Section 4-6
Hydrology, Water Quality and Hazardous Materials

This section addresses potential impacts related to hydrology, water quality, and hazardous materials resulting from the implementation of the Proposed Project. Impacts on surface water and groundwater resources that may result from the Proposed Project are identified, and mitigation measures to avoid, minimize, and compensate for potentially significant impacts on surface water and groundwater resources are described. The potential impacts related to hazardous materials that may exist as a result of the prior farmstead and agricultural use on the Alamo site will also be described.

The Proposed Project contains existing agricultural water supply lines. No additional water supply would be required as a result of Project implementation, therefore this issue is not discussed in this section.

4-6.1 STUDY METHODS

Methods used to identify and evaluate hydrological resources in the study area consisted of a review of existing documentation. Hazardous materials discussion is based on the Phase I Environmental Site Assessment Update and Phase II investigation for the Alamo Creek Detention Basin (Dunn Environmental 2010).

4-6.1.1 Regional Setting

Vacaville is located in the southern Sacramento Valley at the eastern foot of the Vaca Mountains on east-sloping alluvial fan surfaces that drain to the Sacramento River. The Sacramento River Basin encompasses approximately 26,500 square miles and is bounded by the Sierra Nevada to the east, the Coast Ranges to the west, the Cascade Range and Trinity Mountains to the north, and the Sacramento–San Joaquin Delta (Delta) to the south. Five creeks (Alamo, Ulatis, Gibson Canyon, Sweeney, and Horst Creek) pass through and provide drainage for the Vacaville area. These creeks are tributary to Ulatis Creek, which enters Cache Slough about 10 miles southeast of Vacaville. Cache Slough drains to the Sacramento River, which drains into the Delta and San Francisco Bay.

Average annual rainfall in the Vacaville area is 24.6 inches (Western Region Climate Center 2009); most of this rain occurs during November through March. Major storm events can produce high flows throughout the Sacramento River system. Flood-control facilities along these rivers consist of a comprehensive system of dams, levees, overflow weirs (diversion structures intended to ensure a maximum flow in the river), drainage pumping plants, and flood-control bypass channels. Such facilities control floodflows by regulating the amount of water passing through a particular reach of the river. Specifically, the City's flood-control system consists of drainage canals along lower Ulatis and Alamo

Creeks. The canals were designed and constructed during the 1960s to accommodate peak flows from 10-year storms (West Yost Associates 2008). Urban stormwater runoff is disposed of chiefly through conveyance to Ulatis and tributary creeks through sumps, pipelines, and channels organized, primarily, by drainage basin. Historically, agricultural lands were used to store and absorb stormflows during heavy rainfall (Solano County 2008b). Low levees have been constructed to protect subdivisions in Vacaville (Camp Dresser and McKee, Inc. 1987). In addition, aging levees protect lands in southern Solano County adjacent to the Sacramento River from inundation (Solano County 2008b).

The volume of water flowing past the levees protecting southern Solano County is controlled by dams along tributaries to the Sacramento River, and the Yolo bypass. Southern Solano County south of Vacaville is located to the west of the Yolo bypass and downstream of any major dams. The Yolo bypass is a flood bypass area that protects the city of Sacramento and surrounding communities from flooding along the Sacramento River. It conveys 80% of the Sacramento River's floodwaters through Yolo and eastern Solano Counties until rejoining the Sacramento River a few miles upstream of Rio Vista at Liberty Island.

Regional storms during winter and late spring can result in floodflows passing the aging levees along the Sacramento River in south Solano County.

4-6.1.2 Resources Reviewed

Available information regarding hydrologic resources on or near the study area was gathered and reviewed, including:

- Solano County Water Agency Ulatis System Drainage Study (West Yost Associates 2008);
- Summary of Geotechnical Findings and Conclusions, Proposed Alamo Creek Detention Basin (Paragon Geotechnical 2009); and
- City of Vacaville Draft Storm Drain Master Plan Update (West Yost Associates 2000).
- Phase I Environmental Site Assessment and Phase II Environmental Site Investigation for the Upper Alamo Creek Detention Basin (Dunn Environmental 2010)

4-6.2 ENVIRONMENTAL SETTING

The Proposed Project is located in unincorporated Solano County, northwest of the City of Vacaville, but outside the sphere of influence for Vacaville (Figure 3-2). This section describes the regional setting and existing conditions related to hydrological resources in the local region.

4-6.2.1 Vacaville Drainage

Vacaville is located on gently east-southeast sloping alluvial plains between the Vaca Mountains on the west and the Delta to the southeast. Drainage requirements are met by open channels of creeks tributary to Ulatis Creek. Ulatis Creek flows into Cache Slough downstream of the confluence with Alamo Creek. The lower lying southeastern portion of the area is drained by canals that serve to conduct floodflows into the Ulatis Creek system during high rainfall periods. The lower reaches of Alamo Creek and Ulatis Creek are within the legal Sacramento–San Joaquin Delta (RWQCB 2007).

Water for municipal and agricultural use is supplied to Vacaville by the Solano County Water Agency and distributed by the Solano Irrigation District from supplies at Lake Berryessa in upper Putah Creek. Vacaville obtains about one-third of its municipal water supply from groundwater (Solano County 2008b). Most of the growers within the Solano Irrigation District, Maine Prairie Water District, and Reclamation District No. 2068 use surface water. Growers outside of districts that provide surface water rely entirely on groundwater. Most rural residential landowners have individual shallow groundwater wells that serve their domestic needs. Some small rural residential water systems also distribute groundwater to their customers. Existing Solano Irrigation District agricultural water distribution lines and existing wells are present on the Alamo and Ulatis sites. Depending on the requirements of the Solano Irrigation District and needs of the Proposed Project, the water lines and wells would be removed and/or properly abandoned.

The City of Vacaville has historically experienced urban flooding within the urban reaches along Alamo and Ulatis Creeks. Increasing urbanization through time has led to the potential for increasing runoff from developed areas as compared to runoff from undeveloped agricultural lands. Large storms have caused significant flooding in Vacaville. Floods from significant rainfall were experienced along both Alamo and Ulatis Creeks in Vacaville downstream of the Project sites during 1940, 1967, 1973, 1982, 1983, 2002, and 2005 (Camp Dresser and McKee, Inc. 1987, West Yost Associates 2008). Figure 4-6.1 shows areas of flooding from the December 30 and 31, 2005 storm. During the December 2002 and December 2005 storms, Alamo Creek overtopped its banks and flooded established neighborhoods within the City. The Peabody/Tulare area, the Southwood area located west of Peabody Road, and the area along North Alamo Drive all experienced significant flooding during the December 2005 flood event when waters reached several feet in depth and caused millions of dollars in property damage. Flood control in Solano County is overseen by SCWA, which requires the cities in Solano County to adequately mitigate the impacts of stormwater runoff from development projects.

SCWA and the City have prepared drainage studies and storm drainage plans to identify the types and sizes of facilities necessary to protect residents from flooding (for example, West Yost Associates 2008 and Camp Dresser and McKee, Inc. 1987). Based on these studies, the City has completed several projects to reduce flood risk within the City of Vacaville, including:

- High flow by-pass channel along Alamo Creek: Designed to lower water surface elevations during storms with a return frequency of less than 10 years.
- Detention basin near Southwood Park: Designed to mitigate for increased flows resulting from development within the Alamo Creek Watershed.
- Detention basin off Laguna Creek: Designed to reduce peak flows in Alamo Creek during 10-year storm events.

Although the projects listed above have aided in reducing flooding during small storm events, they do not provide significant relief during moderate to large storm events. In recognition of this problem, the Solano County Water Agency (SCWA) initiated the Ulatis System Drainage Study (USDS), which updated the hydrologic and hydraulic modeling of the Ulatis Creek system and modeled flooding based on the December 2002 and December 2005 storms (West Yost Associates 2008). This study identified and evaluated flood control improvements, including the effectiveness of regional detention basins located upstream of the City. The proposed detention basins will provide flood reduction for affected areas of the City, and reduce erosion further downstream in the watershed.

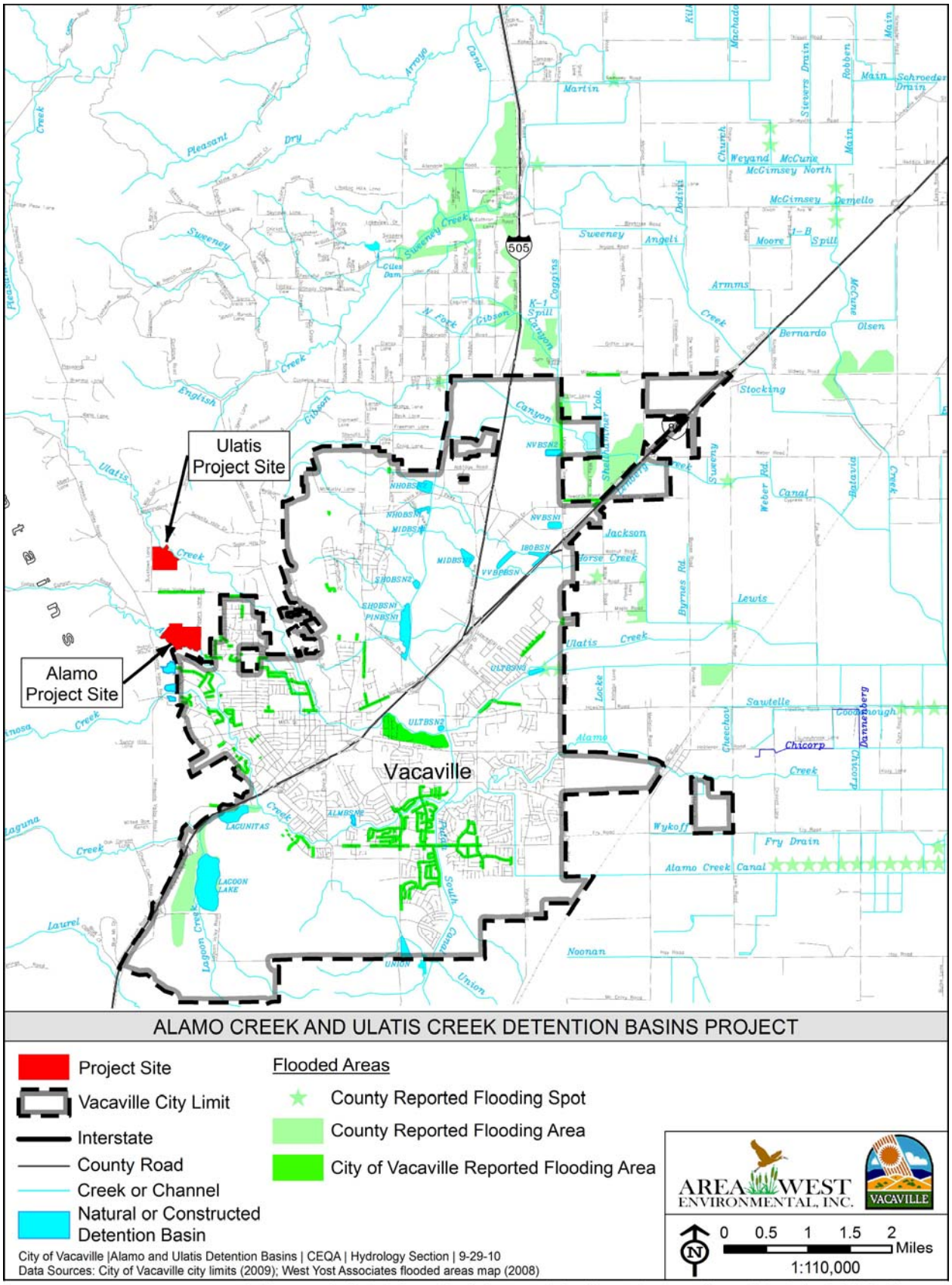

Figure 4-6.1 Flooded Areas During December 30-31, 2005 Storm

4-6.2.2 Project Site Surface Water

The two Project sites are located in the northwest corner of Solano County within the Ulatis Creek watershed (Figure 4-6.2). The sites are located upstream of Vacaville at the base of the Vaca Mountains and are located on gentle southeast-facing slope gradients. Much of the City and northwest portion of the County lie within the Ulatis Creek watershed (Figure 4-6.2). Tributaries to Ulatis Creek flow easterly from the Vaca Mountains and English Hills. About 15 miles downstream of the Project sites, Ulatis Creek is joined by Alamo Creek. Water from Ulatis Creek then flows to Cache Slough, and into the Sacramento River west of Liberty Island at the northern end of the Delta, and ultimately to San Francisco Bay (Figure 4-6.3).

The Alamo Creek site consists of approximately 79 acres of remnant plum/prune orchard and fallow agricultural land adjacent to and northeast of Alamo Creek. Alamo Creek flows from northwest to southeast along the southern boundary of the Alamo site.

The Ulatis Creek site consists of approximately 50 acres of fallow agricultural land adjacent to and southwest of Ulatis Creek. Ulatis Creek flows from northwest to southeast along the northeast boundary of the Ulatis Creek site.

Surface water drainage from the two Project sites will ultimately return to the adjacent creek. The proposed basins are located outside of and adjacent to the 100-year flood zone, as shown on the floodplain zone map included as exhibit 4.5-4 in the Solano County General Plan EIR (Solano County 2008a). Surrounding topography at both sites slopes from west to east.

The Ulatis Creek watershed comprises 52,442 acres, including the Ulatis Creek and Alamo Creek watersheds. Ulatis Creek upstream of the Project sites drains a 6,048-acre watershed, and Alamo Creek upstream of the Project sites drains a 4,118-acre watershed. The volume of water flowing from these watersheds is dependent on the amount and intensity of rainfall received in the watershed.

4-6.2.3 Project Site Groundwater Hydrology

The primary water-bearing formations within the Solano subbasin are sedimentary continental deposits of Late Tertiary (Pliocene) to Quaternary (Recent) age (DWR 2003). Fresh water-bearing units include younger alluvium, older alluvium, and the Tehama Formation. The units are exposed at the surface near the Coast Range on the west and thicken to a section of nearly 3,000 feet near the eastern margin of the basin. Saline water-bearing sedimentary units underlie the Tehama formation and are generally considered the saline water boundary.

The area underlying Vacaville and extending from Putah Creek on the north to the boundaries of Fairfield on the south is underlain by two principal aquifers (SCWA 2009). The shallower aquifer provides agricultural water and local domestic supplies. This aquifer is underlain by the Tehama Formation aquifer. It is quite deep (more than 1,000 feet) under Vacaville, but surfaces in the English Hills area north and west of Vacaville. The City's wells produce groundwater from the Tehama Formation for its water supply.

The groundwater surface typically mimics the surface topography with much lower relief. On a regional scale, the groundwater beneath the Project sites is expected to generally flow from northwest to southeast. This expected groundwater flow condition could be locally affected by pumping supply wells.

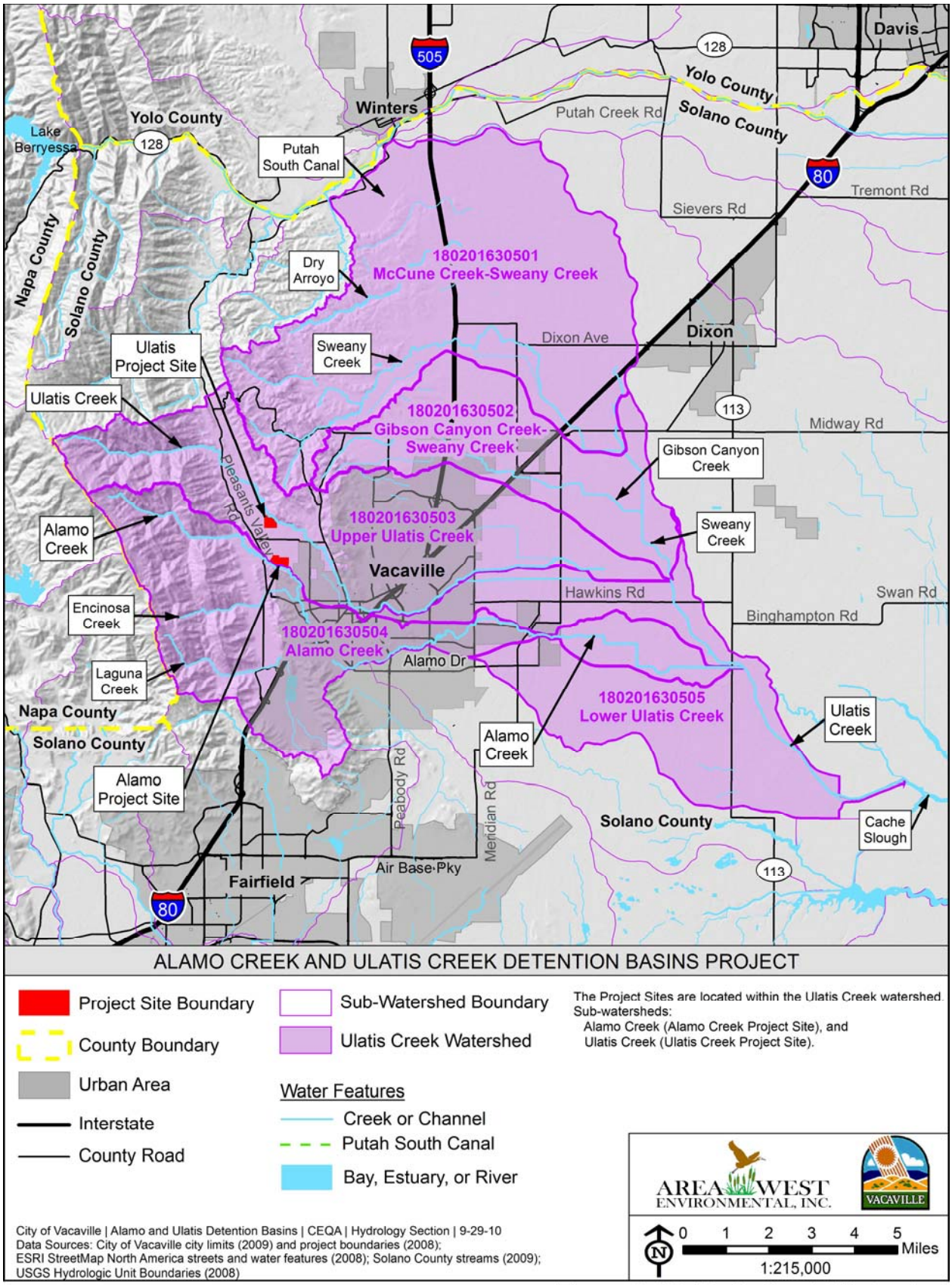

Figure 4-6.2 Ulatis Creek Watershed

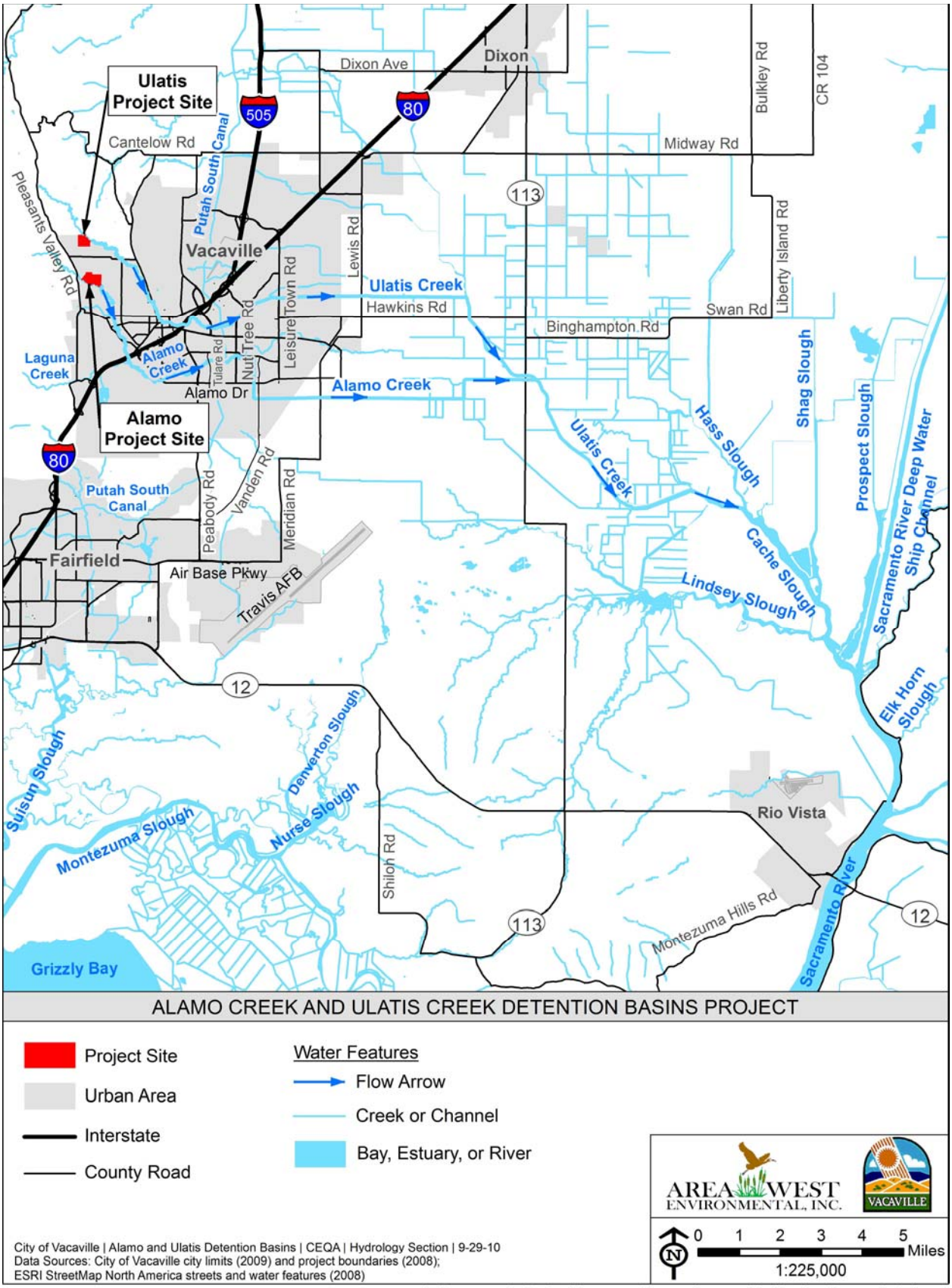

Figure 4-6.3 Alamo Creek and Ulatis Creek Flow

Depth to groundwater information is available for the Alamo site (Paragon Geotechnical 2009). Groundwater was encountered at depths of 16 to 20 feet below ground surface in test pits, borings, and piezometers.

Groundwater elevations were measured in spring and autumn from 1960 to 1987 in a supply well located about 1 mile southeast of the Alamo Project site (DWR 2009). These groundwater elevations ranged from a low of 174.5 feet above mean sea level (msl) in October 1961 to a high of 193.9 msl in March 1983. This record of groundwater elevations shows an annual cycle of groundwater elevation decline during the dry summer months, and a rebound during the rainy season. Such seasonal cycles are often associated with pumping production wells. Superimposed on this seasonal cycle are longer term fluctuations including rebound of groundwater elevations associated with the beginning of delivery of surface water supplies to the area (from 1961 to 1963), a decline associated with the 1970s' drought (1973 to 1977), and increasing groundwater elevations through the 1980s.

Two wells are known to exist at the Alamo site and two additional wells are likely present (Dunn Environmental 2010). An existing domestic well is located at the southwest corner of the Ulatis site adjacent to Bucktown Lane, however detailed groundwater information is not available for the Site, which is covered at a program level in this EIR. Future, project level environmental documentation for the Ulatis project will include groundwater details at that site.

4-6.2.4 Water Quality

4-6.2.4.1 Surface Water

The term "receiving water" is typically used to describe any water body, such as a creek, river, reservoir, or canal, which receives runoff. In the context of the Proposed Project, it refers to those water bodies that would receive runoff from the two Proposed Project sites in excess of the 100-year event. The primary receiving waters are Alamo Creek, which drains to Ulatis Creek, and Ulatis Creek, which drains to Cache Slough. The Basin Plan (RWQCB 2007) identifies beneficial uses for Alamo and Ulatis Creeks as municipal and domestic water supply, agricultural supply, industrial process supply, industrial service supply, contact and non-contact water recreation, warm and cold freshwater habitat, wildlife habitat, and spawning reproduction and/or early development. These beneficial uses are identified in Table 4.6-1.

In accordance with the requirements of the CWA (see Section 4-6.3 "Regulatory Setting"), the SWRCB has determined that beneficial uses in Alamo Creek and Ulatis Creek within the Delta are impaired by high concentrations of diazinon and chlorpyrifos (pesticides related to agricultural and urban runoff).

4-6.2.4.2 Groundwater

The Basin Plan (RWQCB 2007) considers all groundwater in the Central Valley region as suitable or potentially suitable, at a minimum, for municipal and domestic water supply, agricultural supply, industrial process supply, and industrial service supply, unless otherwise designated by the Central Valley RWQCB. These beneficial uses are defined in Table 4.6-1.

Table 4-6.1. Receiving Water and Groundwater Beneficial Uses

Beneficial Use Designation	Applicable to			Definition
	Alamo Creek	Ulatis Creek	Groundwater	
Municipal and Domestic Supply	X	X	X	Community, military, or individual water supply systems including, but not limited to, drinking-water supply
Agricultural Supply	X	X	X	Farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing
Industrial Process Supply	X	X	X	Industrial activities that depend primarily on water quality
Industrial Service Supply	X	X	X	Industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling-water supply, hydraulic conveyance
Contact Water Recreation	X	X		Recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, waterskiing, skin and SCUBA diving, surfing, whitewater activities, fishing, or use of natural hot springs
Noncontact Water Recreation	X	X		Recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tide pool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities
Warm Freshwater Habitat	X	X		Uses of water that support warm-water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
Cold Freshwater Habitat	X	X		Uses of water that support cold-water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
Wildlife Habitat	X	X		Uses of water that support terrestrial or wetland ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats or wetlands, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.
Spawning, Reproduction, and/or Early Development	X	X		Uses of water that support high-quality aquatic habitats suitable for reproduction and early development of fish.

As mentioned above under "Groundwater Hydrology," the project sites are located within the Solano Groundwater Subbasin of the Sacramento Valley Groundwater Basin, as delineated in DWR Bulletin 118, *California's Groundwater* (2003 update) (DWR 2003). Total dissolved solids (TDS) range from 250 ppm to 500 ppm in the northwest and eastern portion of the basin, and are found at levels higher than the 500-ppm secondary maximum contaminant level (MCL) in the central and southern areas. In general, most of the water within the subbasin is classified as hard to very hard. Boron concentrations are less than 0.75 ppm, except in the southern and southeastern portion of the basin, where concentrations average between 0.75 and 2.0 ppm (more than 1.0 ppm will affect sensitive tree crops). Arsenic concentrations are typically between 0.02 and 0.05 ppm, with the highest concentrations found along the southeastern margin of the basin. The current primary MCL for arsenic is 0.01 ppm. In addition, manganese is found at concentrations above the secondary MCL of 0.05 ppm along the Sacramento River along the eastern

portion of the subbasin (DWR 2003). The highest concentrations of solutes (and lowest water quality) in the Solano Groundwater Subbasin are generally found at the southern and eastern basin boundaries near the Delta.

Groundwater within the Solano Subbasin is considered to be of generally good quality useable for both domestic and agricultural purposes (DWR 2003). A review of the State of California's Geotracker database (SWRCB 2009) did not result in identification of any leaking underground storage tanks, land disposal, military, California Department of Toxic Substances Control, or other types of cleanup sites at or within 1 mile of the two Project sites. A permitted underground storage tank at a walnut orchard is located about 0.5 mile southwest of the Ulatis Creek Site and 0.5 mile northwest of the Alamo Creek Site. Groundwater quality at the Project sites is expected to be useable for both domestic and agricultural purposes.

4-6.2.5 Hazardous Materials

Hazardous materials may be present at the Proposed Project as a result of historical human activities. To assess the potential presence of hazardous materials at the Alamo and Ulatis project sites, Phase I and Phase II Environmental Site Assessments were performed. As part of the Phase 1 Environmental Site Assessment conducted for the Alamo project site, additional testing was recommended for agricultural pesticides and at a former aboveground tank location. The Phase 1 Environmental Site Assessment conducted for the Ulatis site also recommended additional testing for agricultural pesticides. A Phase II Environmental Site Assessment completed at the Alamo project site did not identify a recognized environmental condition (Dunn Environmental 2010). Recommendations of the Phase I and Phase II Environmental Site Assessments include:

- Proper abandonment/destruction of any agricultural wells encountered during construction at the project sites.
- Removal of soil associated with burn piles, located along the eastern boundary of the site approximately 750 feet south of the northern project boundary that may contain elevated lead.
- Removal of septic tanks associated with former farm buildings located along the eastern boundary of the site immediately north of Alamo Creek and near the burn pile.

The City will comply with applicable federal, state and local statutory requirements (see Section 4-6.3 Regulatory Framework).

4-6.3 REGULATORY FRAMEWORK

This section summarizes the federal and state regulations pertaining to water resources and discusses pertinent Solano County and City of Vacaville General Plan goals, ordinances, and policies relating to the protection and preservation of water resources (Solano County 2008b, City of Vacaville 1990).

4-6.3.1 Hydrology

The following regulations pertain to hydrology in the study area.

4-6.3.1.1 Federal Regulation

Federal Emergency Management Agency

The Department of Homeland Security's FEMA administers the National Flood Insurance Program (NFIP) to provide subsidized flood insurance to communities that comply with FEMA regulations to limit development in floodplains. Solano County is a participant in the NFIP. FEMA also issues flood insurance rate maps (FIRMs) that identify which land areas are subject to flooding. These maps provide flood information and identify flood hazard zones in the community. The design standard for flood protection is established by FEMA; the minimum level of flood protection for new development is the 1-in-100 Annual Exceedance Probability, defined as a flood that has an average frequency of occurrence on the order of once in 100 years (although such a flood may occur in any given year). Participants in the NFIP must satisfy certain mandated floodplain management criteria. Flood zone areas in Solano County are shown in Figure 4-6.4.

4-6.3.1.2 Local Plans and Policies

The following local planning documents contain policies related to hydrology in the study area.

Solano County Water Agency Flood Control Master Plan

The boundaries of the Solano County Water Agency (SCWA) include all of Solano County. SCWA was formed in 1951 by an act of the California Legislature as the Solano County Flood Control and Water Conservation District (SCFCWCD). In 1989 the name was changed to "Solano County Water Agency". SCWA oversees both water supply and storm drainage planning for Solano County and has adopted a master plan governing flood control and flood control improvements within its territory. One of the major recommendations of SCWA's Flood Control Master Plan is to develop watershed studies to address flooding problems on a watershed basis.

The most recent local watershed study is the Ulatis System Drainage Study, prepared for SCWA by West Yost Associates in March 2008. The Alamo and Ulatis Detention Basins are component facilities included in the recommended alternative for addressing flooding from these two creeks within the City of Vacaville. SCWA does not have specific policies or regulations associated with the construction of the Alamo and Ulatis detention basins by the City.

City of Vacaville Storm Drainage Master Plan

The City of Vacaville adopted an updated Storm Drainage Master Plan in November 2000 (West Yost Associates 2008). The plan evaluated major stormwater conveyance facilities in the City, including both piped and open storm drainage systems, identified system deficiencies, and recommended storm drainage system improvements for both 10-year and 100-year flood protection goals. The hydrology analyzed in the plan is based on the Ulatis Creek watershed, which includes Alamo and Ulatis Creeks, which flow through the City, as well as other tributary creeks that converge with the Ulatis Creek system downstream of the City. The City's Storm Drainage Master Plan is based on anticipated development established by the City of Vacaville General Plan (City of Vacaville 1990). The Plan recommended the construction of several detention basins within the City, most of which have since been constructed. The Plan also included a recommendation for detention basins along both Alamo and Ulatis Creek upstream of the City, to intercept high flows from peak storm events upstream of the City. The proposed detention basins implement the recommendations in the City's Storm Drainage Master Plan.

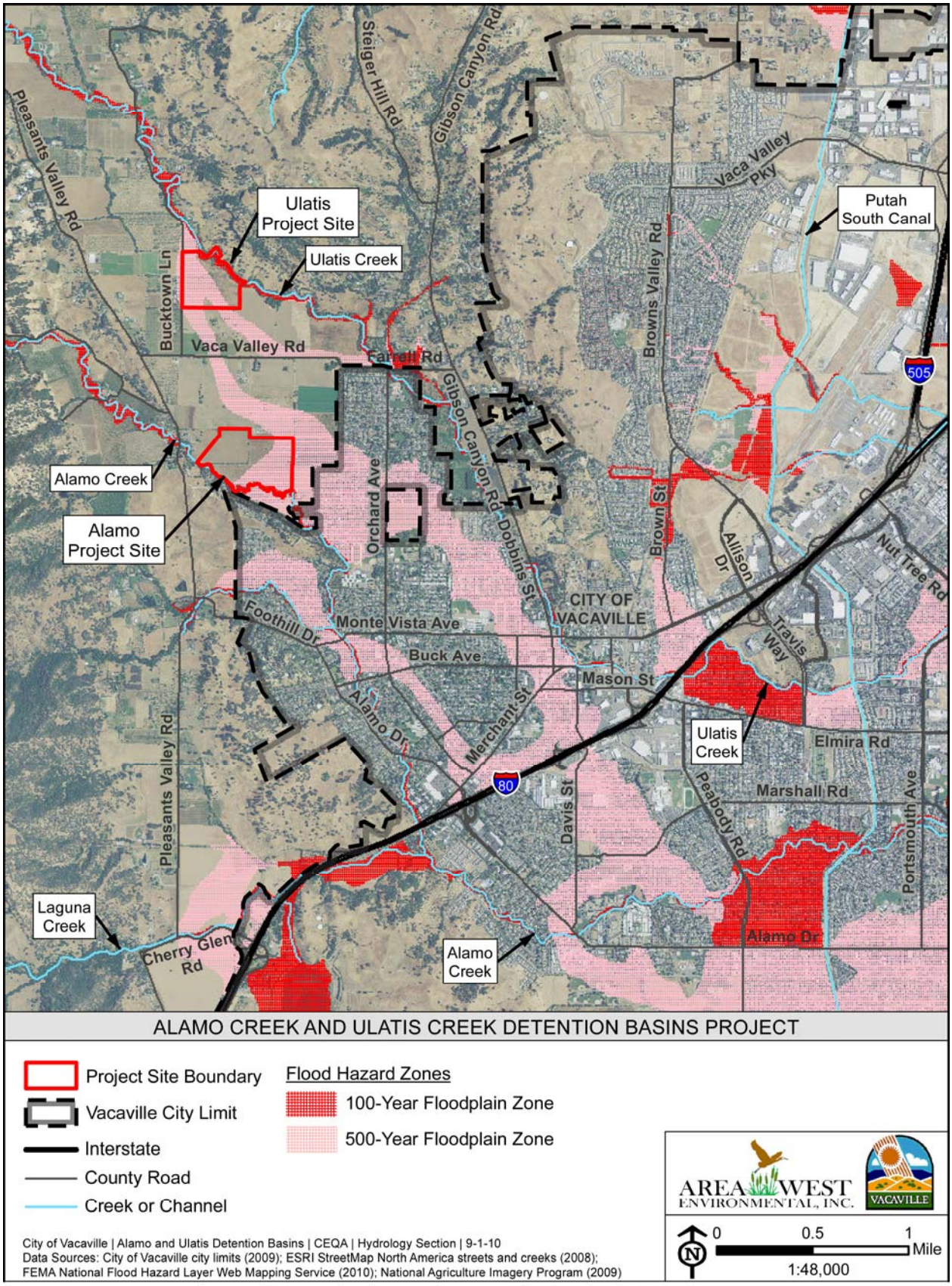

Figure 4-6.4 100-Year Floodplain Zones

Solano County General Plan

The Solano County General Plan (Solano County 2008b) contains various policies and programs to maintain, protect, and preserve water resources and quality in the County. The Solano County General Plan policies and programs relevant to water resources within the study area are listed below:

Policies

HS.P-4 Encourage the use of stormwater detention that may also be used for groundwater recharge.

HS.P-6 Work with federal, state, and local agencies to improve flood control and drainage throughout the county.

HS.P-10 Ensure that flood management policies that minimize loss of life and property also balance with environmental health considerations of the floodplain and therefore do not cause further erosion, sedimentation, or water quality problems in the floodplain area.

RS.P-65 Require the protection of natural watercourses.

RS.P-68 Protect existing open spaces, natural habitat, floodplains, and wetland areas that serve as groundwater recharge areas.

RS.P-72 Preserve riparian vegetation along county waterways to maintain water quality.

Implementation Programs

HS.I-6 Continue to make regular flood control and drainage improvements as recommended by local agency plans, the U.S. Army Corps of Engineers, and the California Reclamation Board. These actions are independent of and in addition to the development review process.

City of Vacaville General Plan

The City of Vacaville General Plan (City of Vacaville 1990) guiding and implementing policies related to water resources, hydrology and storm drainage are listed below:

Guiding Policies

3.5-G 1 Maintain open areas needed to retain stormwater and prevent flooding of urban or agricultural land.

3.5-G 3 Preserve natural creek corridors of significance to the City of Vacaville.

9.2-G 2 Continue to develop a comprehensive system of drainage improvements to minimize flood hazard.

Implementing Policies

9.2-I 1 Develop a financing plan and construct upstream detention flood basins.

4-6.3.2 Water Quality

The following regulations pertain to water quality in the study area.

4-6.3.2.1 Federal Regulation

Clean Water Act

The CWA of 1972 is the primary federal law that governs and authorizes water quality control activities by EPA, the lead federal agency responsible for water quality management, as well as the states. By employing a variety of regulatory and non-regulatory tools (establishing water quality standards, issuing permits, monitoring discharges, and managing polluted runoff), the CWA seeks to restore and maintain the chemical, physical, and biological integrity of surface waters to support "the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water." EPA is the federal agency with primary authority for implementing regulations adopted pursuant to the CWA. EPA has delegated the State of California as the authority to implement and oversee most of the programs authorized or adopted for CWA compliance through the Porter-Cologne Water Quality Control Act of 1969, described below.

Water Quality Criteria and Standards

Pursuant to federal law, EPA has published water quality regulations under Volume 40 of the Code of Federal Regulations (40 CFR). Section 303 of the CWA requires states to adopt water quality standards for all surface waters of the United States. As defined by the CWA, water quality standards consist of two elements: designated beneficial uses of the water body in question and criteria that protect the designated uses. Section 304(a) requires EPA to publish advisory water quality criteria that accurately reflect the latest scientific knowledge on the kind and extent of effects on health and welfare that may be expected from the presence of pollutants in water. Where multiple uses exist, water quality standards must protect the most sensitive use. Section 303(d) lists the water bodies and associated pollutants that exceed water quality criteria.

National Pollutant Discharge Elimination System Permit Program

A discharge from any point source is unlawful unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. In California, EPA delegates much of the implementation of the CWA to SWRCB. NPDES permits cover industrial and municipal discharges, discharges from storm sewer systems in larger cities, stormwater associated with numerous kinds of industrial activity, runoff from construction sites disturbing more than 1 acre of soil, mining operations, and animal feedlots and agricultural facilities above certain thresholds. Stormwater discharges from both large and small construction sites are now subject to NPDES requirements. Large construction sites are those that involve 5 or more acres of soil disturbance.

SWRCB has issued an NPDES general permit for discharges of stormwater associated with construction activity (General Construction Permit) under the CWA. The permit requires the preparation of a Stormwater Pollution Prevention Plan (SWPPP) for proposed construction activities of greater than 1 acre. A SWPPP is an operational plan that identifies and describes the Best Management Practices (BMPs) to be implemented at the construction site to control pollution from stormwater runoff. Since March 10, 2003, small construction sites (those involving disturbance of less than 1 acre of soil) have also required an NPDES permit as part of Phase II of EPA's NPDES Stormwater Program. The Phase II requirements also impose new obligations on municipal separate storm sewer systems (MS4s). Small

MS4s (i.e., those located in an incorporated city or a county of less than 100,000 people) that are located within urbanized areas as defined by the U.S. Census must now be covered by a NPDES permit.

Antidegradation Policy

The federal antidegradation policy, established in 1968, is designed to protect existing uses and water quality and national water resources. The federal policy directs states to adopt a statewide policy that includes the following primary provisions:

- Existing in-stream uses and the water quality necessary to protect those uses shall be maintained and protected;
- Where existing water quality is better than necessary to support fishing and swimming conditions, that quality shall be maintained and protected unless the state finds that allowing lower water quality is necessary for important local economic or social development; and
- Where high-quality waters constitute an outstanding national resource, such as waters of national and state parks, wildlife refuges, and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.

Section 303(d) Impaired Waters List

Under Section 303(d) of the CWA, states are required to develop lists of water bodies that would not attain water quality objectives after implementation of required levels of treatment by point-source dischargers (municipalities and industries). Section 303(d) requires that the state develop a total maximum daily load (TMDL) for each of the listed pollutants. The TMDL is the amount of loading that the water body can receive and still be in compliance with water quality objectives. The TMDL is also a plan to reduce loading of a specific pollutant from various sources to achieve compliance with water quality objectives. The TMDL prepared by the state must include an allocation of allowable loadings to point and nonpoint sources, with consideration of background loadings and a margin of safety. It must also include an analysis that shows the linkage between loading reductions and the attainment of water quality objectives. EPA must either approve a TMDL prepared by the state or disapprove the state's TMDL and issue its own. NPDES permit limits for listed pollutants must be consistent with the waste-load allocation prescribed in the TMDL. The goal of the TMDL program is that, after implementation for a given pollutant on the Section 303(d) list, the causes that led to placement of the pollutant on the list would be reduced or eliminated such that the pollutant would no longer be a significant impact on water quality.

The portions of Alamo Creek and Ulatis Creek within the legal Sacramento-San Joaquin Delta (the lower reaches of these creeks, east of the City of Vacaville) are considered impaired for unknown toxicity, mercury, dichlorodiphenyltrichloroethane (DDT), electrical conductivity, chlorpyrifos, diazinon, and Group A Pesticides.

National Toxics Rule and California Toxics Rule

The National Toxics Rule (NTR) was issued by EPA on December 22, 1992, and amended on May 4, 1995, and November 9, 1999, to establish numeric criteria for priority toxic pollutants for California. The NTR established water quality criteria for 42 pollutants that were not covered under California's statewide water quality regulations. As a result of a court-ordered revocation of California's statewide water quality control plan for priority pollutants in September 1994, EPA initiated efforts to issue additional numeric water quality criteria for California. On May 18, 2000, EPA issued the California Toxics Rule (CTR), which established numeric criteria for priority pollutants not included in the NTR; the CTR was amended on February 13, 2001. The CTR documentation (Federal Register, Volume 65,

page 31682) carried forward the previously established criteria of the NTR, thereby providing a single document listing California's fully adopted and applicable water quality criteria for priority pollutants.

4-6.3.2.2 State Regulation

The Central Valley RWQCB has adopted a Water Quality Control Plan for the Central Valley—Sacramento and San Joaquin River Basins—Region 5 (Basin Plan) to identify and protect beneficial uses of surface waters in the region (RWQCB 2007). The Basin Plan sets forth beneficial uses and numeric water quality objectives for surface water in the project vicinity. Beneficial uses serve as the basis for determining the water quality criteria needed to protect or enhance the uses. In general, beneficial uses are those uses, users, or activities that benefit from the presence of the water and could be adversely affected if water quality were degraded. Existing beneficial uses of the receiving waters within the project vicinity are identified in Table 4.6-1.

SWRCB has adopted a General NPDES permit for construction activities. The construction general permit requires applicants whose projects result in soil disturbance of 1 acre or more to obtain coverage by submitting a Notice of Intent and a SWPPP to RWQCB. For discharges to land, such as for irrigation, applicants are required to file a report of waste discharge with the local RWQCB and obtain waste discharge requirements. The RWQCB issued Order No. 2009-0009 –DWQ, a general NPDES permit to the City on July 1, 2010.

4-6.3.2.3 Local Plans and Policies

The following local planning documents contain policies related to water quality in the study area.

Solano County General Plan

The Solano County General Plan (Solano County 2008b) contains various policies and programs to maintain, protect, and preserve water resources and quality in the County. The Solano County General Plan policy relevant to water quality within the study area is listed below:

Policies

HS.P-10 Ensure that flood management policies that minimize loss of life and property also balance with environmental health considerations of the floodplain and therefore do not cause further erosion, sedimentation, or water quality problems in the floodplain area.

City of Vacaville General Plan

The City of Vacaville General Plan (City of Vacaville 1990) contains the following relevant guiding and implementing policies related to water resources and water quality:

Guiding Policies

8.1-G 4 Preserve and protect water resource areas, including the Alamo, Encinosa, Gibson and Ulatis Creek watersheds.

Implementing Policies

8.1-I 3 Discourage culverting of creeks of significance to the City.

4-6.3.3 Hazardous Materials

The following regulations address agricultural well abandonment, lead in soil and septic tank removal.

4-6.3.3.1 Federal Regulation

The following federal regulations pertaining to hazardous material are applicable to the Proposed Project.

- The Resource Conservation and Recovery Act (RCRA) regulates the potential health and environmental problems associated with hazardous and non-hazardous waste. This law is implemented through 40 CFR Part 260 (et seq.) Subtitle C. RCRA controls the generation, transportation, treatment, storage, and disposal of hazardous waste and applies to all states and to all hazardous waste generators.
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Superfund Amendments and Reauthorization Act (SARA), an amendment to CERCLA, identify requirements for planning, reporting, and notification concerning hazardous materials and hazardous material releases into the environment. SARA and CERCLA regulations are presented in 40 CFR Parts 305 through 355.Occupation Safety and Health Act (OSHA) hazardous material regulations govern worker safety. Separate OSHA standards have been developed for construction and operations workers. Generally, 29 CFR Part 1926 governs construction worker safety.
- The U. S Department of Transportation (DOT) regulations address the interstate transport of hazardous materials and wastes through implementation of the Hazardous Materials Transportation Act (HMTA).
- Title X of the Toxic Substances Control Act addresses lead in soil associated with residential structures and authorizes the EPA to develop methodologies for detecting, assessing risk, and cleaning up soils affected by lead.

4-6.3.3.2 State Regulation

The following state regulations pertaining to hazardous material are applicable to the Proposed Project.

- California Department of Toxic Substance Control (DTSC) is responsible for regulating hazardous waste facilities (facilities that generate, treat, store, or dispose of hazardous waste) and overseeing the cleanup of hazardous waste sites in California.
- California statutes and regulations on hazardous materials and waste are contained in the Health and Safety Code Section 25100 and Title 22 CCR, which contain regulations adopted and administered by DTSC.
- California laws and regulations associated with the storage, handling, use, and/or disposal of hazardous materials are provided in various California Health and Safety Code (H&SC) and CCRs. Consistent with RCRA, California has developed its own hazardous waste control program through the passage of the California Hazardous Waste Control Law (HWCL). It should be noted that the HWCL includes hydrocarbon waste (e.g., oils, lubricants, and greases) that are not classified as hazardous waste under the federal RCRA regulations. This regulation is found in H&SC, Section 25100 (et seq.). Administration and enforcement of the HWCL is through DTSC.
- The California Unified Hazardous Waste and Hazardous Material Management Regulatory Program Act was established in Chapter 6.11, Division 20, Section 25404 of the H&SC. This program establishes requirements for dealing with hazardous waste locally by creating the

Certified Unified Program Agency (CUPA). This responsibility is delegated through a Memorandum of Understanding (MOU) between the California EPA and the local agency. The main CUPA agency for the City of Vacaville is the Solano County Department of Resource Management.

- The California DTSC has identified a human health screening level (CHHSL) for lead in soil of 80 mg/kg for residential soils and 320 mg/kg for commercial/industrial soils.

4-6.3.3.3 Local Regulation

Solano County

Under the Solano County Local Oversight Program, well permits must be obtained that specify appropriate closure procedures. Well closure should be done under the supervision of an appropriate licensed professional such as a professional engineer or professional geologist in accordance with section 3065 of the Professional Standards & Code of Professional Conduct [Title 16, Division 29, Article 5].

Chapter 13, Section 13.10-10 of the Solano County Code discusses well destruction standards and requires wells to be destroyed in such a manner that the ground water of the county will not be contaminated or polluted (Ord. No. 1348, §1.). The Vacaville Municipal Code at Chapter 13.18 Well Regulation and Monitoring has adopted the Solano County code.

Article 8 of Chapter 6.4 of the Solano County Code at Section 6-4.85 identifies destruction of tanks associated with onsite sewage treatment systems, such as septic tanks.

City of Vacaville

The Safety Element of the City of Vacaville General Plan (City of Vacaville 1990) contains the following policies relating to hazards and hazardous materials that are applicable to the Proposed Project.

Guiding Policies

9.4-G 1 Work with Solano County and other public agencies to inform consumers about household use and disposal of hazardous materials.

9.4-G 2 Cooperate with Solano County on implementation of the Hazardous Waste Management Plan and review proposals for hazardous waste facilities for consistency with that Plan.

Implementing Policies

9.4-I 1 Do not encourage industries which rely extensively on use of hazardous materials unless an acceptable use, storage and disposal program is approved by the appropriate agencies.

9.4-I 2 Ensure that development proposals involving hazardous waste facilities are consistent with the Solano County Hazardous Waste Management Plan.

4-6.4 SIGNIFICANCE CRITERIA

This section lists the significance criteria used to determine the severity of potential impacts. An impact to hydrology and water quality, as identified by the State CEQA Guidelines (Appendix G), is considered significant if the Proposed Project would:

- Violate any water quality standards or waste discharge requirements;
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of preexisting nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted);
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or offsite;
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or offsite;
- Create or contribute runoff water, which would exceed the capacity of existing or planned stormwater drainage systems, or provide substantial additional sources of polluted runoff;
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;
- Place within a 100-year flood hazard area structures, which would impede or redirect floodflows;
- Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam; or
- Expose people or structures to inundation by seiche, tsunami, or mudflow.

An impact to hazards and hazardous materials, as identified by the State CEQA Guidelines (Appendix G), is considered significant 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;
- Create a significant hazard to the public or environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- Emit hazardous emissions 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, would it create a significant hazard to the public or environment;
- For a project within the vicinity of a private airstrip, 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; or

- Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wild lands are adjacent to urbanized areas or where residences are intermixed with wildlands.

No impacts have been identified for the following criteria:

- **Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level**.

  Surface water would be detained temporarily in the stormwater basins and would then be slowly released. Groundwater supplies and recharge would not be affected by this activity.

- **Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation.**

  The Proposed Project would have a beneficial impact on local drainage patterns. Both detention basins have been sized to handle the stormwater volume generated from a 100 year, 24-hour storm event. During periods of high flow, the proposed detention basins would alter the existing drainage pattern to store flood flows, reducing flows through downstream reaches of Ulatis and Alamo Creeks, and reducing the potential for these creeks to overtop their banks and flood adjacent residential development. When stream capacity permits, flood flows would be metered back into the creek. The Proposed Project would detain peak storm flows in an off-line facility with the intent to reduce damaging flood volume and velocity, thereby reducing downstream erosion and flood potential. Sediment is expected to settle out and remain in the basins, thus the Proposed Project would reduce offsite, downstream siltation. The Proposed Project helps maintain the capacity of the City's storm drain system by detaining a percentage of flood flow during peak storm events. Since the project is intended to improve conditions described in this significance threshold, it is not necessary to analyze this issue further in this EIR.

- **Potential to create or contribute runoff water, which would exceed the capacity of existing or planned stormwater drainage systems or provide sources of polluted runoff.**

  Project construction and operation would not create or contribute additional runoff water. Stormwater detention from the Proposed Project is expected and intended to result in the detention of water. If basins reach capacity during extraordinary peak storm events, the creek will be flowing at flood stage or above and the runoff exiting the basin at the spillway will result in a pre-project storm runoff condition that would be no greater than what would occur if there were no detention basin.

- **Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.**

  The Proposed Project does not include the construction or relocation of housing.

- **Place within a 100-year flood hazard area structures, which would impede or redirect flood flows.**

  With the exception of detention basin berm and inlet and outlet structures, no structures would be constructed as part of the Proposed Project. The basins, including the inlet and outlet structures are intended to reduce downstream flooding by temporarily detaining peak flood flows.

- **Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.**

  The Proposed Project would detain peak storm flows in an "off-line" facility with the intent to reduce downstream erosion and flooding. The Proposed Project is designed to reduce floodflows by capturing and slowing their release. Although floodflows would be redirected to a detention basin by the Proposed Project, it would not adversely impede these flows because flows would be detained in the basins and then slowly released. The Proposed Project would be constructed to reduce significant risk of loss, injury, or death from flooding. The construction design of the detention basin berms is subject to review and permit by the Department of Water Resources, Division of Safety of Dams which will impose design standards specifically intended to address safety issues.

- **Expose people or structures to inundation by seiche, tsunami, or mudflow.**

  The Proposed Project sites are not located near the ocean and, as a result, would not be subject to flood-related effects associated with a tsunami. Although the Proposed Project would construct onsite detention basins, these bodies of water would be about 20 feet deep, would be at maximum depth for a small amount of time, and are of limited size (i.e., 50 and 79 acres) such that the potential for an atmospherically induced seiche would be limited and would not result in a substantial flooding on- or offsite. The Proposed Project sites are in topographically flat areas not subject to mudslides. These impacts are not evaluated further in this EIR.

- **Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances or waste within one-quarter mile of an existing or proposed school.**

  The Proposed Projects would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste. Therefore, these impacts are not evaluated further in this EIR. The nearest school, the Willis Jepson Middle School, is approximately 0.4 mile southeast of the Propose Project.

- **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, would it create a significant hazard to the public or environment.**

  The Phase I Environmental Site Assessments did not identify either Proposed Project site as being on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. These impacts are not evaluated further in this EIR.

- **For a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area.**

  The Proposed Project sites are not within the vicinity of a private airstrip. These impacts are not evaluated further in this EIR.

- **Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.**

  The Proposed Project sites would not impair implementation of or physically interfere with an adopted emergency response plan or evacuation plan. Trucks would transport excavated soil along routes identified in the Traffic section; however, the additional traffic generated would not impede any emergency or evacuation or response in the area. These impacts are not evaluated further in this EIR.

- **Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.**

  The Proposed Project sites are within rural and agricultural areas in Solano County and not near wildlands. Basin maintenance would result in minimized vegetation growth and potential for fires. These impacts are not evaluated further in this EIR.

4-6.5 IMPACTS AND MITIGATION MEASURES OF THE PROPOSED PROJECT

For purposes of assessing impacts on water resources within the study area, this section includes an analysis of impacts associated with the Alamo and Ulatis sites. This impact analysis assumes that water resources could be directly or indirectly affected by excavation of the detention basins, construction of inlet weirs and outfall pipes, maintenance of the detention basin facility, incidental public access to the basins, and potential agricultural use.

4-6.5.1 Potential to Violate Any Water Quality Standards or Waste Discharge Requirements

IMPACT 6-1: VIOLATION OF WATER QUALITY STANDARDS OR WASTE DISCHARGE REQUIREMENTS

Grading, earthmoving, excavation, and berm construction under the Proposed Project would disturb the existing vegetation cover, soil, and drainage systems of more than 1 acre of land. Construction activities would occur on portions of each Project site over a period of 15 months; therefore, the sites would be subject to exposure to wind erosion, rain, and winter stormwater runoff events depending on the season. Intense rainfall and associated stormwater runoff could result in short periods of sheet erosion within areas of exposed or stockpiled soils. If uncontrolled, these soil materials could cause sedimentation and blockage of drainage channels. Further, the compaction of soils by heavy equipment may reduce the infiltration capacity of soils and increase the potential for runoff and erosion. Construction activities could result in substantial stormwater discharges of suspended solids, turbidity, and other pollutants from the project construction site as contaminated runoff or direct discharges to the adjacent creek. Construction-related chemicals (fuels, paints, adhesives, etc.) could be washed into surface waters by stormwater runoff. The deposition of pollutants (gas, oil, hydrocarbons) onto the ground surface by construction vehicles could similarly result in the transport of pollutants to surface waters by stormwater runoff or in seepage of such pollutants into groundwater.

Non-stormwater discharges could result from activities such as construction dewatering procedures, or discharge or accidental spills of hazardous substances such as fuels, oils, concrete, or other construction materials. Because of the shallow groundwater conditions at the Alamo Creek Site, construction dewatering activities may be necessary during excavation activities deeper than 17 feet (Paragon Geotechnical 2009). Potential disposal options for the dewatering discharges include land application with subsequent evaporation and percolation back to the groundwater, use of dust-control practices, or

direct discharge to the existing or constructed stormwater drainage channels. Dewatering discharges may contain elevated levels of suspended sediment or other construction-related contaminants.

Because construction activities could temporarily result in the substantial increase in discharge of pollutants to onsite stormwater from proposed construction activities, the project could result in potentially ***significant*** short-term construction-related water quality standard violations. Implementation of Mitigation Measure 6-1 would reduce this impact to a ***less-than-significant*** level.

MITIGATION MEASURE 6-1: ACQUIRE APPROPRIATE STORMWATER PERMITS FOR CONSTRUCTION ACTIVITY AND IMPLEMENT A SWPPP

The City shall consult with the Central Valley RWQCB to acquire the appropriate regulatory approvals that may be necessary to obtain SWRCB statewide NPDES stormwater permit for general construction activity, Central Valley RWQCB NPDES permit for construction dewatering activity, and any other necessary site-specific waste discharge requirements.

As required under the NPDES stormwater permit for general construction activity, the City shall prepare and submit the appropriate Notice of Intent and prepare the SWPPP and other necessary engineering plans and specifications for pollution prevention and control. The SWPPP and other appropriate plans shall be implemented by the City and shall identify and specify the use of erosion sediment control BMPs, means of waste disposal, implementation of approved local plans, non-stormwater management controls, permanent post-construction BMPs, and inspection and maintenance responsibilities. The SWPPP shall also specify the pollutants that are likely to be used during construction and that could be present in stormwater drainage and non-stormwater discharges. A sampling and monitoring program shall be included in the SWPPP that meets the requirements of SWRCB Order 2009-0009-DWQ to ensure the BMPs are effective.

The SWPPP shall identify construction techniques that would reduce potential runoff and identify the erosion and sedimentation control measures to be implemented. The SWPPP shall also specify spill prevention and contingency measures, identify the types of materials used for equipment operation, and identify measures to prevent or clean up spills of hazardous materials used for equipment operation and hazardous waste. Emergency procedures for responding to spills shall also be identified. BMPs identified in the SWPPP shall be used in subsequent site development activities. The SWPPP shall identify personnel training requirements and procedures to ensure that workers are aware of permit requirements and proper installation and performance inspection methods for BMPs specified in SWPPP. The SWPPP shall also identify the appropriate personnel responsible for supervisory duties related to implementation of the SWPPP. All construction contractors shall retain a copy of the approved SWPPP on the construction site.

IMPACT 6-2: POTENTIAL TO SUBSTANTIALLY INCREASE THE RATE OR AMOUNT OF SURFACE RUNOFF THAT WOULD RESULT IN FLOODING

Project operation is designed to reduce downstream flooding. If the design water acceptance rates of the basins are exceeded or the basins fill to capacity, downstream flooding may occur at a rate similar to existing conditions. Project construction and operation would however not result in substantial increases in the rate or amount of surface runoff because the Proposed Project is designed to temporarily detain stormwater and reduce downstream flooding. Therefore, this impact is less than significant and no mitigation is required.

There is a potential for the Proposed Project to affect the overland drainage from adjacent properties that passes through the sites on its way to the creeks. The potential obstruction of existing overland flow through ditches and across fields could result in increased flooding on adjacent properties. The City will comply with flood control regulations and will incorporate intercepting drainage facilities around the perimeter of the detention basin berms as needed to accept existing drainage from adjacent property and direct it to the historic downstream outfall. Since overland drainage will be accepted and redirected, there will be no potential for increased flooding. This impact is ***less than significant*** and no mitigation is required.

IMPACT 6-3: WATER QUALITY DEGRADATION FROM FERTILIZERS OR HERBICIDES DURING FARMING ACTIVITIES

The basin floors may be cultivated on an annual basis for hay production. The use of fertilizers or herbicides associated with typical hay production activities could potentially affect water quality in the adjacent creeks. The basins are considered urban storm drainage facilities that are covered under the provisions of the City's MS4 permit. Although not directly applicable to facilities operated under an MS4 permit, the Central Valley RWQCB recognizes the potential for violations of water quality criteria via discharges from agricultural operations through its adoption of order R5-2006-0054, Individual Discharger Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands. The threat of agricultural chemicals such as fertilizers, pesticides, and herbicides to water quality would be a ***significant*** impact. Implementation of Mitigation Measure 6-3 would reduce this impact to a ***less-than-significant level***.

MITIGATION MEASURE 6-3: PROHIBIT AGRICULTURAL CHEMICAL USE

The City will prohibit the use of chemicals during agricultural operations within the basins. City stormwater facilities will be operated in a manner consistent with the City's Stormwater Management Plan and Pollution Prevention Program for compliance with the MS4 program.

IMPACT 6-4: POTENTIAL HAZARD TO THE PUBLIC OR ENVIRONMENT FROM ACCIDENTAL SPILLS OF PROJECT-RELATED HAZARDOUS MATERIALS

Gasoline and diesel fuel would be used to power equipment during short-term time periods during construction and maintenance activities. Equipment refueling would occur off-site to the greatest extent practical. Any gasoline and diesel fuel stored at the site will be in small quantities (e.g., 5 to 10 gallons). Therefore, a spill of these materials will be localized and easily cleaned up. Consequently, small quantities of hazardous material used or stored at the site would represent a ***less-than-significant impact***.

IMPACT 6-5: HAZARD TO CONSTRUCTION WORKERS OR ENVIRONMENT FROM LEAD AT THE ALAMO DETENTION BASIN BURN AREA

The Alamo Detention Basin Phase II Environmental Site Assessment concluded that based on the available data and records the proposed project development poses a low environmental risk related to historic onsite activities (Dunn Environmental 2010). The former farm house was burned for fire training

exercises and the burned remains were sampled for metals. Analytical results identified elevated levels of lead in the burn area soil as high as 580 mg/kg, which exceeds the California DTSC human health screening level (CHHSL) for lead in soil of 80 mg/kg for residential soils and 320 mg/kg for commercial/industrial soils. Exposure to these levels would be ***a significant impact***. Implementation of Mitigation Measure 6-5 would reduce this impact to a ***less-than-significant level***.

MITIGATION MEASURE 6-5: REMOVE THE BURN AREA AT THE ALAMO DETENTION BASIN PRIOR TO CONSTRUCTION

The City shall remove the burn area at the Alamo site prior to basin construction and dispose of materials in accordance with CCR Title 8 and 22 CCR Division 4.5, which regulates generators, transporters, and land disposal of hazardous wastes. Such removal shall be completed prior to grading activities in the construction phase.

IMPACT 6-6: POTENTIAL HAZARD TO THE ENVIRONMENT FROM WELLS AND SEPTIC SYSTEMS AT THE DETENTION BASINS

The Alamo Detention Basin Phase II Environmental Site Assessment (Dunn Environmental 2010) concluded that at least two wells, two septic systems and existing wire or pipeline utilities associated with the wells or septic systems are present onsite. An existing well and pipeline utility is present at the Ulatis site and will be protected and preserved in place for continued use by the neighboring property. These appurtenances could act as conduits for groundwater or surface water contamination. This would be a ***significant impact***. Implementation of Mitigation Measure 6-6 to properly abandon wells and septic systems would reduce this impact to a ***less-than-significant level***.

MITIGATION MEASURE 6-6: ABANDON WELLS AND SEPTIC SYSTEMS PER COUNTY REGULATIONS

The City shall abandon identified wells and any additional wells discovered during basin construction in accordance with Chapter 13, Section 13.10-10 of the Solano County Code**.** The City shall obtain well permits prior to beginning abandonment. Drilling procedures and well design and construction must be accomplished in a manner that prevents the spread of contamination, and shall be developed by an appropriate licensed professional such as a professional engineer or professional geologist. The City shall destroy identified septic tanks and any additional septic tanks discovered during basin construction in accordance with Article 8 Section 6-4.85 of the Solano County Code that identifies destruction of tanks associated with onsite sewage treatment systems, such as septic tanks.

IMPACT 6-7: POTENTIAL HAZARD TO THE PUBLIC FROM MOSQUITOES BREEDING AT THE DETENTION BASINS

The detention basins are not intended to contain standing water for duration sufficient to cause mosquitoes to breed. If, however, standing water is present for more than one week, mosquitoes could potentially breed and cause a health hazard to the public. This would be a ***significant impac***t.

Implementation of Mitigation Measure 6-7 to control mosquitoes would reduce this impact to a ***less-than-significant*** level.

MITIGATION MEASURE 6-7: IMPLEMENT MOSQUITO VECTOR CONTROL AS REQUIRED

In the event that standing water causes mosquitoes to breed at the detention basins, the City shall coordinate with the mosquito vector control district to ensure that vector elimination procedures are followed.

4-6.6 CUMULATIVE IMPACTS AND MITIGATION MEASURES

The cumulative context for hydrology, water quality, and hazardous materials is the unincorporated area of Solano County. Cumulative impacts of development on hydrology, water quality, and hazards and hazardous materials within Solano County, including the City, were evaluated in the Solano County Draft General Plan EIR (General Plan EIR) (Solano County 2008a). The General Plan EIR examined impacts on hydrology, water quality, and hazards and hazardous materials from various development scenarios and included consideration of City and countywide stormwater management.

IMPACT 6-8: CUMULATIVE CONTRIBUTION TO IMPACTS ON HYDROLOGY, WATER QUALITY, AND HAZARDS AND HAZARDOUS MATERIALS

The Proposed Project is being implemented consistent with plans and policies considered in both the City of Vacaville General Plan and the Solano County General Plan EIRs. The Proposed Project is consistent with and implements the SCWA Ulatis System Drainage study (West Yost Associates 2008), and the City's Storm Drainage Master Plan, which were prepared to identify and evaluate flood control alternatives that will reduce or eliminate the flooding from moderate to large storms within the Ulatis Creek System, particularly within the City. The Proposed Project will comply with the NPDES requirements and hazardous material policies; therefore, the cumulative impacts on hydrology, water quality, and hazards and hazardous materials of the Proposed Project would be ***less-than-significant***.