architectural features. As such, this site does not meet criteria 1, 2, or 3 of the CRHR.

Site LV-4H appears to be the remains of outbuildings associated with the Hartley orchards. Mr. Hartley owned many parcels used by the Vacaville Fruit Company in Lagoon and Vaca valleys and likely had packing sheds, equipment storage facilities, and irrigation-related structures in strategic locations around the fruit orchards. The remnant fruit trees, aerials, historic maps depicting large non-residential structures on site, and foundation remains are consistent with the use of Locus 1 for fruit-related purposes. There is no record of the residences of Locus 2; however, it is probable that a foreman, fruit ranch manager, or employee of Mr. Hartley's lived near the vast orchards, perhaps at this location.

While associated with the local fruit industry, this site does not represent a unique or outstanding trend in local history. Mr. Hartley raised fruit on many parcels in the region and did not live at this location. There are no architectural features on site that retain the intended architectural design of the structures. As such, this site does not meet criteria 1, 2, or 3 of the CRHR.

The houses, trees, outbuildings and associated features that once characterized this site were removed and no associated trash features were identified, severely limiting the archaeological research potential of the site. The integrity of the site has been compromised by the removal of the buildings and related features, cattle grazing, discing, and agricultural practices. Therefore, it does not appear to meet criterion 4 of the CRHR and does not qualify as an historic property for the purposes of CEQA.

Sites LV-12H and LV-13H appear to be related to the airport operations, dating from around 1950 to circa 1991, although LV-12H had a cafe on site in the 1940s and perhaps as early as 1915. Both sites have terracotta sewer pipe and electrical conduit, indicating they were plumbed and well lit. A bathtub on LV-13H and toilet tank fragments at LV-12H also supports this assumption. Observed artifacts (glass, ceramics, linoleum flooring, plastic, rubber) are consistent with a mid-twentieth century occupation. The clothesline, household-related items, and driveway indicate that LV-13H may have served as a residence. LV-12H was the airport

headquarters and included a cafe, hanger buildings, office, and playground. Remnants of the airstrip are present on this site.

The airport facility in Lagoon Valley served the Vacaville region for over 40 years as a private airstrip. In later years the glider operation provided a tourist attraction and brought business into the area, contributing to the economic development and expansion of post World War II Vacaville. The glider operation still exists and company records, photographs of the Lagoon Valley site, and oral history information are available, decreasing the importance of the archaeological record to interpret the air history context of the region.

Both sites have been damaged extensively by bulldozing and recent discing. The recent activity has disturbed up to 12 inches of soil, removed all weedy vegetation, and scattered fragments of glass, ceramic and other artifacts across a wide area. The ground disturbance has compromised the integrity of both sites and they do not appear to meet CRHR criteria, nor are they considered significant resources for the purposes of CEQA.<sup>13</sup>

#### *Edwin Markham and the Dyke Property at Lagoon Valley*

Edwin Markham was born in 1852 and came to the Vacaville area as a small child with his mother in the mid-1850s. They settled on about 160-acres of land along the foothills of the southeastern corner of the Lagoon Valley, just within the architectural APE for the Lagoon Valley project. Edwin Markham grew up on the property, eventually receiving a teacher's credential from a college in Vacaville before continuing his studies in San Jose and Santa Rosa. In 1872 he began his teaching career in San Luis Obispo County at Los Berros. Over the next fifteen years, he became a school administrator and principal while at the same time working to establish himself as a poet. As early as 1880 some of his poetry was published, but it was not until he wrote the poem "The Man with the Hoe" which was published in the *San Francisco Examiner* in January 1899, that he gained popularity and importance as a poet. Over the next forty years, he wrote and published his poetry, essays and nonfiction, and lectured, until his death in 1940 in New York. Markham's mother sold their Lagoon Valley property in 1875 to the Radcliff family and their descendants (the Dyke family) still retain the land, although it was subdivided into three legal parcels the twentieth century. Access to these parcels was not obtained at the time of recordation, so it is unclear if any buildings or structures from the Markham period (about 1856-1875) remain, however it appears that at least one residence was constructed on one of these parcels during the last thirty years.

In terms of historical significance, if the Markham residence (or other Markham-era buildings) remains on this site *and* retain its integrity, under Criterion B of the National Register of Historic Places (NRHP), the property would not meet eligibility nor would it be eligible under Criterion 2 (California Register of Historical Resources), which is based on Criterion B of the NRHP. To meet eligibility requirements under Criterion B or (2) as a property associated with "the lives of persons significant in our past (those whose activities are demonstrably important within a local, State, or national historic context)" the person must be associated with that specific resource during the period he achieved significance. According to *National Register Bulletin: Guidelines for Evaluating and Nominating Properties Associated with Significant Persons*, under Criterion B, "Eligible properties generally are those associated with the productive life of the individual in the field in which (s)he achieved significance. Associations with an individual should have occurred during the period of time when the person was engaged in the activities for which (s)he is considered significant. Birthplaces, childhood homes, schools attended as children, retirement homes that are not associated with an individual's significant contributions, graves, and

cemeteries generally are not considered eligible for the National Register on the basis of associations with that person." [Emphasis added]

In the case of Edwin Markham, Markham left Lagoon Valley around 1871 to begin his teaching career and by the late 1890s, he was residing in Oakland. He did not gain importance in the literary field until January 1899, when his most famous poem was published. Therefore, any resources that may be extant on the Dyke property would fall into the category of "childhood homes" and would pre-date Markham's most productive period (1899-1920s) as a poet.

### **Summary of Potential Archaeological Resources Sites**

No significant archaeological sites are present in the proposed residential use area and golf course area. However, there are six significant or potentially significant archaeological resources in the business village use area and along off-site utility corridors. These sites are: three prehistoric sites (CA-SOL-43, CA-SOL-270, and CA-SOL-324), one prehistoric and historical site (CA-SOL-30/H, the Juan Peña Adobe); and two historical sites (Manuel Peña and Demetrio Peña adobes). The proposed alignment for sewer option 1 (force main) crosses the western edge of prehistoric site CA-SOL-324. One historical archaeological site located along sewer option 2 is likely eligible for the CRHR (CA-SOL-30/H, the Peña Adobe). Historical research also suggests other potentially eligible historical features associated with two other Peña family adobes may be present within the business village use area and sewer option 2.

The route of proposed sewer option 2 (gravity line) crosses through the eastern side of the recorded site boundary of CA-SOL-30/H and bisects the western edge of CA-SOL-270. As noted above, although a portion of CA-SOL-30/H has been investigated, the full extent of the prehistoric deposit is unknown. Site CA-SOL-270 includes a substantial prehistoric midden deposit containing numerous human graves and other residential features. The boundaries of CA-SOL-270 have not been defined.

## **Historical Resources**

### **Historic Context**

As discussed previously, the first inhabitants between the Suisun Bay and Putah Creek were the Patwin Indians, the southern branch of the larger Wintu sect. Divided into villages, the Malacas lived in the Lagoon Valley region, while the Ululatos and Tolenas dominated in the Vacaville and Upper Suisun Valley regions, respectively. By 1850, disease and forced Christianization, which led to the removal of the vast majority of the Native American population to mission lands, drained the remaining population in the area. Although Lagoon Valley was one of the first European-settled regions in Solano County, its history is intimately linked with the development of the adjacent Vaca Valley and Vacaville, and is generally dominated by the Peña and Vaca families.

The initial settlement of the Lagoon and Vaca valleys, and what was later to become Solano County, began in the early 1840s led by families coming in from New Mexico. In this region they found ideal living conditions; fertile soil, ample water from the adjacent creeks, and vast grazing lands. The earliest pioneer was Jose Armijo, who obtained a 13,316-acre land grant in the northeastern Suisun Valley, south of the study area. By 1842, Manuel Vaca, Juan Felipe Peña and their families arrived to the area. Both families set up temporary dwellings near the center of the small Lagoon valley, near Laguna Creek, while they constructed permanent residences. Within a year, Vaca constructed a permanent adobe home nestled in the foothills of

the Vaca Mountains, along what would become a primary route to the Sacramento Valley, near present day Cherry Glen Road. Peña built his small adobe residence approximately one-third mile southwest of Vaca.

The oldest trail in the region was one that led from the Sonoma Mission to Sutter's Fort along the Sacramento River. It ran through Suisun Valley, entering Lagoon Valley from the south over the old Peña Pass (the most direct southern route into the valley) in the southern corner of Lagoon Valley (just east of the Tolenas Pass where present day I-80 runs). The trail ran north past the lagoon and through the Lagoon Pass (between Lagoon and Vaca valleys) and on to the Sacramento Valley. By the mid-nineteenth century, the old trail became the Vacaville Road, one of two main transportation routes through Lagoon Valley. These roadways were formed early in the settlement of the valley, then further established during the Gold Rush era as people traveled through Solano County on their way to the mountains east of Sacramento in early 1850s. By the 1870s these routes had become permanent wagon roads.

The fruit industry around Vacaville started as early as the late 1850s. The fruit boom did not fully arrive in Lagoon Valley, particularly Lower Lagoon Valley, until just before the turn of the century. The most successful farm in the lower Lagoon Valley was on the former lands of Demetrio Peña. San Francisco resident Eliza P. Buckingham purchased the nearly 400-acre farm located along the east side of Vacaville Road (bounded on the west side by present day Cherry Glen Road and to the south by Lagoon Valley Road), in the early 1880s. Renamed Lagunita Rancho, Buckingham selected Lagoon Valley for its temperate climate, which she felt was ideal for fruit orchards. Along with the acreage Demetrio Peña had planted in grapes, pears, English walnut and fig trees in the early 1850s, Buckingham established additional orchards in apricot and peaches. The north part of Lagoon Valley (north of I-80 along Pleasants Valley and Cherry Glen roads) became known for its cherry orchards.

The Vacaville region, including Lagoon Valley, continued to grow and ship fruit to all parts of the country into the early twentieth century. However, World War I overproduction for the war effort and rising competition led to a slump in the Vacaville fruit district, which was exacerbated by soil depletion and ground erosion.

The farmland in Lagoon Valley was sparsely populated in the 1940s and 1950s, and only a handful of small farms were extant in the lower portion of the valley south of I-80. As was often typical of small farming regions in the early twentieth century, the old families who settled in the valley before the turn of the century, like the Peñas, Swims, and Buckinghams, slowly subdivided and sold their land after the 1920s. Although farming remained the little valley's main commercial venture through the 1950s, a few businesses were built along the highway. Del Berg constructed the Ranchotel just south of the Peña Adobe in 1953, and Shady Grove Airport was built about 1955 along the north side of Lagoon Valley Road. Even though the northern valley retained much of its fruit orchards, by 1952, most of the land south of I-80, which once was covered by fruit and nut trees, reverted back to pastureland.

The drive to preserve the Lagoon Valley first began in the 1930s when Frank Douglas moved to the Vacaville area and sponsored preliminary studies on the valley's soil and its suitability as a future city park. It was not until the early 1960s when he was appointed director of the Ulatis Flood Control District that a plan for a park took shape. Seeing the lagoon in terms of flood control and as a possible alternative water supply, Vacaville Mayor Roy Cobble and City Manager Bob Meyer backed Douglas' plan. In 1961, the one and a half-acre site on which the Peña Adobe is located was donated to the City of Vacaville. Over the subsequent years, more than 400 acres were acquired by Solano County for the project. In 1980 the natural, intermittent

lagoon was drained and a new 60-acre lake was constructed by the County, along with bike paths around the lake. In 1991, Vacaville annexed Lower Lagoon Valley into its boundaries.

### **Evaluation of Historical Resources**

The historic period resources within the study area consist of a mixture of residential, commercial, and educational/recreational properties, all constructed between the early-1840s and 1953. Two resources date to the nineteenth century, four were constructed after the turn of the century. Regardless of their age, many of these properties contain a mixture of buildings constructed in both the historic and modern periods. Generally, these resources are modest buildings that first and foremost serve their primary functions. Many of the resources, be they houses, farm buildings or commercial buildings, have undergone modest alterations that include small additions to buildings, replacement of original siding and windows, or addition of modern buildings to historic complexes. Generally, the condition of the buildings and structures are generally fair; and most retain a reasonable amount of historic materials.

The six historic resources that make up the survey population were evaluated for historic significance. One is listed on the NRHP and, therefore, appears to be a historic resource for the purposes of CEQA. The remaining five resources were found to be ineligible for inclusion to the NRHP and do not appear to be an historic resource under CEQA guidelines. Additional information on these resources is presented below.

Only two resources date to the nineteenth century, the Peña Adobe property and the Salvador Lopez farm at 5956 Cherry Glenn Road. The Peña Adobe property contains the Juan Peña Adobe, constructed in the early 1840s, a later 1880s wood frame addition and multiple outbuildings mostly built after 1965. The adobe was restored in 1965, is listed on the NRHP and is a California Historical Landmark (California Historical Landmark # 534). The Lopez farm, located northeast of the Peña Adobe, includes circa 1890s residences and multiple outbuildings likely constructed in the later part of the twentieth century.

The remaining historic-era properties consist of both commercial and residential buildings. The residential properties were constructed as part of a small farm complex on land mostly subdivided in the first few decades of the 20<sup>th</sup> century and typical of most small agricultural parcels in semi-urban settings, they contain a mixture of buildings constructed in both the historic and modern periods. One example of this type is Harr farm located at 3954 Lagoon Valley Road, which consists of a modest 1920s Craftsman Bungalow residence, detached garage and a barn constructed in the 1980s. Similarly, the two commercial properties, the Hines Nursery and the Ranchotel and Horse Center consist of a mixture of historic and modern-era buildings.

Only one resource, the Peña Adobe, was previously determined eligible for the NRHP, and was listed on the NRHP in January 1972 and subsequently documented by the Historic American Building Survey in July 1983. Additionally, the site was determined a California Historical Landmark in 1955. The Peña Adobe, also known as the Vaca-Peña Adobe, was found significant for the NRHP under Criterion B, for its association with Solano County pioneer Juan Felipe Peña. JRP inventoried the adobe property; however, because the adobe was previously determined eligible and consequently listed on the NRHP, it did not require evaluation. Additionally, the project Area of Potential Effect (APE) included four parcels that may contain buildings over 50 years old, however, these parcels were not inventoried or evaluated for this report because access to the properties could not be obtained.

None of the remaining resources within the APE appear to be associated with significant events (National Register Criterion A or California Register Criterion 1), instead they are common examples of buildings constructed during the late nineteenth and mid twentieth century development of the Vacaville region. Likewise, research does not indicate that the people associated with these resources were significant under National Register Criterion B or California Register Criterion 2 and would warrant listing in the National Register or California Register. While some were descended from the region's earliest settlers, they do not appear to have attained the same level of significance as their ancestors. In terms of Criterion C or 2, all of the resources are relatively modest examples of their functional type, and common to the period in which they were constructed. Finally, the property types present within the APE have been otherwise documented and do not appear to be important sources of important information regarding construction materials or techniques (Criterion D).<sup>14</sup>

### **Paleontological Resources**

As discussed in greater detail in Section 4.12, Geology and Soils, bedrock at the project site is interbedded claystone and siltstone of the Cretaceous Guinda Formation. It has been encountered at depths ranging from 15 to 40 feet below the ground surface. The bedrock is covered with a minimum of four feet of residual soil formed from weathering and decomposition of the underlying bedrock. The majority of the flat-lying portion of the project site is Quaternary alluvium consisting primarily of interlayered silty clay, silts, clayey sand and clayey gravel, with minor lenses of sand.

There are no reported vertebrate fossils in the Guinda Formation. Invertebrate fossils identified in the Guinda Formation include radiolarians and foraminifera. Although other occurrences of mammalian fossils have been reported from Pleistocene-age deposits in other locations in Solano County, no vertebrate fossils have been recorded in the types of alluvial materials mapped at the project site.<sup>15</sup> However, this does not preclude the possibility that paleontological resources could be discovered during site preparation activities.

#### **4.14.3 REGULATORY SETTING**

Cultural resources, also termed "historical resources" or "historic properties," consist of remains and sites associated with past human activities. These include prehistoric and protohistoric Native American archaeological sites, historic archaeological sites, and historic sites, buildings, structures, or objects. Another category of cultural resources includes traditional cultural properties. These are areas that have been, and often continue to be, of economic and/or religious significance to peoples today. Traditional cultural properties may include Native American sacred areas where religious ceremonies are practiced, or landscapes, which are central to their origins or history as a people. Some historical resource sites may also be of cultural significance to contemporary Native Americans or other ethnic groups because they contain objects or elements important to their cultural heritage.

Significant historical resources and traditional cultural properties are afforded protection under existing federal, State and local laws. These laws and regulations were designed to protect significant cultural resources that may be affected by actions that they undertake or regulate. The National Environmental Policy Act (NEPA), NHPA and CEQA are the basic federal and state laws governing preservation of historic and archaeological resources of national, regional, State and local significance.

## **Federal**

Federal laws for cultural resources are governed primarily by Section 106 of the NHPA of 1966 (amended 1999). The Code of Federal Regulations (CFR) includes specific information on the protection of historic resources. A historic property is defined to mean any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization that meet the national Register criteria. The term eligible for inclusion in the National Register includes both properties formally determined as such in accordance with regulations of the Secretary of the Interior and all other properties that meet the National Register criteria (36 CFR 800.16).

Section 106 of NHPA requires Federal agencies to take into account the effects of their undertakings on historic properties and affords the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings. The Council's implementing regulations, "Protection of Historic Properties" are found in 36 Code of Federal Regulations (CFR) Part 800. The goal of the Section 106 review process is to offer a measure of protection to sites which are determined eligible for listing on the NRHP. National Register criteria define an important cultural resource as one that is associated with important persons or events, or that embodies high artistic or architectural values, or that has scientific value (36 CFR 60.6). Amendments to the Act (1986 and 1992) and subsequent revisions to the implementing regulations have, among other things, strengthened the provisions for Native American consultation and participation in the Section 106 review process. For the proposed new CVP water service contracts, compliance with the NHPA will occur through the Bureau's coordination with the Advisory Council on Historic Preservation.

## **State**

### **Historical Resources**

State historic preservation regulations affecting this project include the statutes and guidelines contained in CEQA (CEQA; Public Resources Code sections 21083.2 and 21084.1 and section 15064.5 of the CEQA guidelines). CEQA requires lead agencies to carefully consider the potential effects of a project on historical resources.

The CEQA Guidelines (section 15064.5[a] of the Title 14 of the CCR) identifies the following four categories of historical resources that lead agencies must consider in determining the significance of impacts on historical and unique archaeological resources:

1. *A resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historic Places.*
2. *A resource included in a local register of historical resources, as defined in Section 5020.1(k) of the Public Resources Code or identified as significant in an historical resource survey meeting the requirements of Section 5024.1(g) of the Public Resources Code shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.*
3. *Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be an historical resource, provided the lead agency's*

determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be “historically significant” if the resource meets the criteria for listing on the California Register of Historical Places, including the following:

- A. *Is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage.*
  - B. *Is associated with the lives of persons important in our past.*
  - C. *Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.*
  - D. *Has yielded, or may be likely to yield, information important in prehistory or history (PRC section 5024.1; 36 CFR 60.4).*
4. *The fact that a resource is not listed in, or determined to be eligible for listing in the California Register of Historical Resources, not included in a local register of historical resources (pursuant to Section 5020.1(k) of the Public Resources Code, or identified in an historical resources survey (meeting the criteria in Section 5024.1(g) of the Public Resources Code) does not preclude a lead agency from determining that the resource may be an historical resource as defined in Public Resources Code Section 5020.1(j) or 5024.1.*

Lead agencies must treat historical resources within the first three categories as protected by statute on either an unqualified or a presumptive basis. The first category is considered mandatory under statute. For the second category, this definition indicates that although any resource included in, or eligible for inclusion in, the State register must be treated as an historical resource. A resource included in a local register, but not in the State register, is only presumed to be an historical resource. Under the third category, the resources are presumed to be historically or culturally significant. The fourth category extends only to those resources that an agency chooses to consider “historical.”

### **Archaeological Resources**

The California Public Resources Code section 21083.2 defines a “unique archaeological resource” as follows:

*an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets the following criteria:*

- 1) *Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.*
- 2) *Has a special and particular quality such as being the oldest of its type or the best available example of its type.*
- 3) *Is directly associated with a scientifically recognized important prehistoric or historic event or person.*

A “nonunique archaeological resource” is one that does not meet the criteria for being “unique” (Public Resources Code section 21083.2[h]). Public Resources Code section 21083.2 provides that CEQA generally gives protection only to those “archaeological resources” that are “unique.” An EIR is not required to address the issue of nonunique archaeological resources.

However, although an archaeological resource may not be “unique” for purposes of section 21083.2, it may nevertheless qualify as an “historical resource” under section 21084.1. That is, some resources are “historical resources” because they are “archaeologically significant.” Section 15064.5(e) of the Title 14 CCR requires that the lead agency must first determine whether the archaeological site is an historical resource.

## Paleontological Resources

Paleontological remains are recognized as nonrenewable resources significant to our culture, and as such are protected under provisions of the Antiquities Act of 1906 and subsequent related legislation, policies, and enacting responsibilities. The January 1, 1979, "Clean Water Grant Program for the Protection and Preservation of Cultural Resources" (California State Water Resources Control Board, Rev. 6-11), for example, defines cultural resources to include paleontological values and elucidates guidelines for preservation, summarizing some of the applicable legislation.

Significant paleontological resources are fossils or assemblages of fossils that are unique, unusual, rare, uncommon or important, and those that add to an existing body of knowledge in specific areas. They include fossil remains of large to very small water and land vertebrates, remains of plants and animals previously not represented in certain portions of the time scale, and assemblages of fossils that might aid chronological correlations, particularly those offering data for the interpretation of tectonic events, geomorphologic evolution, paleoclimatology, and the relationships of water and land species.

According to a memorandum from Grissold E. Petty, Acting Associate Director of the Bureau of Land Management (1978: emphasis added):

*There is no universally accepted definition for a significant scientific paleontological resource. A definite determination can only be made by a qualified, trained paleontologist. Using the following guidelines, a paleontological resource is of significant scientific and educational value if it:*

- 1. Provides important information of the evolutionary trends among organisms, relating living inhabitants of the earth to extinct organisms.*
- 2. Provides important information regarding development of biological communities or interaction between botanical and zoological biotas.*
- 3. Demonstrates unusual or spectacular circumstances in the history of life.*
- 4. Is in short supply and in danger of being depleted or destroyed by the elements, vandalism, or commercial exploitation, and is not found in other geographic locations.*

*All vertebrate fossils have been categorized as being of significant scientific value.*

## Native American Burials

California law protects Native American burials, skeletal remains and associated grave goods regardless of their antiquity and provides for the sensitive treatment and disposition of those remains (California Health and Safety Code section 7050.5, California Public Resources Code sections 5097.94 *et seq.*). Section 7050.5(b) of the California Health and Safety code specifies protocol when human remains are discovered. The code states:

*In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the Government Code, that the remains are not subject to the provisions of Section 27492 of the Government Code or any other related provisions of law concerning investigation of the circumstances, manner and cause of death, and the recommendations concerning treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the Public Resources Code.*

## **Local**

### **City of Vacaville**

#### **General Plan**

Consistency of the Proposed Project with relevant City of Vacaville General Plan goals and policies is presented in Appendix C. As shown in Appendix C, the Proposed Project is consistent with applicable cultural resource goals and policies.

#### **4.14.4 IMPACTS AND MITIGATION MEASURES**

##### **Method of Analysis**

Consistent with General Plan Implementing Policy 8.5-I1, two technical studies were prepared as part of this EIR to identify potential prehistoric, historic-era archaeological, and historical resources at the project site and at off-site sewer alignments to determine potential impacts. The conclusions and recommendations provided in reports documenting the results of the technical studies form the basis of the following impact analysis. Methodologies for each study are summarized below.

##### **Archaeological Resources**

An investigation was conducted by Far Western Anthropological Research Group, Inc., (Far Western) to address both prehistoric and historic-era archaeological resources contained within the project area. Primary work tasks associated with this investigation included a complete archival review of previous archaeological studies in Lagoon Valley, record search of the Northwest Information Center of the California Historical Resources Information System, and field inventory of the Specific Plan area. Fieldwork associated with this study was conducted in May and June 2003.

The records search was inclusive of the entire Lagoon Valley, extending from the valley bottom to the crest of the surrounding hill slopes. The location of all archaeological studies and recorded archaeological sites were transferred to a portion of the Fairfield North and Elmira 7.5' topographic quadrangles and copies of all associated records and reports were obtained. In addition, the Native American Heritage Commission was also contacted and requested to search the Sacred Lands files for any information on the Specific Plan area.

As a result of previous surveys conducted in the project area, as discussed in the Environmental Setting, current reconnaissance of the Specific Plan area and proposed off-site sewer alignment options was carried-out at a relatively wide transect interval. Approximately 842 acres comprising the proposed residential area was surveyed by walking parallel transects, spaced at no more than 195-foot intervals. The Hines Nursery portion, which comprises over 160 acres, was not examined due to extensive disturbance and inadequate surface visibility. Proposed off-site utility and sewer corridors were surveyed using 32-foot transects. The portion of sewer option 2 north of I-80 was not surveyed due to inaccessibility.

Results of the investigation were documented in *Archaeological Survey for the Lower Lagoon Valley Project, Vacaville, Solano County, California* (Far Western Anthropological Research Group, Inc. 2003), which is available for review at the City of Vacaville, Community Development Department, Planning Division, 650 Merchant Street, Vacaville, California.

## Historical Resources

JRP Historical Consulting Services prepared an Historical Resources Evaluation Report (HRER) to evaluate historic buildings, structures, and objects within the APE for the Proposed Project. The purpose of the report was to examine the potential eligibility of these resources for listing in the NRHP, as well as to consider their potential eligibility as historical resources for the purposes of CEQA. The historic resources were evaluated in accordance with section 15064.5(a)(2)-(3) of the CEQA Guidelines using the criteria outlined in section 5024.1 of the California Public Resources Code.

The APE for the architectural survey for the Proposed Project was developed in May 2003 by JRP. Consistent with general cultural resource practices, the architectural APE included the area directly impacted by construction (development area) as well as a buffer zone on all sides immediately adjacent to the proposed development area. Only those resources located within the architectural APE were included in the survey. Once the APE was defined, JRP staff conducted a reconnaissance survey of the area to account in the field for all the buildings, structures and objects found within the APE. This field reconnaissance helped to determine which buildings appeared to be more than 50 years of age and would therefore be studied. Additional background research was done through First American Real Estate Solutions commercial database, review of historic and current USGS topographic maps, and other documents to confirm dates of construction.

Within the APE for this project, six parcels contained buildings or features built in 1953 or before, and constituted the survey population. Four parcels that contained buildings over 50 years old were not inventoried or evaluated for the study because access could not be obtained to those properties. The remaining parcels in the survey area were either vacant or contained buildings, structures or objects constructed in or after 1954. Those resources less than 50 years old are non-historic and did not require survey or recordation. None of the non-historic resources appeared to meet the demanding threshold of significance for properties less than 50 years old.

The investigation of historic-era properties included research regarding their historical context, as well as resource-specific research conducted in both archival and published records. Research for this project was conducted at the California State Library, the Solano County Assessor's and Recorder's offices, Vacaville Public Library, Solano County Archives, Vacaville Heritage Council, the California Department of Transportation Library (Headquarters in Sacramento), Caltrans District 4 Maps and Plans Office, Shields Library at UC Davis, and through personal interviews.

Results of the investigation were documented in *Historic Resources Evaluation Report: Lagoon Valley Project, Vacaville, Solano County, California* (JRP Historical Consulting Services, 2003). The report is available for review at the City of Vacaville, Community Development Department, Planning Division, 650 Merchant Street, Vacaville, California.

## Standards of Significance

For the purpose of this EIR, impacts on cultural resources are considered significant if the Proposed Project would:

- Cause a substantial adverse change in the significance of a historical resources as defined in section 15064.5 of the CEQA Guidelines;
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to section 15064.5 of the CEQA Guidelines;
- Directly or indirectly destroy a unique paleontological resources of site or unique geologic feature; or
- Disturb any human remains, including those interred outside of formal cemeteries.

### **Project Impacts and Mitigation Measures**

#### **4.14-1 Construction of sewer line option 1 or sewer line option 2 could affect prehistoric sites CA-SOL-324, CA-SOL-270, or CA-SOL-30/H or historic archaeological features associated with the Peña family adobes (sewer option 2 and northern portion of Business Village).**

##### **Sewer Option 1 (Force Main)**

As currently proposed, sewer option 1 would cross the western edge of Site CA-SOL-324, a buried prehistoric site that contains a variety of prehistoric habitation debris and human remains and was determined in 2001 to be eligible for listing on the NRHP. Previous work at the site identified the eastern and northern boundaries of the deposit, but the western boundary remains undefined. The deposit is buried by approximately 180 centimeters of alluvium, and no surface evidence is present.

##### **Sewer Option 2 (Gravity Line)**

The route of proposed sewer option 2 bisects the western edge of CA-SOL-270, which includes a substantial prehistoric midden deposit containing numerous human graves and other residential features. The boundaries of this site have not been defined.

Sewer option 2 would also require excavation of trenches along the eastern side of site CA-SOL-30/H, which is the location of the standing Peña Adobe and includes a substantial Late Prehistoric midden. This corridor has been previously tested with auger borings, and intact prehistoric deposits were not encountered. Nevertheless, there is a distinct possibility that features associated with the Peña Adobe complex occur along the proposed utility route. There is also a slight possibility that intact prehistoric features exist along this corridor. Because no surface indication of such features exist, and large sections of the proposed sewer route are currently paved, it would be logistically difficult to determine if significant features are present prior to excavation of the sewer trenches.

The pipe would pass through an area where a building once stood and will pass very close to another building location. Neither building is standing nor do foundation remnants or other archaeological features on the surface indicate the exact locations of the buildings within the adobe property.

##### **Business Village**

Historical research indicates that the remains of two other Peña family adobe residences may be located somewhere within the northern portion of the business village use area or along the northern stretch of sewer option 2. The areas thought to contain these resources are prohibitively large, and no evidence of these adobe buildings is currently visible at the surface.

## Summary of Potential Impacts

Construction of either proposed sewer line option and other various utilities would cross through either prehistoric site CA-SOL-324 (force main option 1) or CA-SOL-270 (gravity option 2) and could also encounter materials associated with CA-SOL-30/H and historic features associated with the Peña family adobes (sewer option 2 and northern portion of Business Village). Because construction activities in the proposed business village use area of the project and along other various utility corridors may cause substantial adverse change to the significance of cultural resources through damage or destruction, the effect of the project on these resources would, under section 15064.5 of the CEQA Guidelines, constitute an adverse effect on the environment and result in a **significant impact**.

Impacts on significant cultural resources require several management approaches to mitigate these effects to ensure consistency with General Plan Guiding Policy 8.5-G1 and Implementing Policy 8.5-I2. These approaches include: resource monitoring in suspected areas of archaeological sensitivity, test excavations to confirm site boundaries; and mechanical pre-trenching and limited archaeological test excavations of project utility/sewer corridors located within or near significant or potentially significant archaeological sites. Both sites (CA-SOL-270 and CA-SOL-324) are known to contain human remains and both are buried by recent, culturally sterile alluvium and lack surface indicators of the extent or significance of deposits that would be affected.

Potential mitigation for this impact could include relocation of the sewer alignments to avoid archaeological sites; however, identification of the boundaries of CA-SOL-270 or CA-SOL-324 could require extensive excavation that could result in greater disturbance of these sites than either of the potential sewer alignments. Consequently, depending on the sewer line option that is ultimately chosen, either CA-SOL-270 or CA-SOL-324 would likely require data recovery prior to project implementation.

Implementation of the following mitigation measures would reduce the impact of the project on these archaeological sites to a less-than-significant level by identifying, prior to construction, known resources that would be affected by project implementation and requiring appropriate treatment and recovery. Mitigation measures would also require monitoring of earth-disturbing activities in sensitive areas and include provisional measures that require scientific recovery and evaluation of resources that are encountered.

## Mitigation Measures

Implementation of the following mitigation measures would reduce this impact to a *less-than-significant level*.

- 4.14-1 (a) *If CA-SOL-270 or CA-SOL-324 cannot be avoided by altering the proposed sewer and other utility alignments, the trench for the selected alignment shall be pre-excavated with a backhoe under the direction of a qualified archaeologist to identify residential features, human graves, and other intact cultural deposits. Prior to any excavation, the qualified archaeologist shall prepare a research design conforming to the requirements of section 15126.4(b)(3)(C) of the CEQA Guidelines.*

- (b) *If human burials or cultural features are encountered during pre-excavation, trenching shall stop, and the burial or feature should be excavated in a controlled manner and thoroughly recorded consistent with current archaeological standards. Non-feature site deposits shall also be sampled through the hand excavation of columns retrieved from trench sidewalls and/or from control units placed in the trench bottom. All hand-excavated sediments and soils shall be processed through 1/8-in mesh screen, with a minimum of 10 cubic meters of site deposit sampled in this manner. Flotation samples excavated from trench sidewalls shall also be obtained to recover fine-grained faunal and floral remains. The location of the utility trenches and any features or burials encountered during excavation shall be mapped using GPS technology. Trench side walls shall be thoroughly examined and recorded by a qualified geoarchaeologist and a site map shall be prepared. All recovered materials shall be analyzed, including radiocarbon and obsidian hydration dating, and a thorough research report prepared documenting the results of the investigation. This report shall, at a minimum, follow guidelines set forth in Archaeological Resource Management Reports Recommended Content and Format (Office of Historic Preservation [OHP], 1990).*
- (c) *During construction, all ground-disturbing activities within sites CA-SOL-30/H, CA-SOL-270, CA-SOL-324 or other archaeologically sensitive zones (e.g., Peña family adobes) shall be monitored by a qualified archaeologist (listed on the Registry of Professional Archaeologists [ROPA]).*
- (d) *Should an intact deposit or feature be uncovered during monitoring at CA-SOL-30/H, CA-SOL-270, CA-SOL-324 or in archaeologically sensitive zones, work in the immediate vicinity shall stop and the find assessed as to its legal significance by a qualified archaeologist. Any significant historical features or other deposits shall be hand excavated and sampled using accepted archaeological standards. Any foundation remnants shall be mapped, photo documented, and recorded prior to removal. The location of all finds shall be recorded on project plans and documented using GPS technology.*

Implementation of this mitigation measure would ensure that significant elements of prehistoric sites CA-SOL-324, and CA-SOL-270, which are eligible for listing on the CRHR, and potentially eligible historic sites CA-SOL-30/H and Peña family residences, would be subject to scientific recovery and evaluation, pursuant to CEQA. This would ensure that important scientific information that could be provided by these resources regarding history or prehistory is not lost.

#### **4.14-2 Construction along utility corridors east of Lagoon Valley Lake could encounter a potentially significant prehistoric deposit at CA-SOL-43.**

Development of the Proposed Project would result in the installation of a water line following the park roadway alignment on the east side of Lagoon Valley Lake. Based on surface observations, the boundaries of site CA-SOL-43 are thought to be located approximately 65 to 98 feet from the proposed utility corridor. However, because the boundaries of this site are based on surface observations, a strong possibility exists that subsurface deposits extend into the proposed utility corridor. Earth-disturbing activities associated with installation of utility lines along the proposed route—such as trenching—could damage or destroy resources that may be present within the utility alignment. This is considered a **potentially significant impact**.

## Mitigation Measures

Implementation of the following mitigation measure would reduce this impact to a *less-than-significant level*.

- 4.14-2 (a) *Prior to construction, a qualified archaeologist shall implement a testing program to determine whether significant deposits associated with CA-SOL-43 lie within the proposed utilities alignment. Prior to any excavation, the archaeologist shall prepare a research design conforming to the requirements of Section 15126.4(b)(3)(C) of the CEQA Guidelines. The research design shall include procedures for finds that are determined not to be significant, as well as finds that are potentially significant.*
- (b) *A qualified archaeologist shall hand-excavate surface transect units between the recorded site boundary and the utility corridor to determine if intact cultural deposits associated with CA-SOL-43 are present. If such deposits exist in the proposed corridor, a 1-x-2-m control unit shall be excavated under the direction of a qualified archaeologist and the material evaluated to determine if the deposit represents a significant resource under CEQA.*
- (c) *If the site deposit does not appear significant, no further management is required.*
- (d) *If a significant deposit is encountered, the project applicant shall, in consultation with the lead agency, evaluate alternative alignments for the proposed utilities to avoid the deposits associated with CA-SOL-43.*
- (e) *If the utilities alignment cannot feasibly be moved, data recovery excavations shall be conducted under the direction of a qualified archaeologist immediately following conclusion of the test excavation. This work shall include the excavation of additional 1-x-2-m control units (up to 6 cubic meters) and collection of column samples for flotation processing to recover plant macrofossils and small faunal remains. The site shall be mapped, unit profiles described, and the location of all control units recorded using GPS technology. All materials recovered during the test and data recovery excavations shall be analyzed and a research report prepared following guidelines set forth in Archaeological Resource Management Reports: Recommended Content and Format (OHP 1990).*

Implementation of the mitigation measure would ensure that significant elements of CA-SOL-43, a potentially significant prehistoric archaeological site, would be subject to identification, and avoidance or scientific recovery and evaluation, as appropriate, pursuant to CEQA and the CEQA Guidelines. This would ensure that important scientific information that could be provided by these resources regarding history or prehistory is not lost.

### **4.14-3 Earth-disturbing activities associated with implementation of the Proposed Project could result in the disturbance of previously unidentified prehistoric or historic archaeological resources.**

Investigations have detected six archaeological sites that could be encountered within the off-site utility alignment corridors and in the business village use area, but the extent of these sites have not been fully determined. In addition, previously unidentified archaeological sites can

also be present without providing surface indications (e.g., at the Demetrio Peña Adobe in the northern part of the proposed Business Village). Because the Specific Plan area and vicinity are known to be archaeologically sensitive, the potential exists for additional, unanticipated finds of archaeological resources during ground-disturbing activities associated with project implementation. Prior to evaluation of these deposits, any deposits encountered must be presumed significant under the criterion specified in section 15064.5(a)(3)(D) of the CEQA Guidelines (may be likely to yield information important in prehistory or history). Therefore, the potential for damage to or destruction of these cultural resources as a result of project construction would be considered a ***potentially significant impact***.

### **Mitigation Measures**

Implementation of the following mitigation measure would reduce this impact to a *less-than-significant level*.

4.14-3 (a) *In the event that such historical resources are discovered during project construction, construction work in the vicinity of the find shall cease until the find has been evaluated by a qualified archaeologist and a course of action decided upon, as described in (b), below. A physical barrier (e.g., exclusionary fencing) shall be erected to prohibit potentially destructive activities from occurring and/or visitation and potential vandalism by unauthorized personnel. Project-related activities and access to the location shall be prohibited until the City of Vacaville is notified otherwise.*

(b) *A qualified archaeologist shall be notified to make a preliminary assessment of the discovered resource. Following this assessment, the City of Vacaville and the applicant shall be provided written notice to alert them of the situation. In coordination with the City and the applicant, the archaeologist shall evaluate the potential significance of the find and recommend what treatment measures, if any, are appropriate.*

*The qualified archaeologist shall conduct the evaluation of the discovered resource following these considerations:*

- *CRHR criteria for evaluation should be applied to determine if the resource is significant.*
- *The evaluation should be conducted in following a research design consistent with that found in Guidelines for Archaeological Research Designs (Office of Historic Preservation [OHP], 1991).*
- *The City and the applicant (or at their request, the qualified archaeologist) shall consult with the appropriate Native American tribal groups during the evaluation and treatment phases.*

(c) *To expedite the review process after fieldwork is completed, the qualified archaeologist shall prepare a brief management summary report for the City and the applicant that describes and assesses the significance of the discovered resource, including a discussion of the methods and criteria used to determine significance. If the resource is deemed eligible for inclusion in the CRHP, the report shall detail avoidance and/or treatment recommendations.*

- (d) *A comprehensive research report, detailing the results of any archaeological evaluation and/or data recovery treatment activities associated with the unanticipated discovery, shall be prepared by the qualified archaeologist, and submitted to the City and the applicant no later than 360 days after the completion of any field studies associated with this effort. The comprehensive research report shall follow guidelines set forth in Archaeological Resource Management Reports: Recommended Content and Format (OHP, 1990).*

Section 15064.5 of the CEQA Guidelines requires lead agencies to make provision for accidental, unanticipated discovery of historical resources, including those determined eligible for listing on the CRHR, during construction. CEQA requires that these provisions include an immediate evaluation of the find by a qualified archaeologist, and, if the find is determined to be a significant cultural resource, the lead agency make available contingency funding and a time allotment sufficient to allow for avoidance or appropriate mitigation measures.

Implementation of this mitigation measure would ensure that unanticipated archaeological resources, if discovered during construction activities, would be subject to scientific recovery and evaluation, pursuant to CEQA. This would ensure that important scientific information that could be provided by these resources regarding history or prehistory is not lost.

**4.14-4 Trenching for sewer line option 2 in the vicinity of the Peña Adobe could subject the structure to vibration, which could affect the building structure or non-structural elements.**

As noted in the Environmental Setting, the Peña Adobe is listed on the NRHP for its significance at the local level under Criterion B for its direct association with Solano County pioneer Juan Felipe Peña. If sewer line option 2 (gravity line) is selected, trenching, placement of the line, backfill, and recompaction to install the sewer line could occur east of the adobe in the access road, parking lot, and through the lawn north of the site. While no long-term impacts regarding the historical context of the adobe or direct impacts to the structure itself are expected to occur, short-term vibration from heavy equipment and installation activities could affect the building structure, façade, or its contents. The potential to damage the adobe, a listed resource, is therefore considered a ***potentially significant impact***.

**Mitigation Measures**

Implementation of the following mitigation measure would reduce this impact to a *less-than-significant level*.

- 4.14-4 (a) *Prior to utility trenching adjacent to the Peña Adobe, an engineering analysis on the adobe shall be made by an engineer qualified in acoustic/vibration analysis to determine the level (if any) of vibrational effects that could occur during construction. If such effects could occur and could result in damage, appropriate equipment selection and construction methods shall be specified in construction contracts to avoid the potential for damage.*
- (b) *A monitoring program shall be developed and implemented during construction under the direction of a qualified professional to monitor vibration levels and to evaluate the effectiveness of controls. In the event of adverse effects, work shall stop immediately and corrective action taken.*

Implementation of this mitigation measure would ensure that no substantial adverse impact occurs to historic structures as a result of vibration from site preparation and construction activities, by requiring the use of appropriate equipment and implementation of appropriate measures to minimize vibration, as well as monitoring to identify and halt or prevent potential vibration-related effects, if such effects are observed during construction.

**4.14-5 Earth-disturbing activities associated with implementation of the Proposed Project could result in the disturbance of previously unidentified human remains, including those interred outside of formal cemeteries.**

No formal cemeteries are known to have occupied the project site, so any human remains, if encountered, would likely come from archaeological or historical archaeological contexts. As described above in the Environmental Setting, archaeological materials, including human burials, have been discovered in archaeological contexts in the vicinity of the project site, and a substantial potential therefore exists for such resources to be present and for trenching during utility installation or excavation activities to potentially disturb any human remains.

Human burials, in addition to being potential archaeological resources, have specific provisions for treatment in section 5097 of the California Public Resources Code and under section 7050.5 of the California Health and Safety Code. Section 7050.5(b) of the California Health and Safety Code requires that if human remains are found in any location other than a dedicated cemetery, excavation is to halt in the immediate area, and the county coroner is to be notified. Within 48 hours of notification, the coroner is required to examine the remains and make an assessment of their origin.

Disturbing human remains could violate the Health Code, as well as destroy the resource. This impact is, therefore, considered to be **potentially significant**.

**Mitigation Measures**

Implementation of the following mitigation measures would reduce this impact to a *less-than-significant level*.

- 4.14-5 (a) *In the event that human skeletal remains or material thought to be human remains are encountered during project construction, work shall be halted in the general vicinity of the finds and the City and the applicant immediately notified. If possible, all finds will be preserved in place and protective measures implemented to safeguard the remains from further disturbance or vandalism. Following protection of the finds, the following steps will be implemented:*

*The City and the applicant shall immediately retain a qualified cultural resources specialist to assess the remains and determine whether they are human. If the find is determined to be non-human and nonarchaeological, then no further consideration is necessary and construction may resume. If the find is determined to be non-human, but archaeological, then the procedures described in Mitigation Measure 4.14-2 (a) through (e) shall be followed.*

- (b) *If the find is determined to be human, the Solano County Coroner and representatives of the City of Vacaville and the applicant shall be simultaneously notified. The cultural resources specialist or physical anthropologist shall work*

*with the Coroner to determine whether the remains are prehistoric Native American or are of more recent origin. If the remains are found to be of recent origin, then the discovery becomes a police issue. If the remains are determined to be Native American, the following shall be implemented:*

- i. The NAHC shall be notified by the Coroner within 24 hours of identification. Although it is the Coroner's responsibility to notify the NAHC, a representative of the City shall also contact the NAHC and verify that the notification was made. The NAHC shall immediately notify the person it believes to be the Most Likely Descendant (MLD) for purposes of consultation.*
- ii. Following notification, City shall consult with the selected MLD and provide the opportunity within 24 hours for the MLD to visit the site of discovery, provided permission from the legal landowner can be obtained. The City shall work with the MLD to arrive at a satisfactory plan for treatment and final disposition of the remains. The preferred resolution shall be to preserve the remains in place and to avoid further project-related impacts. If preservation in-place is not a viable option, in consultation with the MLD, the City shall develop an appropriate plan for the recovery and documentation of the remains and any associated grave goods. This plan shall be implemented along with an Unanticipated Historic Properties evaluation to determine the CRHR significance of the discovery and any associated archaeological deposit.*
- iii. It is the policy of the State of California that any Native American remains and/or grave goods not immediately reburied will be repatriated. Final disposition of the remains, however, may include re-interment or placement within a state approved curation facility if requested by the MLD.*
- iv. If a satisfactory agreement for the final disposition of the remains cannot be reached, either of the parties may request mediation by the NAHC. In the event that mediation fails, with appropriate dignity, the landowner or their representative must re-inter the remains and any associated items on the property in a location not subject to further disturbance.*

Implementation of this mitigation measure would ensure the appropriate treatment of and previously unidentified human remains under State law.

#### **4.14-6 Ground-disturbing activities associated with implementation of the Proposed Project could encounter previously unidentified paleontological resources.**

No unique geological feature is known to exist on the project site, and as described above in Environmental Setting, no fossils have been documented at the surface or in underlying alluvium or rock units on or adjacent to the project site. Although unlikely, this does not preclude the possibility that such resources would not be encountered during trenching or excavation activities. Therefore, if fossiliferous material is discovered, it could be considered a unique resource due to the potential to yield information important in history or prehistory (Criteria 4 of the NRHP and D of the CRHR). Until an evaluation is made of the find, any construction-related, earth-disturbing activities resulting from implementation of the Proposed Project that damages or destroys fossils is considered ***potentially significant***.

## Mitigation Measures

Implementation of the following mitigation measures would reduce this impact to a *less-than-significant level*.

4.14-6 (a) *The project applicant shall retain a qualified paleontologist to prepare a paleontological resources impact mitigation plan. The plan shall include, but not be limited to, the following elements and requirements:*

- *Resource identification training procedures for construction personnel*
- *Procedures for reporting discoveries and their geologic context*

(b) *If subsurface paleontological resources are encountered, excavation shall halt in the vicinity of the resources and a qualified paleontologist shall evaluate the resource and its stratigraphic context. The monitor shall be empowered to temporarily halt or redirect construction activities to ensure avoidance of adverse impacts to paleontological resources.*

- *During monitoring, if potentially significant paleontological resources are found, "standard" samples shall be collected and processed by a qualified paleontologist to recover micro vertebrate fossils*
- *If significant fossils are found and collected during the Project, they shall be prepared to a reasonable point of identification. Excess sediment or matrix shall be removed from the specimens to reduce the bulk and cost of storage. Itemized catalogs of material collected and identified shall be provided to the museum repository with the specimens*
- *Significant fossils collected during this work, along with the itemized inventory of these specimens, shall be deposited in a museum repository for permanent curation and storage*
- *A report documenting the results of the monitoring and salvage activities, and the significance of the fossils, if any, shall be prepared. The report and inventory, when submitted to the lead agency, signifies the completion of the program to mitigate impacts to paleontological resources*
- *As necessary, the qualified vertebrate paleontologist shall revise the paleontological resources impact mitigation program for the remaining excavation*

Implementation of this mitigation measure would require an instructional program to assist construction personnel in identifying paleontological resources and requiring the scientific recovery and evaluation of any paleontological resources or unique geologic features that could be encountered, which would ensure that important scientific information that could be provided by these resources regarding history or prehistory is not lost.

## ENDNOTES

1. Far Western Anthropological Research Group, Inc., *Archaeological Survey for the Lower Lagoon Valley Project*, Vacaville, Solano County, California, September 2003, p.12.
2. Far Western Anthropological Research Group, Inc., *Archaeological Survey for the Lower Lagoon Valley Project*, Vacaville, Solano County, California, September 2003, p. 14.
3. Far Western Anthropological Research Group, Inc., *Archaeological Survey for the Lower Lagoon Valley Project*, Vacaville, Solano County, California, September 2003, pp.8 and 20.
4. Far Western Anthropological Research Group, Inc., *Archaeological Survey for the Lower Lagoon Valley Project*, Vacaville, Solano County, California, September 2003, pp.14 and 20.
5. Far Western Anthropological Research Group, Inc., *Archaeological Survey for the Lower Lagoon Valley Project*, Vacaville, Solano County, California, September 2003, p. 20.
6. Far Western Anthropological Research Group, Inc., *Archaeological Survey for the Lower Lagoon Valley Project*, Vacaville, Solano County, California, September 2003, p.14.
7. Far Western Anthropological Research Group, Inc., *Archaeological Survey for the Lower Lagoon Valley Project*, Vacaville, Solano County, California, September 2003, pp.9 and 21.
8. Far Western Anthropological Research Group, Inc., *Archaeological Survey for the Lower Lagoon Valley Project*, Vacaville, Solano County, California, September 2003, p.16.
9. Far Western Anthropological Research Group, Inc., *Archaeological Survey for the Lower Lagoon Valley Project*, Vacaville, Solano County, California, September 2003, pp.18 through 20.
10. Far Western Anthropological Research Group, Inc., *Archaeological Survey for the Lower Lagoon Valley Project*, Vacaville, Solano County, California, September 2003, p.20.
11. Far Western Anthropological Research Group, Inc., *Archaeological Survey for the Lower Lagoon Valley Project*, Vacaville, Solano County, California, September 2003, pp.21 through 22.
12. Far Western Anthropological Research Group, Inc., *Archaeological Survey for the Lower Lagoon Valley Project*, Vacaville, Solano County, California, September 2003, pp.22 through 23.
13. Far Western Anthropological Research Group, Inc., *Archaeological Survey for the Lower Lagoon Valley Project*, Vacaville, Solano County, California, September 2003, pp.23.through 25.
14. JRP Historical Consulting Services, *Historic Resource Evaluation Report, Lagoon Valley Project*, Vacaville, Solano County, California, October 2003, pp. 16 through 21.

15. University of California, Berkeley, Museum of Paleontology, UCMP Online Database search, August 2003. (<http://elib.cs.berkeley.edu/ucmp/index.shtml>); R.W. Graymer, D.L. Jones and E.E. Brabb, Geologic Map and Map Database of Northeastern San Francisco Bay Region, California, U.S. Geological Survey Miscellaneous Field Studies Map MF-2403, 2002.