11. HYDROLOGY AND WATER QUALITY

This EIR chapter describes existing plan area conditions and potential Specific Plan impacts associated with storm drainage and downtstream water quality, and recommends mitigation measures for any identified significant or potentially significant impacts.

11.1 SETTING

11.1.1 Surface Runoff

(a) Countywide Drainage Context. Solano County has a variety of surface drainage features including creeks, sloughs, marshes, and an extensive municipal storm drainage infrastructure. Solano County cities are individually responsible for drainage within their borders and have constructed municipal infrastructure to handle surface runoff. The unincorporated County relies heavily on gravity to drain excess surface runoff to natural water courses.

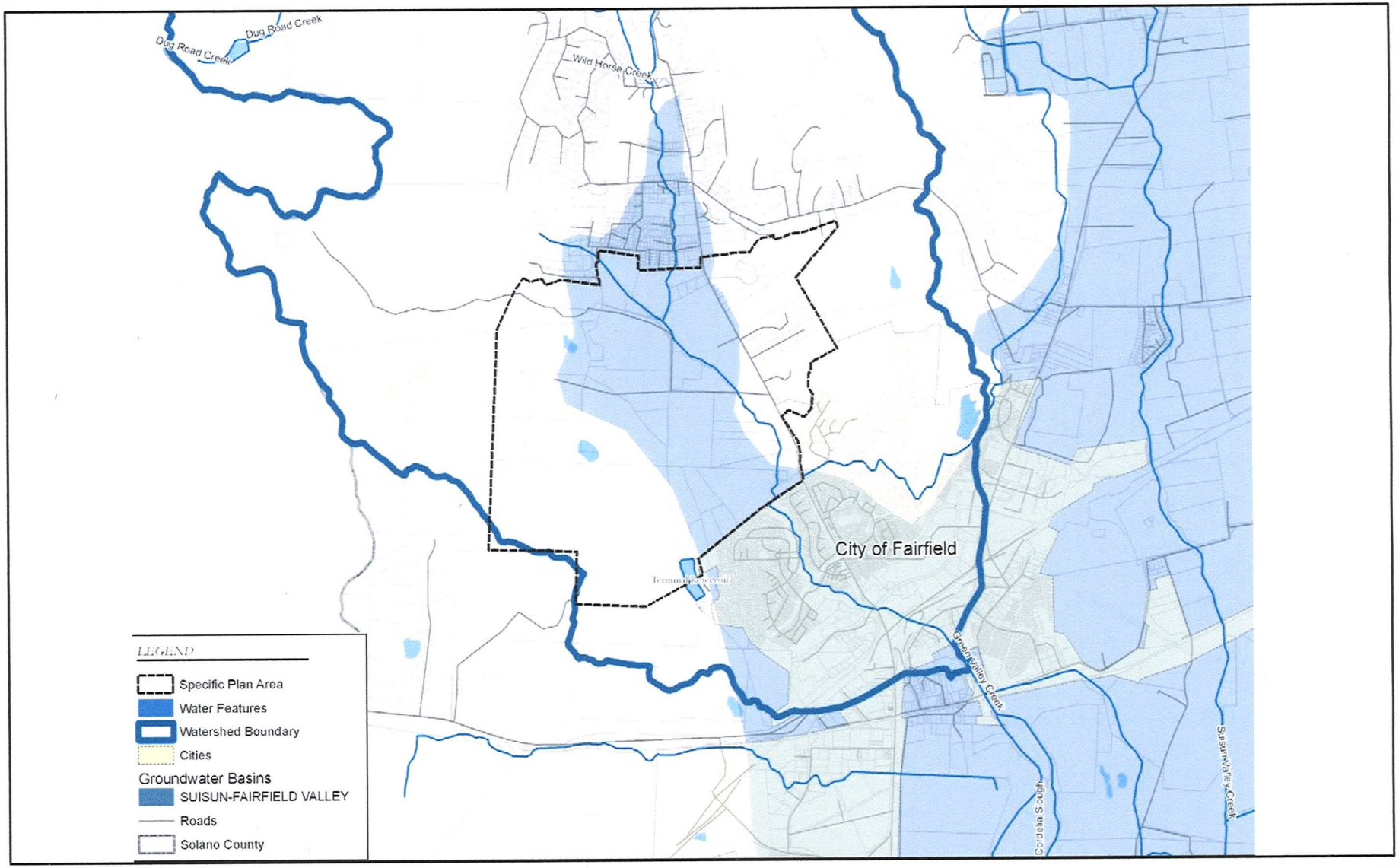
The 2008 Solano County General Plan states that landowners within the unincorporated county's watersheds must capture runoff on-site because there is no other system available to accommodate that runoff. The General Plan explains that landowners need to find ways to allow water to filter into the soil on their properties and/or use other natural systems to detain and filter runoff. This required approach also has water quality and water supply benefits, as pollutants are captured locally, rather than making their way into natural waterways, and water can be re-used onsite, where appropriate.

(b) Middle Green Valley Drainage Characteristics. Middle Green Valley hydrologic features are illustrated on Figures 11.1 and 11.2. Green Valley Creek and Hennessey Creek are the two principal surface drainage features. Other surface water features also include two large stock ponds within the Mason-Lawton Trust properties, and the SID-operated U.S. Bureau of Reclamation-owned Terminal Reservoir on the southern boundary of the plan area. Two upper tributaries of Green Valley Creek drain the North Green Valley area north of the plan area and converge within the north portion of the plan area as Green Valley Creek. Hennessey Creek drains areas to the west of and within the southwest portion of the plan area, converging with Green Valley Creek near the southern boundary of the plan area.

(c) Downstream Drainage. Green Valley Creek continues southward from the plan area, through the Hidden Meadows subdivision in Fairfield, beneath the I-80 freeway, and discharging into Cordelia Slough.

11.1.2 Flooding

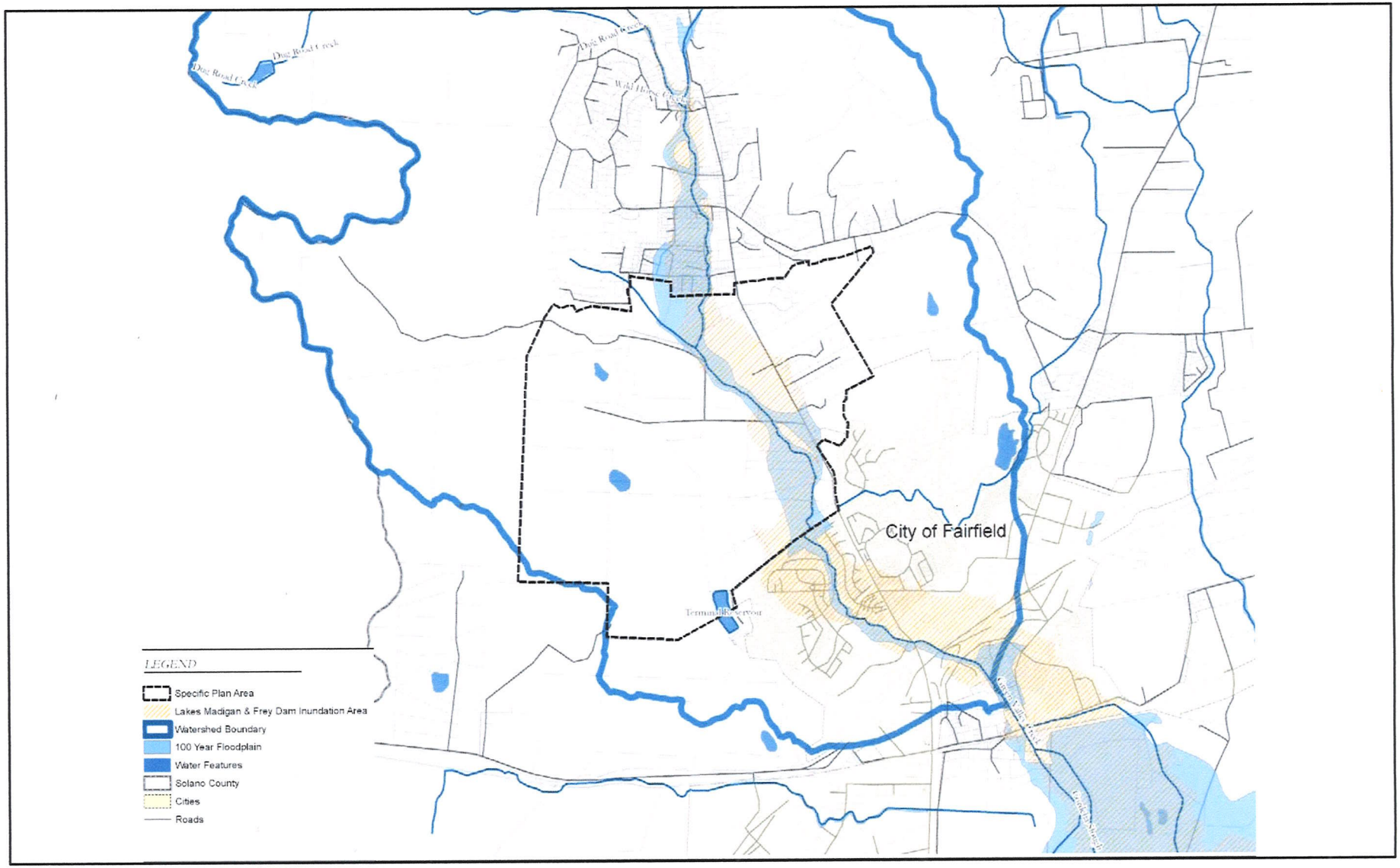
(a) Countywide Context. Flooding, the submergence of land caused by stormwater overflow, can lead to significant risk and damage to lives and property. Spreading urbanization can further aggravate the potential for stormwater flood damage by reducing the floodplain area



SOURCE: Solano County

Figure 11.1

HYDROLOGIC FEATURES IN PLAN AREA VICINITY



SOURCE: Solano County

Figure 11.2

STORMWATER AND INUNDATION AREAS IN PLAN AREA AN VICINITY

available to absorb stormwater in low-lying areas and preventing natural absorption of stormwater in upstream areas. Agricultural land has long been used in Solano County as valuable de facto flood protection. Farmland can contribute significantly to flood prevention and reduction.

The Solano County Water Agency (SCWA), whose boundaries include all of Solano County, as well as the property of the University of California, Davis, is the flood control authority for Solano County. SCWA was formed in 1951 by an act of the California Legislature. The authorities of SCWA were established to include both water supply and flood control. The Legislature specifically authorized SCWA to function as the Solano County Flood Control and Water Conservation District (SCFCWCD). Accordingly, SCWA maintains a *Flood Control 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.

(b) Middle Green Valley Flooding Characteristics. Heavy seasonal rainfall can still occasionally result in Green Valley Creek overflows and flooding along the creek corridor. The Federal Emergency Management Agency (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. Associated design standards for flood protection have also been established by FEMA. The FEMA-established 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--i.e., the "100-year flood" (although such a flood may occur in any given year). The FEMA FIRM 100-year floodplain zone for Green Valley Creek in the plan area and vicinity is shown on Figure 11.2. The illustrated floodplain zone represents the FEMA- estimated inundation area based on a flood that has a 1 percent chance of occurring in any given year.

The segment of Hennessey Creek immediately north of Terminal Reservoir Road was re-aligned (straightened) and channelized over 75 years ago. Some creek bank reinforcement (concrete lining) is evident in this plan area reach of Hennessey Creek that has apparently been done privately. SCWA flood improvement and maintenance activities in more recent decades have been limited to the section of Green Valley Creek south of I-80--i.e., the Green Valley Creek Flood Control Project section between I-80 and Cordelia Slough. There has been no SCWA flood improvement or creek maintenance activity in the creek sections above I-80, and there is no funding mechanism in place to provide for such activity.

(c) Downstream Flooding Conditions. The FEMA-delineated 100-year flood zone for Green Valley Creek downstream from the plan area is also illustrated on Figure 11.2.

The Green Valley Flood Control Project was established in the late 1950s for the section of Green Valley Creek between I-80 and Cordelia Slough. As shown on Figure 11.1, the watershed area for the Green Valley Project ranges from the hills between Vallejo and Fairfield to the Suisun Marsh. Initial construction for the Green Valley Project was completed by the United State Army Corps of Engineers in 1962. After completion, the Green Valley Project was turned over to SCWA for operation and maintenance.

The Green Valley Project was originally designed to control a storm with a 40-year recurrence level, meaning the Project was initially designed to handle a storm that occurs on an average of once in every 40 years. Flood control protection in an urban area is now typically designed to handle a 100-year recurrence level. The Green Valley Project within the City of Fairfield has therefore been upgraded since 1962 to a 100-year protection level.

The channels of the Green Valley Project are unlined earth channels where some vegetation is allowed to grow for slope protection. SCWA is responsible for all associated maintenance and capital improvements. Trees and woody vegetation are cleared periodically to ensure adequate flood control capacity. Part of the SCWA's long-term maintenance program for the Green Valley Project includes monitoring channels to ensure that they retain the capacity to carry the flows the Project was designed for.

SCWA works closely with the County and City of Fairfield to ensure that development projects adequately mitigate their storm water runoff impacts. As development in the watershed of the Green Valley Project continues, SCWA will be responsible for ensuring that there is adequate capacity for any additional off-site runoff created.

11.1.3 Dam Inundation

Dam inundation occurs when an upstream dam is not structurally sound or is unable to withstand earthquake damage. The degree and rapidity of dam failure depends on the dam's structural characteristics.

The State of California Office of Emergency Services (OES) has identified 10 of the 18 total state-regulated dams in the county where dam inundation has the potential to cause human injury or loss of life. As shown on Figure 11.2, two of the 10, Lake Madegan and Lake Frey, have a combined dam failure inundation area designation that includes portions of the plan area valley floor. To reduce the likelihood of associated dam inundation impacts, policies and programs are included in the Solano County General Plan requiring an assessment of each dam's potential for earthquake-induced failure, evacuation times, inundation profiles (flood depth), and inclusion of project features that may reduce dam failure hazards. Staff in the County's Department of Resource Management will evaluate projects in dam inundation areas on a case-by-case basis using current data available to them.

11.1.4 Groundwater

(a) Countywide Context. Before 1960, as agriculture developed throughout the county, groundwater use increased substantially for both municipal supplies and agriculture. Groundwater overdraft persisted in several parts of the county, providing an impetus for creating a surface-water supply to offset the overdraft. The resulting Solano Project was conceived in the 1940s and 1950s to meet the water demands of agriculture, municipalities, and military facilities in Solano County. Congressional authorization was granted for the construction of the Solano Project and the first water was delivered in 1959. The physical facilities of the Solano Project are Monticello Dam/Lake Berryessa, Putah Diversion Dam/Lake Solano, and the Putah South Canal. SCWA is responsible for operations and maintenance of the Solano Project and has an agreement with SID to operate and maintain Solano Project facilities on SCWA's behalf.

Once the Solano Project started making agricultural water deliveries, groundwater levels rebounded. In general, the county's groundwater levels are stable, dropping in dry years, and rebounding in wet years.

The Cities of Rio Vista and Dixon are still served exclusively with groundwater from basins under those cities. Vacaville gets approximately one-third of its municipal water supply from groundwater located under that city.

Most of the growers within the Solano Irrigation District, Maine Prairie Water District, and Reclamation District No. 2068 use surface water. Growers outside of these districts still 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.

There are four groundwater basins within Solano County as defined by The State Department of Water Resources (2006): the Napa-Sonoma Lowlands subbasin within the Napa–Sonoma Valley basin, the Suisun–Fairfield Valley basin, and the Solano and Yolo Valley subbasins within the Sacramento Valley Basin.

(b) Middle Green Valley Groundwater Characteristics. As shown on Figure 11.2, the flat valley floor portions of the plan area are within the Suisun-Fairfield Valley groundwater basin. (The Solano Subbasin, which underlies the northeastern portion of the county, is the largest groundwater basin in the county; the Suisun-Fairfield Valley Basin is the second largest groundwater basin in Solano County.) The Suisun-Fairfield Valley basin lies southwest of English Hills beneath Middle Green Valley and the cities of Fairfield and Suisun City. This basin is not used in a significant capacity because of low yields and poor water quality. Groundwater levels in the basin drop in dry years, but rebound in wet years.

As indicated previously, one of the main reasons the Solano Project was developed was to rectify groundwater overdraft in agricultural areas. Once the Solano Project started making agricultural water deliveries, groundwater levels rebounded.

11.1.5 Water Quality

The Suisun Marsh and other marshlands located along the Bay-Delta play an important role in maintaining and protecting water quality for human and natural communities. Intact riparian corridors in Solano County are also important resources for the protection of water quality in urban and rural areas. Even so, many of the county's water bodies have been identified by federal and state agencies as not meeting mandated water quality standards for total maximum daily loads (TMDLs) of certain pollutants. Of particular concern are the water bodies with high levels of pesticide (diazinon), Polychlorinated biphenyls (PCB), and mercury pollutants. Green Valley Creek is not one of the water bodies identified by federal or state agencies as not meeting mandated standards.

Pursuant to the federal Clean Water Act, the quality of stormwater runoff discharging into creeks and sloughs is governed by the *National Pollutant Discharge Elimination System* (NPDES). NPDES permits are required in the county for construction projects disturbing more than 1 acre of soil, mining operations, animal feedlots and agricultural facilities above certain thresholds, industrial and municipal discharges, discharges from storm sewer systems in larger cities, and discharges associated with numerous kinds of industrial activity. Permit issuance requires the

preparation of a storm water pollution prevention plan (SWPPP). A SWPPP is an operational plan that identifies and describes the best management practices (BMPs) to be implemented by the NPDES permit holder to reduce impacts on water quality and aquatic habitat.

Solano County's Storm Water Management Plan (SWMP) is consistent with NPDES requirements and procedures. The SWMP establishes a process for the review of development site plans to address short- and long-term water quality issues, including construction period impacts and impacts associated with proposed land uses following construction.

11.2 PERTINENT PLANS AND POLICIES

CEQA requires an EIR to identify the plan and policy setting within which the project is proposed and discuss any inconsistencies between the proposed project and these applicable plans and policies [CEQA Guidelines section 15125(d)]. CEQA also indicates that this plan and policy consistency discussion should be limited to the context of evaluation and review of environmental impacts [CEQA Guidelines section 15124(b)].

11.2.1 Solano County General Plan

Those policies and implementation programs from the 2008 Solano County General Plan that are pertinent to consideration of the proposed Specific Plan and its potential hydrologic and water quality impacts are listed below. Where any proposed Specific Plan land use and development policy or standard has been found in this Draft EIR to be potentially inconsistent with one or more of these County-adopted goals, policies or implementation programs pertaining to drainage, stormwater flooding, dam inundation, groundwater, or water quality, a potentially significant environmental impact has been identified, and one or more mitigations have also been identified for incorporation into the Specific Plan to reduce the impact and better implement the General Plan. Otherwise, the proposed Specific Plan is considered consistent with the goals, policies and implementation programs listed below.

Water Resources Policies and Implementation Programs:

- Identify, promote, and seek funding for the evaluation and remediation of water resource or water quality problems through a watershed management approach. Work with the regional water quality control board, watershed focus groups, and stakeholders in the collection, evaluation and use of watershed-specific water resource information. (Policy RS.P-64)

- Require the protection of natural water courses. (Policy RS.P-65)

- Together with the Solano County Water Agency, monitor and manage the county's groundwater supplies. (Policy RS.P-66)

- Encourage new groundwater recharge opportunities. (Policy RS.P-67)

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

- Preserve and maintain watershed areas characterized by slope instability, undevelopable steep slopes, high soil erosion potential, and extreme fire hazards in agricultural use.

Watershed areas lacking water and public services should also be kept in agricultural use. (Policy RS.P-69)

- Protect land surrounding valuable water sources, evaluate watersheds, and preserve open space lands to protect and improve groundwater quality, reduce polluted surface runoff, and minimize erosion. (Policy RS.P-70)

- Ensure that land use activities and development occur in a manner that minimizes the impact of earth disturbance, erosion, and surface runoff pollutants on water quality. (Policy RS.P-71)

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

- Require and provide incentives for site plan elements (such as permeable pavement, swales, and filter strips) that limit runoff and increase infiltration and groundwater recharge. (Policy RS.P-75)

- Promote sustainable management and efficient use of agricultural water resources. (Policy RS.P-76)

- Establish development standards that maximize retention of runoff and regulate development to avoid pollution of storm water, water bodies, and groundwater. (Implementation Program RS.I-66)

- Develop an ordinance that establishes a riparian buffer to protect water quality and ecosystem function. The minimum buffer width shall be determined according to existing parcel size. For parcels more than 2 acres in size, a minimum 150- foot development setback shall be provided. For parcels of 0.5-2.0 acres, a minimum 50-foot setback shall be provided. For parcels less than 0.5 acre a minimum 20-foot setback shall be provided. Exceptions to these development setbacks apply to parcels where a parcel is entirely within the riparian buffer setback or development on the parcel entirely outside of the setback is infeasible or would have greater impacts on water quality and wildlife habitat. (Implementation Program RS.I-67)

- Require site plan elements to limit runoff from new development. These measures might include reduced pavement or site coverage, permeable pavement, vegetation that retains and filters stormwater, and/or drainage features. Limit the construction of extensive impermeable surfaces and promote the use of permeable materials for surfaces such as driveways, streets, parking lots, and sidewalks. (Implementation Program RS.I-70)

- Explore a cooperative city/County program to compensate farmers and/or landowners to preserve farmland for watershed preservation and maintenance. (Implementation Program RS.I-78)

Flood Control Policies and Implementation Programs:

- Prevent or correct upstream land use practices that contribute to increased rates of surface water runoff. (Policy HS.P-1)

- Restore and maintain the natural functions of riparian corridors and water channels throughout the county to reduce flooding, convey stormwater flows, and improve water quality. (Policy HS.P-2)

- Require new developments to incorporate devices capable of detaining the stormwater runoff caused by a 100-year storm event or to contribute to regional solutions to improve flood control, drainage, and water recharge. (Policy HS.P-3)

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

- Appropriately elevate and flood proof developments for human occupancy within the 100-year floodplain for the profile of a 100-year flood event. (Policy HS.P-5)

- Require new development proposals in dam, canal, or levee inundation areas to consider risk from failure of these facilities and to include mitigations to bring this risk to a reasonable level. (Policy HS.P-7)

- Preserve open space and agricultural areas that are subject to natural flooding and are not designated for future urban growth; prohibit permanent structures in a designated floodway where such structures could increase risks to human life or restrict the carrying capacity of the floodway. (Policy HS.P-9)

- Require periodic stream maintenance by private property owners, and undertake regular stream maintenance by the appropriate public agencies. (Implementation Program HS.I-5)

- During project review, require the use of stormwater management techniques in developed upstream watershed areas that protect low-lying areas from flooding. Incorporate appropriate measures into the development review process to mitigate flooding and prevent erosion in and around county ditches. (Implementation Program HS.I-7)

- During project review, encourage the use of landscaping practices and plants that will reduce demand on water, retain runoff, decrease flooding, and recharge groundwater. (Implementation Program HS.I-10)

- Where new development for human occupancy is proposed within dam, canal, or levee inundation areas, require the applicant to prepare a report describing the results of an inspection of the dam, canal, or levee by a state-registered civil engineer, including the reliability of the facility during a 100-year flood, potential for failure during seismic shaking, likely inundation area, and predicted evacuation times. The report should also include any necessary dam, levee, or canal improvements to protect life and property in the proposed development. (Implementation Program HS.I-11)

Drainage Policies and Implementation Programs:

- Require development projects to minimize pollution of stormwater, water bodies receiving runoff, and groundwater, and to maximize groundwater recharge potential by:

- implementing planning and engineering design standards that use low-impact development techniques and approaches to maintain and mimic the natural hydrologic regime;

- using "infiltration" style low-impact development technologies; and

- following stormwater best management practices during and after construction, in accordance with relevant state-required stormwater permits. (Policy PF.P-33)

- Control the rate and dispersal of runoff from developments through use of detention and retention basins, appropriate landscaping, minimal use of impervious surfaces, and other stormwater facilities. (Policy PF.P-34)

- Provide for the costs of operating and maintaining storm drainage facilities by establishing the appropriate funding entity and fees to ensure that the costs are borne by those receiving benefit. (Policy PF.P-35)

- As a condition of project approval, require new development to provide adequate on-site and offsite stormwater and drainage facilities to control both direct and indirect erosion and discharges of pollutants and/or sediments so that "no net increase in runoff" occurs as a result of the proposed project. To determine the needs for facilities and best management practices, the County will require, when necessary, that a licensed and County-approved civil engineer perform a hydrological/drainage analysis. The project applicant would be responsible for the cost of this analysis.

  In cases where a local or regional drainage facility may be the best solution to serve multiple properties or an entire drainage basin, the County will work with property owners and public agencies with jurisdiction in the affected area to devise an appropriate funding mechanism (e.g., impact fees, assessment district) for such facilities. (Drainage Implementation Policy PF.I-32)

11.2.2 Solano County Grading and Erosion Control Ordinance

The purpose of the County Grading and Erosion Control Ordinance (Chapter 31 of the County Code) is to provide the means for controlling soil erosion, sedimentation, increased rates of water runoff, and related environmental damage by establishing minimum standards and providing regulations for the construction and maintenance of fills, excavations, cuts and clearing of vegetation, revegetation of cleared areas, drainage control, and protection of exposed soil surfaces to protect downstream waterways and wetlands and to promote the safety, public health, convenience and general welfare of the community.

11.2.3 Solano County Water Agency Flood Hazard Warning System

The Solano County Water Agency Flood Hazard Warning System was created in 2006 to provide up-to-date information to the community and public agencies on potential flooding in Solano County.

11.2.4 Regional Water Quality Control Board

State water quality is regulated/administered by the State Water Resources Control Board (SWRCB) and its nine Regional Water Quality Control Boards (RWQCBs). Solano County is within the jurisdiction of the San Francisco Bay RWQCB and the Central Valley RWQCB. The Middle Green Valley plan area is within the jurisdiction of the San Francisco Bay RWQCB. The state and RWQCBs also maintain independent regulatory authority over the placement of waste, including fill, into waters of the state under the Porter-Cologne Water Quality Control Act (see section 6.2.3 of this Draft EIR).

11.2.6 Federal Clean Water Act

Under Section 404 of the Clean Water Act, the U.S. Army Corps of Engineers has jurisdiction over wetlands and waters of the United States. Permitting of activities that could discharge fill or dredge materials or otherwise adversely modify wetlands or other waters of the United States and associated habitat is required. Permits authorized by the U.S. Army Corps of Engineers under the act typically involve mitigation to offset unavoidable impacts on wetlands and other waters of the United States in a manner that achieves no net loss of wetland acres or values.

11.3 IMPACTS AND MITIGATION MEASURES

11.3.1 Significance Criteria

Based on the CEQA Guidelines,[1] the Specific Plan would be considered in this EIR to have a significant drainage or water quality impact if its implementation would:

(a) violate any water quality standards or waste discharge requirements;

(b) 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 which would result in substantial erosion or siltation on- or off-site;

(c) 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 of amount of surface runoff in a manner which would result in flooding on- or off-site;

(d) create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff;

(e) otherwise substantially degrade water quality;

(f) 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;

(g) place within a 100-year flood hazard area structures which would impede or redirect flood flows;

[1] CEQA Guidelines, Appendix G, items VIII(a), VIII(c) through (i), and XVI(c).

(h) 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

(i) require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

11.3.2 Impacts and Mitigation Measures

Impact 11-1: Construction-Period Impacts on Water Quality. Surface water pollutants associated with Specific Plan-facilitated construction activity, including soil disturbance associated with grading activities, could significantly degrade the quality of receiving waters in Hennessey Creek, Green Valley Creek and, ultimately, Suisun Bay, representing a ***potentially significant impact*** (see criteria [a], [b], and [d] under subsection 11.3.1, "Significance Criteria," above).

Explanation:

Project-facilitated additional urban development within the four Specific Plan-proposed "neighborhoods" could further degrade downstream water quality. Construction activities involving soil disturbance, excavation, cutting/filling, and grading activities could result in increased erosion and sedimentation to surface waters.

During construction and grading, erosion and sediment control measures would be conducted in accordance with Solano County stormwater management requirements and best management practices for the reduction of pollutants in runoff. Discretionary developments in the plan area disturbing more than one acre of soil would be subject to National Pollutant Discharge Elimination System (NPDES) provisions and associated County NPDES permit issuance requirements. NPDES permit issuance requires the preparation of a storm water pollution prevention plan (SWPPP). A SWPPP is an operational plan that identifies and describes the best management practices (BMPs) to be implemented by the NPDES permit holder to reduce impacts on water quality and aquatic habitat.

Mitigation 11-1. The County shall ensure that the developer of each future Specific Plan-facilitated discretionary development in the plan area complies where applicable with all current state, regional, and County water quality provisions, and in particular, complies with the process of development plan review established in the County's Storm Water Management Plan (SWMP), and associated County NPDES permit issuance requirements instituted to address short-term and long-term water quality issues, including construction period activities. Implementation of this requirement would reduce this impact to a ***less-than-significant level.***

Impact 11-2: Ongoing Impacts on Water Quality. Ongoing activities associated with project-facilitated development could increase the level of contaminants in receiving waters. Sources of pollutants could include (a) runoff from new roadways, parking areas, and other paved areas; and (b) herbicides, pesticides, and fertilizers used in new agricultural activities and new domestic landscaping. These factors could combine to significantly degrade the quality of receiving waters in Hennessey Creek, Green Valley Creek, and ultimately, Suisun Bay, representing a ***potentially significant impact*** (see criteria [a], [b], and [d] under subsection 11.3.1, "Significance Criteria," above).

Explanation:

Increased uses of herbicides, pesticides, and fertilizers associated with new, project-facilitated agricultural activities and domestic landscaping could add to contamination of receiving waters. In the newly developed neighborhood areas, urban debris and oil and grease that collect on new paved surfaces could be washed into drainages and further impair runoff water quality and ultimately water quality in downstream receiving waters.

Mitigation 11-2. As a condition of future discretionary development approvals in the plan area, the County shall ensure that developers comply with applicable Solano County Storm Water Management Plan and NPDES permit requirements. In addition, as recommended in the County General Plan under Implementation Program RS.I-67, the minimum riparian buffer width to protect water quality and ecosystem function shall be determined according to existing parcel size. For parcels more than 2 acres in size, a minimum 150- foot development setback shall be provided. For parcels of 0.5-2.0 acres, a minimum 50-foot setback shall be provided. For parcels less than 0.5 acre a minimum 20-foot setback shall be provided. Exceptions to these development setbacks apply to parcels where a parcel is entirely within the riparian buffer setback or development on the parcel entirely outside of the setback is infeasible or would have greater impacts on water quality and wildlife habitat. Implementation of this measure would reduce the impact to a ***less-than-significant level.***

Pursuant to the federal Clean Water Act, the quality of stormwater runoff discharging into creeks and sloughs is governed by the *National Pollutant Discharge Elimination System* (NPDES). NPDES permits are required in the county for construction projects disturbing more than 1 acre of soil, mining operations, animal feedlots and agricultural facilities above certain thresholds, industrial and municipal discharges, discharges from storm sewer systems in larger cities, and discharges associated with numerous kinds of industrial activity. Permit issuance requires the preparation of a storm water pollution prevention plan (SWPPP). A SWPPP is an operational plan that identifies and describes the best management practices (BMPs) to be implemented by the NPDES permit holder to reduce impacts on water quality and aquatic habitat.

Solano County's Storm Water Management Plan (SWMP) is consistent with NPDES requirements and procedures. The SWMP establishes a process for the review of

development site plans to address short- and long-term water quality issues, including construction period impacts and impacts associated with proposed land uses following construction.

Changes in Impacts on Groundwater Resources. Given the abundance of groundwater recharge sources in the plan area, and the spatial limitations of the Specific Plan-proposed development areas, there is no basis to anticipate an adverse project groundwater impact; i.e., the impact of the proposed Specific Plan on groundwater would be ***less-than-significant***.

Mitigation. No significant adverse impact has been identified; no mitigation is required.

Impact 11-3: Flooding Impacts. For the most part, the Specific Plan-designated development areas avoid identified creek and dam failure inundation areas. Nevertheless, a limited number of Specific Plan-designated Agricultural-Residential (5-acre minimum lots), Rural Farm (1 to 5 acres per unit) and Rural Neighborhood (1 to 4 units per acre) land use designations in the proposed Elkhorn, Nightingale and Three Creeks neighborhoods overlap the Solano County General Plan-identified Lakes Madigan & Frey Dam Inundation Area and Green Valley Creek 100-year flood zone, the latter as mapped by the Federal Emergency Management Agency (FEMA) flood insurance rate map (FIRM) program. Since there are as yet no specific development proposals associated with these residential land use designations, direct flooding impacts cannot be determined. Nevertheless, these Specific Plan-designated residential development area overlaps could potentially result in the placement of housing within a dam failure inundation zone or 100-year flood hazard area, with associated risks to public safety and property damage, and could result in the placement of structures in the flood zone which would impede or redirect flood flows. These possible effects represent a ***potentially significant environmental impact*** (see criteria [f] and [g] in section 11.3.1, "Significance Criteria," above).

Mitigation 11-3. As a condition of future residential subdivision and other discretionary development approvals in these particular areas, the County shall ensure that project-specific applications comply with Solano County General Plan policies and requirements related to flood hazard protection, including policies HS.P-5 (appropriate elevation and flood proofing), HS.P-7 (mitigation requirements to bring risks from dam failure inundation to a reasonable level), and HS.I-11 (applicant-prepared engineering report requirements for new development for human occupancy in designated dam failure inundation areas). Implementation of this measure would reduce the impact to a ***less-than-significant level.***