3.8 - Hydrology and Water Quality

3.8.1 - Introduction

This section describes the existing hydrology and water quality setting and potential effects from project implementation on the site and its surrounding area. Descriptions and analysis in this section are based on information provided by the California Irrigation Management Information System, City of Vallejo General Plan, the Federal Emergency Management Agency, and the Solano360 Public Draft Specific Plan dated November 9, 2012.

3.8.2 - Environmental Setting

The environmental setting of the proposed project, including hydrology and water quality character, regional setting, project site, and surrounding area is discussed below.

Hydrology and Water Quality Character

Significant hydrology and water quality characteristics identified with this section include climate, surface water resources and quality, groundwater resources and quality, and flooding and flood control. Details concerning each of these topical areas are provided below.

Regional Setting

The project site is located within the San Francisco Bay Hydrologic Region, specifically in the Napa River Sub-Area. The project site is located in the Lake Chabot watershed.

Project Site

Four creeks currently cross the fairgrounds property including North, Central and South Rindler Creeks and Blue Rock Springs. North Rindler Creek crosses the northwest corner of the property in an underground pipe and discharges into Lake Chabot. Central Rindler Creek enters the property near the northeasterly corner and wraps around the south end of the site in a man-made open channel prior to discharging into Lake Chabot. The channel is commonly referred to as the "Fairgrounds Channel." South Rindler Creek and Blue Rock Springs enter the property near the southeast corner and connect to the Fairgrounds Channel (Mackay and Somps, 2011). Prior to development of the original fairgrounds, Central Rindler Creek crossed the property from east to west and discharged directly into Lake Chabot. Central Rindler Creek was realigned in a man-made channel as part of the fairgrounds development circa 1950.

Surrounding Area

Lake Chabot receives stormwater runoff from the creeks as well as runoff from the Fairgrounds property. Offsite flooding issues have been identified on Coach Lane and at the Newell Mobile Homes located south of the site.

Climate

The City of Vallejo is located at 60 feet above mean sea level and has a climate that is influenced by its topography and proximity to the coast. Average temperatures are as follows: 47.0 degrees Fahrenheit (°F) in the winter, 58.2°F in the spring, 70.3°F in the summer, and 62.9°F in the fall.

The California Irrigation Management Information System (CIMIS) Station #109, Carneros Station, is located roughly 8.8 miles northwest of the project site. According to data obtained from CIMIS, the majority of precipitation occurs in the winter and early spring months of November through March, with a Mean Annual Precipitation (MAP) of approximately 22.36 inches. Summers are essentially dry and evapotranspiration exceeds precipitation in all months, with the exception of months November through February. Average annual temperature at the Carneros Station is 56.07 degrees Fahrenheit. Average monthly rainfall, evapotranspiration, and temperature data for the period March 1993 through April 2007, is presented in Table 3.8-1 and is the most current information available from CIMIS.

Table 3.8-1: Mean Monthly Rainfall, Temperature, and Evapotranspiration Values for CIMIS Station #109, Carneros

Month	Precipitation[b] (Inches)	Temperature[b] (ºF)	Evapotranspiration[b] (inches)	Net Precipitation (inches)
October	0.71	58.1	3.3	-2.60
November	2.76	51.2	1.7	1.10
December	4.50	46.9	0.9	3.60
January	4.11	47.1	1.2	2.90
February	4.18	49.7	1.8	2.41
March	2.51	52.7	3.3	-0.74
April	1.49	54.3	4.4	-2.92
May	1.08	58.8	5.8	-4.69
June	0.89	62.9	6.8	-5.91
July	0.00	64.2	6.9	-6.90
August	0.06	64.2	6.0	-5.93
September	0.06	62.7	4.8	-4.74
Total	22.36	—	46.8	-24.43

Notes:
[a] The Carneros Station is located approximately 8.8 miles from the project site, roughly along the same 22-inch isohyet (SCWA 1999).
[b] The period of record for this analysis is March 1993 through April 2007.
Source: CIMIS, 2011.

Surface Water Resources and Quality

Resources

The project site is located within the San Francisco Bay Hydrologic Region, specifically in the Napa River Sub-Area. As stated above, the project site is located within the 4,700-acre Lake Chabot watershed, which is approximately 7.3 square miles. Lake Chabot is a recreational lake that is managed by the Greater Vallejo Recreation District (GVRD). According to the GVRD, the lake is stocked for fishing, but swimming is not permitted. The lake also serves as a detention basin. The southern shoreline of Lake Chabot is located in Dan Foley Park, and the northern shore is within Six Flags Discovery Kingdom. Blue Rock Springs Creek discharges into Rindler Creek, which flows into the southeast side of Lake Chabot. A dam is located on the northwest side of the lake, where Chabot Creek discharges from the lake over the dam spillway when the water surface elevation rises above the spillway invert. Chabot Creek discharges into the mouth of the Napa River north of Mare Island Strait, and Mare Island Strait discharges into the San Pablo Bay at its confluence with the Carquinez Strait.

Although Lake Chabot and its tributaries are not listed on the 2006 303(d) list of impaired water bodies, Lake Chabot is monitored by the State's Toxic Substances Monitoring Program. The Toxic Substances Monitoring Program was developed to provide a consistent statewide approach to the detection and evaluation of the occurrence of toxic substances in fresh, estuarine, and marine waters of the State through the analysis of fish and other aquatic life.

Because of issues related to legacy pesticides (chlordane, DDT, dieldrin), dioxin and furan compounds, mercury, polychlorinated biphenyls, selenium, and nickel, the San Pablo Bay is on the 2006 303(d) list.

Surface water to the site is supplied by runoff from precipitation during the winter and spring months. Stormwater enters the project area from the four creeks identified above including North, Central and South Rindler Creek and Blue Rock Springs.

Groundwater Resources and Quality

Resources

In total, 28 groundwater basins have been identified in the San Francisco Bay Hydrologic Region. The groundwater basins underlie approximately 1,400 square miles (896,000 acres), accounting for approximately 5 percent of the region's average water supply for agricultural and urban uses, and they account for less than 1 percent of the statewide groundwater uses.

The project site is located in the Napa-Sonoma Volcanic Highlands groundwater source area. The City of Vallejo does not use local groundwater for water supply. During drilling, groundwater was initially encountered at 14 feet, 14.5 feet, 18 feet, and 19 feet.

Basin Boundaries and Hydrology

The proposed development area is located in the San Francisco Bay Hydrologic Region, specifically in the Napa-Sonoma Volcanic Highlands subbasin. The region, which covers approximately 4,500 square miles (2.88 million acres), includes all of San Francisco and portions of Marin, Sonoma, Napa, Solano, San Mateo, Santa Clara, Contra Costa, and Alameda counties. The main boundaries of the region are Mount Saint Helena to the north; the Mayacamas Mountains to the west; Howell Mountain, Atlas Peak, and Mount George to the east; and Napa-Sonoma Marsh to the south.

The Napa River serves as the central spine of the San Francisco Bay Hydrologic Region, and runs for approximately 55 miles from its headwaters originating in Mount Saint Helena to its discharge in the San Pablo Bay. Major tributaries of the Napa River include the Conn, Rector, Soda, Milliken and Dry creeks.

Except for the Vaca Mountains and Montezuma Hills, the topography of Solano County is relatively flat and divided into three main watersheds: the Napa River watershed, Putah Creek/Lake Berryessa watershed, and Suisun Creek watershed. The proposed site is located within the Napa River watershed.

Napa River Watershed

The Napa River is bounded on the north by Mount Saint Helena; the Napa-Sonoma Marsh to the south; the Mayacamas Mountains to the west; and Howell Mountain, Atlas Peak, and Mount George to the east. The Napa River Watershed encompasses about 426 square miles and primarily includes a central valley floor, flanked by mountains on the east and west. Valley floor elevations range from approximately 400 feet above sea level (asl) in the north to sea level at San Pablo Bay, which is located to the south. Because of its proximity to San Pablo Bay, the lower reaches of the Napa River (and tributaries) are tidally influenced.

Approximately 1,000 natural and human made storage facilities exist in the Napa Valley. Of this number, five major reservoirs have been identified within the Napa River Watershed, including Kimball Reservoir, Bell Canyon Reservoir, Lake Hennessey, Rector Reservoir, and Milliken Reservoir. The primary capacity, source, and size of major storage facilities in the Napa River Watershed are summarized in Table 3.8-2.

Table 3.8-2: Major Storage Facilities in Napa River Watershed

Name of Storage Facility	Storage Capacity (acre/feet)	Primary Sources	Operation/Ownership
Kimball Reservoir	335	Napa River	City of Calistoga
Bell Canyon Reservoir	2,050	Bell Creek	City of Saint Helena
Lake Hennessey	31,000	Conn Creek, Sage Creek, Chiles Creek	City of Napa

Table 3.8-2 (cont.): Major Storage Facilities in Napa River Watershed

Name of Storage Facility	Storage Capacity (acre/feet)	Primary Sources	Operation/Ownership
Rector Reservoir	4,000	Rector Creek	State of California
Milliken Reservoir	2,000	Milliken Creek	City of Napa
Source: Napa County Baseline Data Report, 2005.			

Vallejo Sanitation and Flood Control District (VSFCD) provides public stormwater and drainage service for the project area. Within the site, existing stormwater and surface water runoff is collected and conveyed through a combination of drainage systems.

There are several components related to the drainage system on and around the plan area. Major components include the four existing creeks, a manmade open channel, and Lake Chabot. Other components include both public and private underground pipe systems. Public facilities are owned and maintained by the VSFCD and are located both onsite and offsite. Private facilities are owned and maintained by the County and are generally located onsite.

The existing public drainage facilities within the project area revolve around the creek systems that collect water from a much larger watershed to the north, east, and south of the site. The creeks are known as North Rindler Creek, Central Rindler Creek, South Rindler Creek, and Blue Rock Springs. As shown in Exhibit 3.8-1, the creeks converge near the plan area prior to discharging into Lake Chabot.

North Rindler Creek has been diverted into an underground pipe system that crosses under State Route 37 and discharges into Lake Chabot.

Central Rindler Creek has been diverted into a combination of underground pipes and a manmade open channel. The pipe system crosses under Interstate 80 (I-80) near the north end of the existing racetrack and discharges into an open channel known as the Fairgrounds Channel on the Fairgrounds property. The channel flows south along the east property line; then flows west along the south property line; then flows north along the west property line and eventually crosses under Fairgrounds Drive and discharges into Lake Chabot.

South Rindler Creek has also been diverted into a combination of underground pipes and a manmade open channel. The pipe system crosses under I-80 near the south end of the racetrack and then discharges into the Fairgrounds channel, which connects to Lake Chabot as described above.

Blue Rock Springs is an open channel system that flows north through the Newell Mobile Home Park and discharges into the Fairgrounds Channel near the middle of the southern plan area.

Flooding and Flood Control

Flooding

Flooding is defined as an overflowing of normally dry land, often after heavy rain. When the capacities of streams and storm drainage facilities are exceeded, flooding often occurs. Flooding events can be worsened by natural and human made activities that can limit the ability of the land to absorb rainfall. Historic offsite flooding issues have been identified on Coach Lane and at the Newell Mobile Homes located south of the site from the creeks identified above.

100-Year Flood Hazards

A 100-year flood is defined as the level of floodwater expected to be equaled or exceeded every 100 years on average. The Federal Emergency Management Agency (FEMA) provides information on flood hazard and frequency for cities and counties on its Flood Insurance Rate Maps (FIRM). According to the FIRM No. 06095C0440E, and as shown in Exhibit 3.8-2, a significant portion of the site is currently shown to be within the 100-year flood hazard area. According to the VSFCD Master Plan flood map, a different portion of the property is shown to be in the flood plain. The current effective FEMA map appears to be based on old information, while the VSFCD Master Plan is based upon more recent information. However, it is unclear if either map truly represents the existing condition. Additionally, it is unclear if either map takes the existing levee along the east side of the racetrack into account as it relates to the flood plain. Remapping the existing flood plain is beyond the scope of this Plan. However, FEMA, the City of Vallejo, and VSFCD are currently in the process of remapping the plan area. Preliminary and effective maps are anticipated to be published in October 2012 and December 2013, respectively. As of late October 2012, these updated maps were not available for review and are currently being compiled. The remapping will be based on runoff rates that are identified in the VSCFD Master Plan. Accordingly, the VSFCD District Engineer recommended using the 100-year flow rates identified in the VSFCD Master Plan as it relates to planned improvements within the plan area.

Flood Control

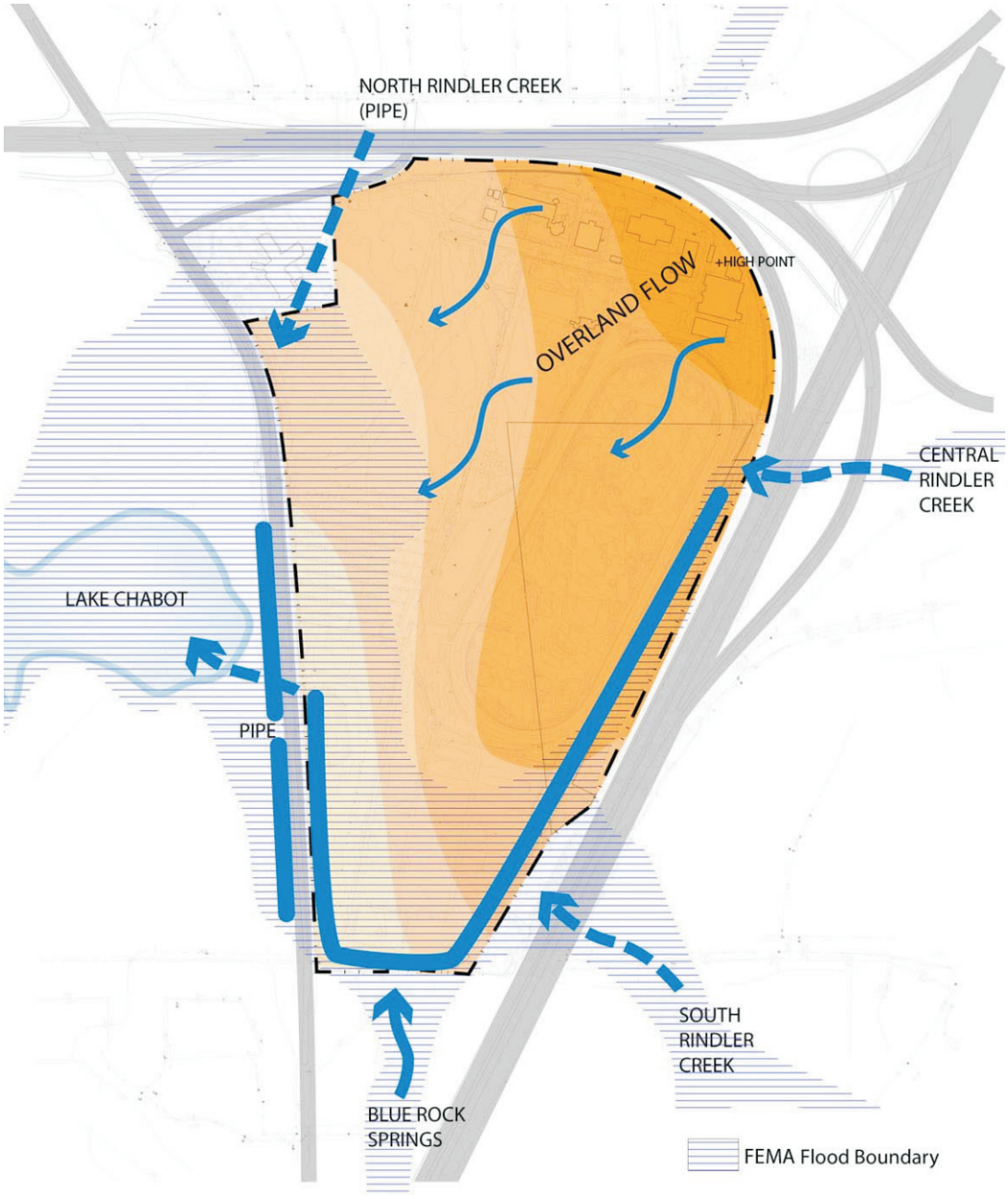
Dams and Levees

Dams

According to California Office of Emergency Services data mapped by the Association of Bay Area Governments, the project site is not located within a dam failure inundation hazard area. Additionally, the distance from the project site (approximately 5 miles) and site elevation (82 to 105 feet above mean sea level) would preclude the risk of exposure to coastal hazards such as sea level rise, extreme high tides, or tsunamis.

Levees

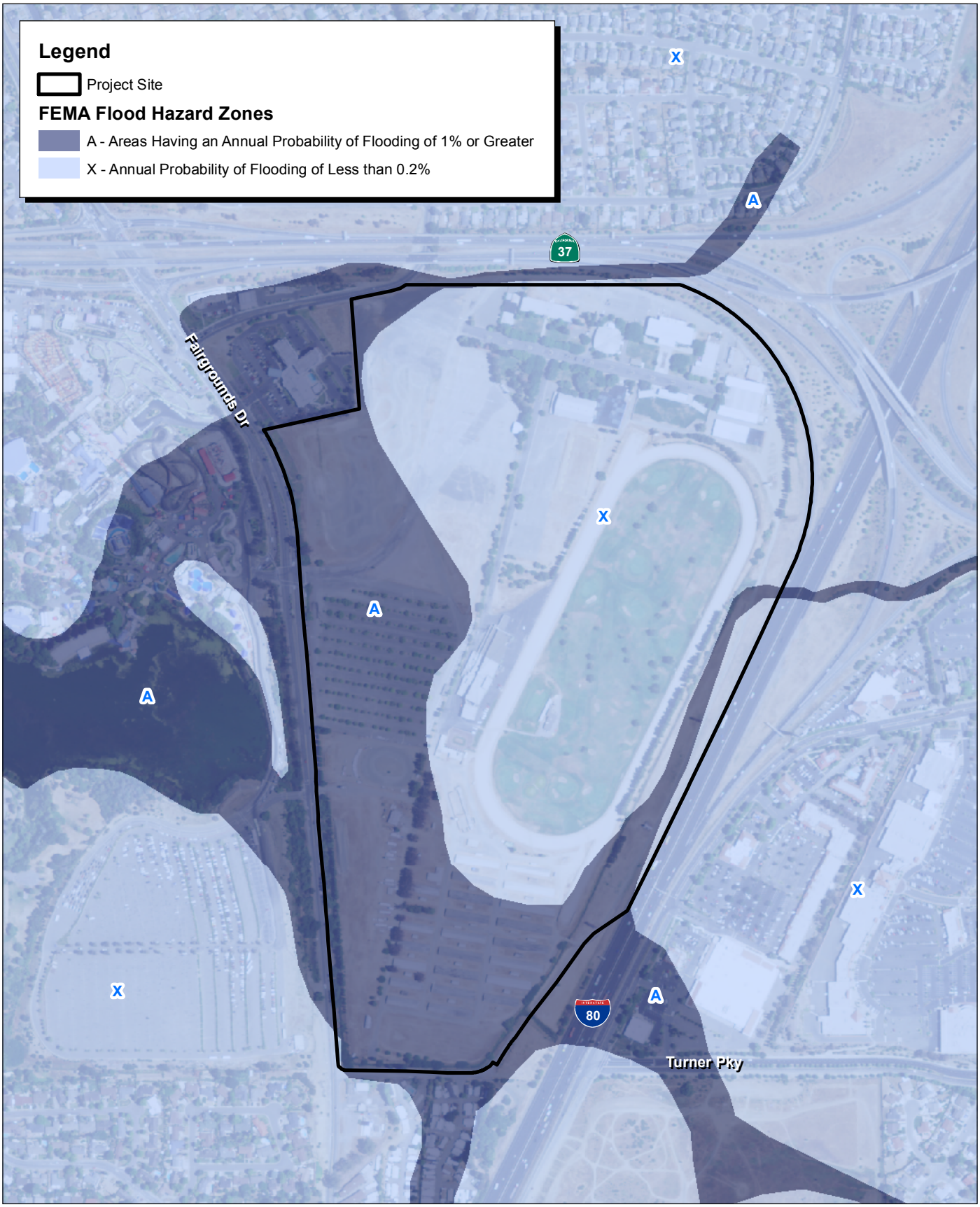
A levee currently separates the racetrack from the peripheral drainage. However, the VSFCD Master Plan does not include these levee improvements that were constructed to prevent flooding on the racetrack. In order for the levee to be taken into account in its "as-is" condition, it would need to be certified through the USACE.



Source: SWA Group, 2011.

Michael Brandman Associates

Exhibit 3.8-1
Existing Drainage Pattern



Source: Solano County NAIP, 2009. FEMA NFHL Data (November 18, 2009)

Michael Brandman Associates

NORTH

640 320 0 640

Feet

Exhibit 3.8-2
FEMA Designated Flood Hazard Zones

As of the preparation of the Plan, it is not known if the levee in its current "as-is" condition would meet these design standards. If the levee cannot meet the design standards, it would need to be reconstructed.

3.8.3 - Regulatory Framework

Federal

Clean Water Act

The federal Clean Water Act (CWA, 33 USC 1251-1376), as amended by the Water Quality Act of 1987, is the major federal legislation governing water quality. The objective of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's water." Important applicable sections of the Act are as follows:

- Sections 303 and 304 provide for water quality standards, criteria, and guidelines.
- Section 401 requires an applicant for any federal permit that proposes an activity which may result in a discharge to "waters of the United States" to obtain certification from the state that the discharge will comply with other provisions of the Act. The Regional Water Quality Control Board (RWQCB) provides certification.
- Section 402 establishes the National Pollutant Discharge Elimination System (NPDES), a permitting system for the discharge of any pollutant (except for dredge or fill material) into waters of the United States. This permit program is administered by the RWQCB, and is discussed further below.
- Section 404 establishes a permit program for the discharge of dredge or fill material into waters of the United States. The USACE administers this permit program.

State

California Water Code

Derived from several sources, including the riparian doctrine taken from English common law, Spanish pueblo rights, the appropriative doctrine of western mining and irrigation tradition, and the correlative doctrine as it related to groundwater, the California Water Code establishes the foundation for acquisition and protection of water rights. These water doctrines, with some originating hundreds of years ago, remain relevant to current water law discussions to varying extents, and they have been used by the court system over the years to resolve conflicts and establish precedents.

During the middle to late 1800s, when the mining and agricultural industries were growing throughout California, questions often arose regarding who had rights to how much water. In general, the deciding factor was who was there first. This is characterized as the appropriative doctrine of water rights: "first in time, first in right." Currently, new acquisitions of surface water are obtained under the appropriative doctrine, as constrained by the reasonable and beneficial use test and California's public trust doctrine.

Rights to groundwater are more complex and groundwater as a resource is generally considered in three separate classes: (1) as stream underflow, (2) as definite underground streams, and (3) as percolating waters. The first two are treated legally as surface water, and all underground water is considered percolating water unless proven otherwise.

Landowners whose property overlies an aquifer have rights to develop the water. That right is conditional, however, through provisions of the correlative doctrine. Under the correlative doctrine, all landowners must share scarce water resources during shortages and must limit their use to the amount of water reasonably required to meet each landowner's beneficial needs. This doctrine assumes that all landowners have similar and equal rights to the underlying groundwater.

To provide a basis for groundwater management, the California State Legislature has passed a law to allow for the creation of groundwater management districts.

Porter-Cologne Water Quality Control Act

The State of California's Porter-Cologne Water Quality Control Act (California Water Code Section 13000, et seq.) provides the basis for water quality regulation within California. The Act requires a "Report of Waste Discharge" for any discharge of waste (liquid, solid, or otherwise) to land or surface waters that may impair a beneficial use of surface or groundwater of the State. Waste Discharge Requirements (WDRs) resulting from the Report are issued by the Regional Water Quality Control Board (RWQCB).

California State Water Resources Control Board

Responsibility for administering California water rights procedures lies with the California State Water Resources Control Board (SWRCB), which also is responsible for managing and administering various federal and state water quality control programs. Procedures are provided by statute, but the board has the authority to establish rules and regulations to help it carry out its work. All board activities are governed by state water policy and are administered in accordance with policies and procedures in the California Water Code.

The SWRCB carries out its water quality protection authority through the adoption of specific Water Quality Control Plans (Basin Plans). These plans establish water quality standards for particular bodies of water. California water quality standards are composed of three parts: the designation of beneficial uses of water, water quality objectives to protect those uses, and implementation programs designed to achieve and maintain compliance with the water quality objectives.

The SWRCB recently adopted the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SWRCB 2005). This policy provides implementation measures for numerical criteria contained in the California Toxics Rule, promulgated in May 2000 by the U.S. EPA. When combined with the beneficial use designations in the Basin Plan, these documents establish statewide water quality standards for toxic constituents in surface waters.

San Francisco Bay Regional Water Quality Control Board

The SWRCB administers water rights, water pollution control, and water quality functions throughout the State, while the Regional Water Quality Control Boards conduct planning, permitting, and enforcement activities. The project area lies within the jurisdiction of the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB).

Local

City of Vallejo

General Plan

The General Plan includes the following policies pertinent to Hydrology and Water Quality:

Public Facilities and Other Services Element

- **Policy 1:** New development should bear the cost to extend or upgrade public services and/or provide or upgrade public facilities to serve the new development proportionately to the demand generated by new development. It is recognized that in some instances the City may also participate in the cost to extend public services and/or public facilities to areas in which such services/facilities do not currently exist when the City makes a specific finding that such an extension will benefit the community.
- **Policy 4:** Specific Plans and Planned Development master plans should identify sites for public uses as required by the needs of the City, GVRD, VCUSD, VSFCD, Solano County and/or permitting state and federal agencies.
- **Policy 6:** Sanitary and Storm Water Systems: (a) The number of new catch basins with debris traps should be minimized; drainage into wetlands or other sensitive areas should be first channeled through a sedimentation basin.

Safety Element

- **Policy 1:** Require strict compliance with the Flood Damage Protection Ordinance of the City of Vallejo.
- **Policy 3:** Evaluate all new developments to determine how peak runoff can be delayed using such measures as detention or retention basins, permanent greenbelt areas, temporary underground storage, permeable paving and roof top ponding.
- **Policy 6:** Sanitary and Storm Water Systems: (a) The number of new catch basins with debris traps should be minimized; drainage into wetlands or other sensitive areas should be first channeled through a sedimentation basin.

Natural Resources Element

- **Policy 1:** Retain major drainage swales, particularly those indicated as blue line streams on U.S. Geological Survey Maps.
- **Policy 2:** Protect watershed areas, particularly the area north of Lake Herman, in conformance with the policies and ordinances of the City of Benicia.

3.8.4 - Methodology

MBA analyzed the proposed project's potential to cause adverse impacts on hydrology and water quality utilizing several resources. The California Irrigation Management Information System provided information about meteorology and climate. The Vallejo General Plan provided descriptions of waterways and hydrological characteristics of the Vallejo area. FEMA Flood Insurance Rate Maps and a drainage memorandum prepared by Mackay and Somps in May 2011 were also consulted. The Plan was reviewed for descriptions of drainage facilities.

3.8.5 - Thresholds of Significance

According to the CEQA Guidelines' Appendix G Environmental Checklist, to determine whether hydrology and water quality impacts are significant environmental effects, the following questions are analyzed and evaluated. Would the project:

a) Violate any water quality standards or waste discharge requirements?

b) 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 pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted?

c) Substantially alter the existing drainage pattern of 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 off-site?

d) 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 off-site?

e) 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?

f) Otherwise substantially degrade water quality?

g) 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?

h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?

i) 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?

j) Inundation by seiche, tsunami, or mudflow? (Refer to Section 7, Effects Found Not To Be Significant.)

3.8.6 - Project Impacts and Mitigation Measures

Short-Term Water Quality

Impact HYD-1: Construction activities associated with the proposed project have the potential to degrade water quality in downstream water bodies.

Impact Analysis

This impact analysis addresses checklist items a), c), e), and f) in the context of water quality impacts from construction activities.

Entertainment Area

According to the Plan, approximately 62 of the 149.11 acres within the plan area are developed with buildings and paved parking lots. Approximately 33 additional acres are developed with a golf course and equestrian racetrack. The remaining 57 acres are generally undeveloped. Portions of the undeveloped land are utilized as unpaved parking facilities fair events and for overflow parking from Six Flags Discovery Kingdom.

Project implementation would result in approximately 97 acres of impervious surface or 65 percent of the project site (Ragan, pers. comm.). During proposed grading activities, there would be the potential for surface water to carry sediment from onsite erosion and small quantities of pollutants into the stormwater system and local waterways. Soil erosion may occur along project boundaries during construction in areas where temporary soil storage is required. Small quantities of pollutants have the potential for entering the storm drainage system, thereby potentially degrading water quality.

Construction of the proposed project would also require the use of gasoline and diesel-powered heavy equipment, such as bulldozers, backhoes, water pumps, and air compressors. Chemicals such as gasoline, diesel fuel, lubricating oil, hydraulic oil, lubricating grease, automatic transmission fluid, paints, solvents, glues, and other substances would likely be utilized during construction. An accidental release of any of these substances could degrade the water quality of the surface water runoff and add additional sources of pollution into the drainage system.

The NPDES stormwater permitting programs regulate stormwater quality from construction sites. Under the NPDES permitting program, the preparation and implementation of Stormwater Pollution Prevention Plans (SWPPPs) are required for construction activities that disturb more than 1 acre in area. The SWPPP must identify potential sources of pollution that are reasonably expected to affect the quality of stormwater discharges as well as identify and implement Best Management Practices (BMPs) that ensure the reduction of these pollutants during stormwater discharges. Federal and state law provide that BMPS must achieve specific quantitative numeric effluent limitations, and monitoring and reporting requirements will apply.

Mitigation is proposed that would require the project applicant to prepare and implement an SWPPP prior to the issuance of grading or building permits. The implementation of the mitigation measure would ensure that runoff associated with short-term construction activities would not contribute to the

degradation of water quality in downstream waterways, particularly those with Total Maximum Daily Loads (TMDLs) in effect. Impacts would be reduced to a level of less than significant.

Fairgrounds

Implementation of the fairgrounds project would require construction and grading of previously undeveloped land as discussed above. However, mitigation is proposed that would require the project applicant to prepare and implement an SWPPP prior to the commencement of grading or construction. The implementation of the mitigation measure would reduce potential impacts to a less than significant level.

Level of Significance Prior to Mitigation

Potentially significant impact.

Mitigation Measures

Entertainment Area

MM HYD-1a Prior to the issuance of grading permits or building permits (whichever occurs first), the project applicant shall prepare and submit a Stormwater Pollution Prevention Plan (SWPPP) to the City of Vallejo that identifies specific actions and Best Management Practices (BMPs) to prevent stormwater pollution during construction activities in accordance with the revised NPDES General Permit for Stormwater Discharges Associated with Construction Activity (Order 2009-0009 DWQ). The City of Vallejo shall confirm that the RWQCB has approved the SWPPP prior to issuance of grading or building permits. The SWPPP shall identify a practical sequence for BMP implementation and maintenance, site restoration, contingency measures, responsible parties, and agency contacts. The SWPPP shall include but not be limited to the following elements:

- Temporary erosion control measures shall be employed for disturbed areas.
- No disturbed surfaces shall be left without erosion control measures in place during the winter and spring months.
- Sediment shall be retained onsite by a system of sediment basins, traps, or other appropriate measures.
- The construction contractor shall prepare Standard Operating Procedures for the handling of hazardous materials on the construction site to eliminate or reduce discharge of materials to storm drains.
- BMP performance and effectiveness shall be determined either by visual means where applicable (e.g., observation of above-normal sediment release), or by actual water sampling in cases where verification of contaminant reduction or elimination (such as inadvertent petroleum release) is required by the RWQCB to determine adequacy of the measure.

- In the event of significant construction delays or delays in final landscape installation, native grasses or other appropriate vegetative cover shall be established on the construction site as soon as possible after disturbance, as an interim erosion control measure throughout the wet season.

Fairgrounds

MM HYD-1b Prior to the commencement of project grading or construction (whichever occurs first), the project applicant shall prepare and submit a Stormwater Pollution Prevention Plan (SWPPP) to the City of Vallejo that identifies specific actions and Best Management Practices (BMPs) to prevent stormwater pollution during construction activities in accordance with the revised NPDES General Permit for Stormwater Discharges Associated with Construction Activity (Order 2009-0009 DWQ). The SWPPP shall identify a practical sequence for BMP implementation and maintenance, site restoration, contingency measures, responsible parties, and agency contacts. The SWPPP shall include but not be limited to the following elements:

- Temporary erosion control measures shall be employed for disturbed areas.
- No disturbed surfaces shall be left without erosion control measures in place during the winter and spring months.
- Sediment shall be retained onsite by a system of sediment basins, traps, or other appropriate measures.
- The construction contractor shall prepare Standard Operating Procedures for the handling of hazardous materials on the construction site to eliminate or reduce discharge of materials to storm drains.
- BMP performance and effectiveness shall be determined either by visual means where applicable (e.g., observation of above-normal sediment release), or by actual water sampling in cases where verification of contaminant reduction or elimination (such as inadvertent petroleum release) is required by the RWQCB to determine adequacy of the measure.
- In the event of significant construction delays or delays in final landscape installation, native grasses or other appropriate vegetative cover shall be established on the construction site as soon as possible after disturbance, as an interim erosion control measure throughout the wet season.

Level of Significance After Mitigation

Less than significant impact.

Long-Term Water Quality

Impact HYD-2: Operational activities associated with the proposed project have the potential to degrade water quality in downstream water bodies.

Impact Analysis

This impact analysis addresses checklist items a), c), e), and f) in the context of water quality impacts from operational activities.

Entertainment Area

As described above, approximately 62 of the 149.11 acres within the plan area are developed with buildings and paved parking lots. Development of the proposed project would result in impervious surface coverage on the project site up to 97 acres through construction of buildings, parking areas and internal roadways, sidewalks, and the outdoor event areas. The increase in impervious surface coverage would create the potential for discharge of urban pollutants into downstream waterways. Leaks of fuel or lubricants, tire wear, and fallout from exhaust contribute petroleum hydrocarbons, heavy metals, and sediment to the pollutant load in runoff transported to receiving waters. Runoff from the proposed landscaped areas may contain residual pesticides and nutrients.

According to the Plan, one primary objective of the water feature is to provide water quality benefits for the project and improve the water quality of the runoff leaving the plan area prior to discharging into downstream facilities that lead to Lake Chabot. Under the proposed project, a majority of the runoff from the site would be routed through the proposed onsite manmade water feature, which would serve as a stormwater treatment BMP for the runoff. The design of the water feature would be intended to provide good water quality at all times to the maximum extent practicable, so that any excess runoff to the lake would result in the discharge of relatively clean lake water to the receiving water downstream. Accordingly, a decrease in urban runoff pollutants discharged to the receiving water as a result of the proposed project is anticipated (PACE Advanced Water Engineering, 2011). In addition, other water quality improvements such as biotreatment facilities would be implemented throughout the plan area. Water quality improvements for the plan area would be constructed in accordance with the Bay Area Municipal Regional Permit (MRP).

The proposed water feature would have a stormwater treatment function that could utilize biologic processes for treatment of urban pollutants in runoff as well as maintaining the normal health of the aquascape system. The water quality treatment features incorporated into the new lake system would include: aeration, lake biofilters, wetland planters, and vegetated pretreatment basins or wetland filters. According to a technical memorandum prepared by PACE Advanced Water Engineering to evaluate the proposed water feature, together these features would function as an effective system to manage the urban storm runoff quality and the health of the new water feature to ensure that any discharges to the adjacent Lake Chabot would have an improved quality (PACE Advanced Water Engineering, 2011). Moreover, these water quality elements would work either through management of urban stormwater runoff or through water feature water quality maintenance, to ensure that the

water within the proposed water feature and any discharge from the proposed Solano360 development is of the same or better quality than that discharged prior to development.

Mitigation is proposed that would require the project applicant for the entertainment and open space area to prepare and submit a stormwater quality management plan to the authority having jurisdiction for review and approval prior to issuance of building permits for the proposed project. The plan would require the project applicant to document various stormwater quality control measures, including the Vallejo Municipal Code, consistent with the NPDES provision C.3 standards, that would be in effect during project operations to ensure that runoff associated with operational activities would not contribute to the degradation of water quality in downstream waterways, particularly those with TMDLs in effect. Impacts would be reduced to a level of less than significant.

Fairgrounds

As stated above, mitigation is proposed that would require the project applicant to prepare and submit a stormwater quality management plan prior to the commencement of project construction. Implementation of the plan would reduce potential impacts to a level of less than significant.

Level of Significance Prior to Mitigation

Potentially significant impact.

Mitigation Measures

Entertainment Area

MM HYD-2a Prior to the issuance of grading permits for the proposed project, the project applicant shall submit a stormwater quality management plan to the authority having jurisdiction for review and approval.

Fairgrounds

MM HYD-2b Prior to the commencement of grading for the proposed project, the project applicant shall submit a stormwater quality management plan to the authority having jurisdiction for review and approval.

Level of Significance After Mitigation

Less than significant impact.

Groundwater Supplies and Recharge

Impact HYD-3:	**The project would not 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 pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted.**

Impact Analysis

This impact analysis addresses checklist item b).

Entertainment Area and Fairgrounds

The proposed project would be served with potable water supplied by the City of Vallejo. As discussed in Impact USS-1, the City has adequate long-term water supplies to serve the proposed project, and no additional groundwater wells or supplies would be required. Therefore, the proposed project would not contribute to depletion of groundwater supplies.

The water feature has the potential to impact groundwater levels by either discharging to the groundwater or becoming a point of groundwater discharge to the surface. As proposed, the water feature bottom would be designed for low permeability so that no significant interaction between the water feature and groundwater would occur. Additionally, there is a large existing reservoir nearby and any impacts of the proposed water feature would be similar or less than the impacts of the existing reservoir. In summary, no significant impacts to groundwater caused by the onsite water feature or by the project are anticipated (PACE Advanced Water Engineering, 2011).

The project site does not contain any groundwater recharge basins. Although the project's impervious surfaces would reduce infiltration of rainfall into groundwater across the site, the proposed water feature would also serve as a detention basin and keep some of the water onsite. Therefore, the development of the proposed project would not interfere with groundwater recharge.

As such, impacts would be less than significant.

Level of Significance Prior to Mitigation

Less than significant impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less than significant impact.

Drainage

Impact HYD-4: The proposed drainage facilities would prevent potential downstream flooding.

Impact Analysis

This impact analysis addresses checklist item d).

Entertainment Area and Fairgrounds

The development of the proposed project would result in approximately 97 acres of impervious surface coverage on the project site, creating an increase in runoff from the site and potentially causing flooding and erosion in downstream waterways (Ragan, pers. comm.).

The primary drainage infrastructure improvements for the project would remove the site from the flood plain. The site is in the flood plain due to high offsite flows from the east and south. The flows

enter the site from Central and South Rindler Creek as well as Blue Rock Springs. The existing drainage channel on the site that connects to Lake Chabot is not sufficient to contain the offsite flows. Accordingly, in order to remove the site from the flood plain the existing Fairgrounds channel would be widened and deepened in addition to improving the existing culvert under Fairgrounds Drive. Portions of the plan area may also be removed from the flood plain by placing fill material to raise the ground elevations. The proposed cross-section of the Fairgrounds Channel would include an 8–foot-wide, 1-foot–deep, meandering, low-flow "notch"; a 40- to 50-foot-wide, 2-foot–deep, low-flow channel section; and a 20- to 50-foot-wide, 5- to 7-foot-deep upper level bench. Side slopes are planned at a minimum of 3:1 but may be flattened to 4:1 where possible. The overall depth of the channel varies from 5 to 9 feet. The channel ranges in overall width from approximately 100 to 180 feet at the top of bank, as shown on Figure 6.1 of the Specific Plan. Design guidelines associated with the channel improvements are provided in Chapter 4 of the Specific Plan. The channel improvements would reduce the flooding conditions for the Newell mobile home park.

A new, multi-purpose water feature would be constructed onsite to manage and reduce peak discharges from the plan area. The water feature would connect to an existing 84-inch underground pipe near the northwest corner of the project site. This main water feature within the project would be a dual use recreation amenity and onsite flood control system. Additional onsite water quality improvements would be implemented throughout the plan area, such as biotreatment facilities, to meet NPDES permit requirements. Onsite drainage systems within the streets would be designed in accordance with City and Vallejo Sanitation and Flood Control District (VSFCD) standards. Underground pipes would be designed to accommodate 15-year storm events. Surface flow in the streets would be designed to accommodate 100-year storm events by directing water to the onsite water feature or fairgrounds channel. New stormwater pipelines would be constructed in each backbone roadway providing service to each parcel. Existing pipelines that traverse the project site would be relocated as necessary to avoid conflicts with development.

These proposed drainage improvements would ensure that less than significant project-related runoff would enter downstream waterways during a peak storm event. With the implementation of these improvements, as identified in the Plan, drainage impacts would be reduced to a level of less than significant.

Level of Significance Prior to Mitigation

Less than significant impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less than significant impact.

Flooding

Impact HYD-5:	**The project would not place within a 100-year flood hazard area structures, including homes, which would impede or redirect flood flows or 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.**

Impact Analysis

This impact analysis addresses checklist items h) and i).

Entertainment Area

As stated in the Plan, incomplete and conflicting information exists as it relates to 100-year flooding within the plan area. Sources of information include the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), the Vallejo Sanitation and Flood Control District (VSFCD) Storm Drain Master Plan and verbal information provided by the District Engineer, and the City of Vallejo.

According to the FIRM No. 06095C0440E, and as shown in Exhibit 3.8-2, a significant portion of the site is currently shown to be within the 100-year flood hazard area. No additional development constraints within this area of the site are shown within Exhibit 3.8-2. According to the VSFCD Master Plan flood map, a different portion of the property is shown to be in the flood plain. As noted above, the current effective FEMA map appears to be based on old information, while the VSFCD Master Plan is based upon more recent information. However, it is unclear if either map truly represents the existing condition. Additionally, it is unclear if either map takes the existing levee along the east side of the racetrack into account as it relates to the flood plain. Remapping the existing flood plain is beyond the scope of this Plan. However, FEMA, the City of Vallejo, and VSFCD are currently in the process of remapping the plan area. Preliminary and effective maps are anticipated to be published in October 2012 and December 2013, respectively. As of late October 2012, these updated maps were not available for review and are currently being compiled. The remapping will be based on runoff rates that are identified in the VSCFD Master Plan. Accordingly, the VSFCD District Engineer recommended using the 100-year flow rates identified in the VSFCD Master Plan as it relates to planned improvements within the plan area.

Drainage improvements identified in Impact HYD-4 above and outlined in further detail within the Plan would reduce any potential flooding impacts to a less than significant level. Drainage calculations are provided in Exhibit 2-8.

Fairgrounds

Flood hazard area issues for the fairgrounds portion of the project site are discussed above. As previously described, a levee currently separates the racetrack from the peripheral drainage. However, the VSFCD Master Plan does not include those levee improvements that were constructed to prevent flooding on the racetrack.

One flood control option noted in the Plan, specifically as it relates to Phase 1 development, is for the existing levee along the racetrack to be utilized to protect portions of the plan area from flooding. In order for the levee to be taken into account in its "as-is" condition, it would need to be certified through the USACE. As of the preparation of the Plan, it is not known if the levee in its current "as-is" condition would meet these design standards. If the levee cannot meet the design standards, it would need to be reconstructed. In any event, the levee would not be sufficient to remove the entire plan area from the floodplain, and the improvements previously described to the Fairgrounds Channel would still be required. The levee, in combination with channel improvements, may also be considered as a viable solution, which could potentially avoid some jurisdictional wetland impacts but at the same time would make the plan area a "levee protected community."

In order to address any potential flooding issues related to the possible failure of the levee, drainage improvements are identified within the Plan. These improvements would reduce any potential impacts associated with levee failure to less than significant.

Level of Significance Prior to Mitigation

Less than significant impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less than significant impact.

3.8.7 - Residual Significant Impacts

None identified.