

Chapter 5G. Hydrology and Water Quality

INTRODUCTION

To provide the context on which potential impacts can be assessed, this chapter presents information on surface drainage, flooding, water quality, and groundwater resources in the planning area. This information is based on a review of previously prepared environmental studies provided by the City of Davis Planning Department, the General Plan, and the proposed General Plan update.

SETTING

Regional Setting

Surface Drainage

The City's planning area lies in the Sacramento Valley between the Coast Ranges and the Sacramento River. The climate of this area is characterized by hot, dry summers and cool, wet winters. The temperature range is approximately 30-100°F with an annual average of 61°F. Annual average rainfall in this region is approximately 17 inches and occurs primarily between November and March. (National Weather Service 1999).

The planning area is situated on the valley floor where slopes are as flat as 5-10 feet per mile. The Sacramento River and the Yolo Bypass drain Yolo County, which is part of the Sacramento River Flood Control Project. The largest surface waterway in the region is Putah Creek, which drains an area of approximately 600 square miles, and extends 80 miles from the Coast Ranges to the Yolo Bypass and ultimately to the Sacramento River. Flow in Putah Creek is substantially regulated by the Solano Project, which includes Lake Berryessa and a distribution system to deliver water to agricultural and municipal users in Solano and Yolo Counties. The current main channel for flow conveyance (South Fork) was constructed in the late 1800s and is located south of UC Davis. The historic channel of Putah Creek (North Fork Cutoff), which no longer receives flow from Putah Creek, extends through the UC Davis campus and City center areas.

Other major streams that drain the unincorporated county areas include the 204-square-mile watershed of Willow Slough Bypass to the north that flows into the Yolo Bypass. Willow Slough Bypass is a leveed channel that receives flows from Willow, Cottonwood, Chickahominy, and Dry Sloughs south of Cache Creek. Summer low-flow drainage within the planning area consists

primarily of urban runoff flows and agricultural return flows in open constructed ditches and drains. Flow is generally from west to east toward the Yolo Bypass.

Flood Hazards

The soils in the eastern portion of Yolo County contain appreciable amounts of clay that limit infiltration rates and consequently cause high runoff rates. Flooding has frequently occurred in the Willow and Dry Sloughs and watersheds north of Putah Creek. Yolo County has been mapped by the Federal Emergency Management Agency (FEMA) as part of the National Flood Insurance Program. This program identifies areas of potential flooding and their associated risks. Figure 5G-1 illustrates the 100-year flood areas in and around the City.

The potential for flooding in the planning area exists when floodwaters from the Sacramento River back up into the Yolo and Willow Slough Bypasses, eliminating gravity flow from these systems. Ponding also occurs in some areas from combinations of rainfall intensity, impermeable soils, shallow groundwater conditions, and presence of depressions. Floodwaters from local drainages subsequently back up and pond behind the levees of the bypasses until floodflows in the bypasses recede. The Yolo County Flood Control and Water Conservation District (YCFCWCD) provides assistance in resolving regional drainage problems. The YCFCWCD has the authority to plan, develop, and manage water resources, including the construction, operation, and maintenance of irrigation, drainage, and flood control facilities and power and pumping plants.

Internal drainage in the planning area is captured by various storm drain collection systems, pumping stations, and retention ponds that are maintained by the City of Davis Public Works Department. Drainage generally follows surface contours with most of the flow moving west to east.

The City and YCFCWCD have developed and begun implementation of the Covell Drainage System Comprehensive Drainage Plan (Borcalli & Associates 1992) to convey 100-year frequency flows. The Covell Drain joins Channel A east of Highway 113 and continues in an easterly direction to the Willow Slough Bypass. Flow in Channel A is affected by backwater effects of Willow Slough Bypass during major flood events (Jones & Stokes Associates 1997). Most of central Davis is served by a subsurface stormwater drainage system that conveys flows in a northerly direction. Two large detention basins (North and West Ponds) provide storage for stormwater and discharge to Channel A. Subsurface drains in the eastern portion of the planning area generally convey flows in an easterly direction with a large portion discharged to a retention pond at Pole Line Road and Second Street. During large flows, the pond can exceed its capacity and excess flows are pumped to a ditch (on the south side of the Southern Pacific Railroad tracks) that flows east to the Yolo Bypass. Drainage south of I-80 generally flows to the North Fork Cutoff or the South Fork of Putah Creek.

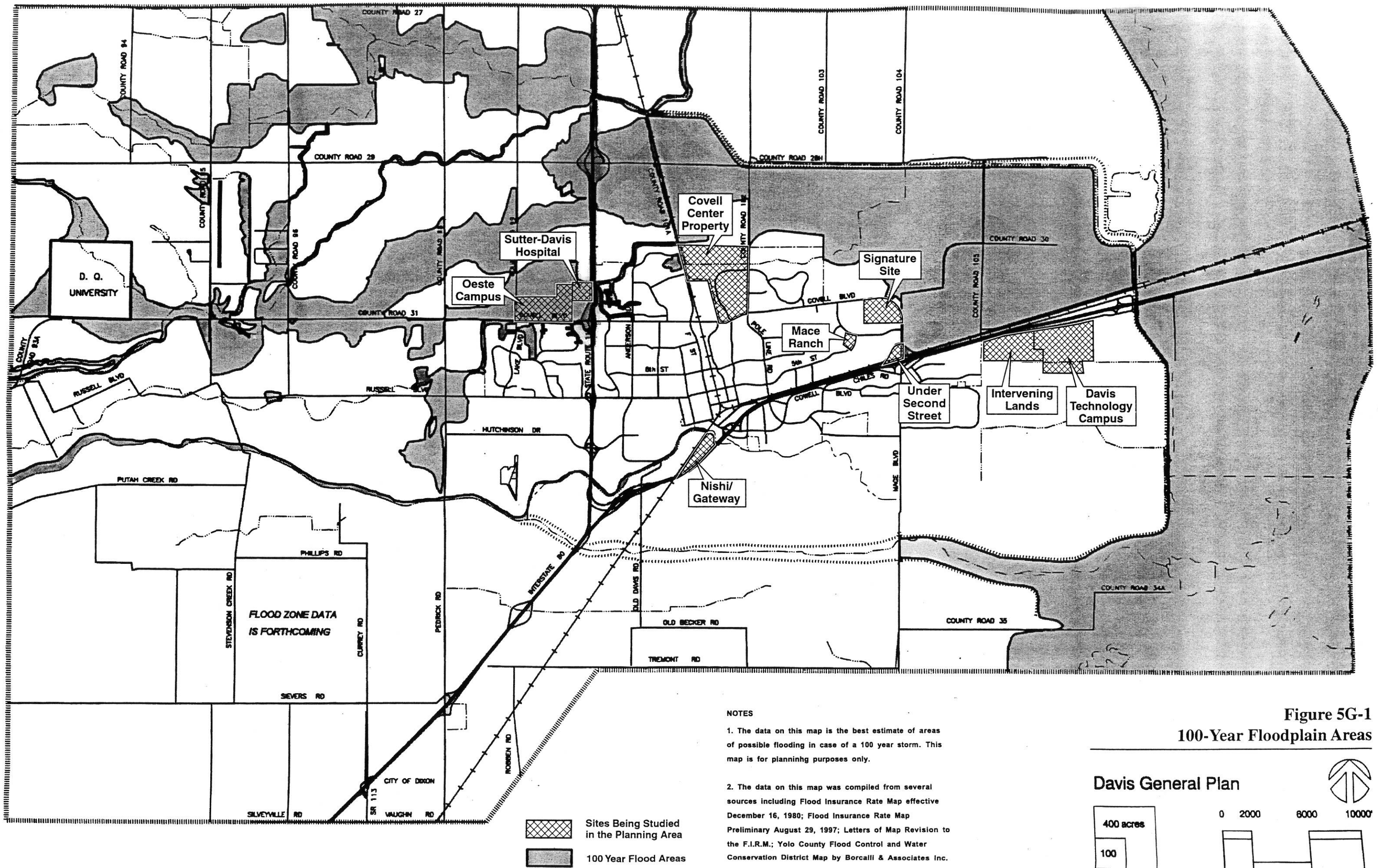


Figure 5G-1
100-Year Floodplain Areas

NOTES

1. The data on this map is the best estimate of areas of possible flooding in case of a 100 year storm. This map is for planning purposes only.
2. The data on this map was compiled from several sources including Flood Insurance Rate Map effective December 16, 1980; Flood Insurance Rate Map Preliminary August 29, 1997; Letters of Map Revision to the F.I.R.M.; Yolo County Flood Control and Water Conservation District Map by Borcaili & Associates Inc.

Davis General Plan

400 acres

100

0 2000 6000 10000'

Sites Being Studied in the Planning Area
 100 Year Flood Areas

Groundwater Hydrology

The UC Davis campus and the South Fork of Putah Creek overlie the deep alluvial groundwater basin that extends more or less continuously throughout the Sacramento Valley. The planning area is located in the lower Cache-Putah Basin, which is a subunit of the overall basin and extends from the Plainfield Ridge (approximately 8 miles west of the City) to the Sacramento River (approximately 15 miles east of the City). The basin fill consists of discontinuous layers of unconsolidated Tehama formation sediments with variable texture ranging from clay to gravel. The coarser deposits form aquifers and provide most of the water supply for the UC Davis campus and the planning area. Groundwater can be found anywhere from 10-50 feet below ground surface. Water-bearing deposits generally extend to 3,000 feet.

The City obtains all its municipal water supply from 21 wells located throughout the City with depths of 330-1,450 feet. Only one of these wells taps into the deep aquifer (700-1,500 feet below ground surface); the others draw water from the shallow intermediate aquifer (200-600 feet below ground surface).

Water Quality

Surface Water. UC Davis and the City conduct routine monitoring of wastewater discharges and receiving water quality in the South Fork of Putah Creek and the Willow Slough Bypass, respectively. Water quality conditions vary with the season, particularly in summer when streamflows are minimal and there is little rainfall runoff to dilute pollutants that enter the stream channel. During summer flow conditions, water quality parameters of importance to aquatic life include temperature, dissolved oxygen, turbidity, coliform bacteria, ammonia, and biostimulatory nutrients (e.g., nitrogen, phosphorus), as well as nuisance conditions, such as algae growth and odors. During winter, streamflow is much higher and is influenced more by stormwater runoff. Winter flows are influenced by storm event induced transport of pollutants, such as sediments from soil erosion, oils and grease from automobiles and paved areas, nutrients from agricultural fields and livestock boarding areas, and organic litter (e.g., leaves and grass clippings).

The City does not perform routine monitoring of small surface drainages in the planning area. Pollutant concentrations in urban runoff are highly variable, depending on urban densities, land uses, and the time between storm events that produce surface runoff. The Covell Drain, Channel A, and other surface drainage ditches are typically intermittent and often have no appreciable flow during the dry season. During low-flow periods, surface water may contain detectable amounts of agricultural pollutants, such as pesticides, herbicides, and fertilizers from agricultural return water or urban runoff. Urban runoff also typically contains elevated concentrations of trace metals such as copper, lead, cadmium, chromium, and zinc. The sources of these metals are typically linked to automobile use.

Groundwater. Groundwater quality in the planning area is generally high in total dissolved solids and hardness that causes scaling in plumbing systems and affects taste and odor.

Over one-half of the residential homes use water softeners to lower hardness levels. Overall, groundwater quality in the planning area is of fair quality when compared to current drinking water regulations. It is believed that acceptable standards for certain contaminants may be exceeded in the future. Therefore, long-term development of wells over 1,500 feet deep is planned to improve total dissolved solids and to continue to meet drinking water standards.

Sites Being Studied

Table 5G-1 summarizes existing surface drainage and flooding information for the sites. Groundwater conditions are generally homogenous throughout the planning area and therefore are not described separately for each site being studied.

Table 5G-1. Summary of Surface Drainage and Flooding Information for the Sites Being Studied

Site Being Studied	Drainage Patterns	Located in a Flood Hazard Area?
Nishi/Gateway	Drains southwest over surface ditches to the South Fork of Putah Creek	No
Covell Center property	Drains to the northeast; site is bisected by Channel A, which carries water from the Covell Drain	No
Signature site	Drains to various subsurface storm drains, north to Channel A	No
Mace Ranch interior retail site	Drains to various subsurface storm drains, north to Channel A	No
Under Second Street	Drains to various subsurface storm drains, north to Channel A	No
Sutter-Davis Hospital	Drains east to the southern boundary of the site	Yes ^a
Oeste Campus	Drains east to the southern boundary of the site	Yes ^a
Davis Technology Campus	Drains via surface ditches to a channel south of the site that flows east to the Yolo Bypass	Yes ^b
Intervening Lands	Drains via surface ditches to a channel south of the site that flows east to the Yolo Bypass	Yes ^b
In-Fill Area	Drains through various conveyances, eventually draining to the Sacramento River and Yolo Bypass	Portions ^c

^a Within 100-year floodplain as defined by FEMA. Flooding occurs because of the level topography, backup of water at the box culverts under Highway 113, and overflows that periodically occur from Willow Slough to the north (ESA 1992).

^b Portions of sites below the 25 foot elevation level are considered to be within an area of potential inundation associated with levee failure along the Yolo Basin.

^c Portions of planning area are within 100-year floodplain defined by FEMA and the Yolo Basin inundation area. Refer to Figure 5G-1 for location of 100-year floodplain.

Regulatory Setting

FEMA administers the National Flood Insurance Program, which offers low-cost flood insurance to flood-prone areas in exchange for local regulations that regulate development in the 100-year floodplain. The City of Davis has enacted regulations in accordance with this program.

The Central Valley Regional Water Quality Control Board (RWQCB) has primary authority for ensuring that the quality of surface water and groundwater resources is protected from degradation. Beneficial uses of the major rivers and groundwater basins, along with narrative and numerical water quality objectives, are established and periodically reviewed pursuant to the Porter-Cologne Water Quality Control Act of 1975 in the Water Quality Control Plan for the Sacramento and San Joaquin River Basins (Basin Plan) (California Regional Water Quality Control Board 1995).

The RWQCB primarily implements the Basin Plan by permitting waste discharges in conformance to the Basin Plan and the federal Clean Water Act through the National Pollutant Discharge Elimination System (NPDES) permit system. In particular, the RWQCB administers the NPDES stormwater permit system for general construction activity. NPDES stormwater permits are required for projects that disturb more than 5 acres of land. The NPDES permit requires filing a public notice of intent (NOI) to discharge stormwater to the RWQCB and preparation and implementation of a storm water pollution prevention plan (SWPPP). The SWPPP includes a site map and description of construction activities and identifies the best management practices (BMPs) that will be employed to prevent soil erosion and discharge of other construction-related pollutants (e.g., petroleum products, solvents, paints, cement) that could contaminate nearby water resources. Monitoring may be required to ensure that BMPs are implemented according to the SWPPP and are effective at controlling discharges of stormwater-related pollutants.

Additionally, a hazardous material spill prevention and response plan to identify BMPs would be implemented before, during, and after construction to reduce pollution in stormwater runoff. A hazardous material spill prevention and response plan generally includes the following types of protective measures:

- Prevent petroleum products, concrete, truck washing, asphalt or other coating materials, and other hazardous materials used during construction, operations, and maintenance from contaminating soil or entering surface waters.
- Implement strict handling rules for hazardous materials to prevent spills and provide controlled storage areas well away from the stream channel.
- Maintain spill cleanup equipment in proper working condition and cleanup any spills immediately.
- The City of Davis has created the “Partners for a Cleaner Davis” program for businesses and residents. This voluntary program educates the public in BMPs and other methods

of reducing non-point water pollution, including limiting the entry of wash water into storm drains and integrated pest management to reduce the use of pesticides in home gardens and commercial landscaping.

IMPACTS AND METHODOLOGY

The remainder of this chapter presents an assessment of potential impacts on hydrology and water quality resources. Impacts assessed include General Plan policy consistency, the potential to change existing drainage patterns and amounts of surface runoff, expose people or property to flooding hazards, degrade water quality during construction-related activities and from increased amounts of urban runoff, and create long-term changes in both groundwater supply and quality. This analysis will provide an assessment of the overall potential impacts related to implementation of the General Plan and will identify appropriate mitigation measures to reduce the project's effects on hydrology and water quality resources.

Impacts were evaluated qualitatively based on existing published information regarding drainage and flooding characteristics within the planning area.

Applicable Policies

The existing and proposed General Plans contain goals, policies, standards, and actions that are designed to reduce or eliminate potential environmental impacts that may be related the implementation of each plan. In evaluating the hydrology and water quality impacts associated with each alternative in the General Plan update, it is assumed that these goals, policies, standards, and actions will be implemented with all future projects. In this chapter, the following policies were applied to the assessment of potential impacts for Alternatives 3 through 5 (see policy descriptions below). For Alternative 2, the goals, policies, standards, and actions contained in the City's existing General Plan were assumed in the assessment of potential impacts. A comparison of the existing General Plan and General Plan update is contained in Chapter 3, "Project Description".

Goals and Policies Specific to Water Conservation

The General Plan update identifies goals, policies, standards, and actions relating to water conservation that would reduce impacts in the planning area. Specific goals and policies that affect the assessment of impacts include the following:

GOAL WATER 1. Minimize increases in water use. Reduce per capita water consumption by 20% as compared to historic use through programs encouraging water conservation.

- **Policy WATER 1.1.** Give priority to demand reduction and conservation over additional water resource development.
- **Policy WATER 1.2.** Require water conserving landscaping.
- **Policy WATER 1.3.** Do not approve future development within the City unless an adequate supply of quality water is available or will be developed prior to occupancy.

Goals and Policies Specific to Municipal Water Supply

The General Plan update identifies goals, policies, standards, and actions relating to municipal water supply that would reduce impacts in the planning area. Specific goals, policies, and actions that affect the assessment of impacts include the following:

GOAL WATER 2. Ensure sufficient supply of high-quality water for the Davis Planning Area.

- **Policy WATER 2.1.** Provide for the current and long-range water needs of the Davis Planning Area, and for protection of the quality and quantity of groundwater resources.
- **Policy WATER 2.2.** Manage groundwater resources so as to preserve both quantity and quality.
- **Policy WATER 2.3.** Maintain surface water quality.
 - **Action WATER 2.3a.** Continue to implement best management practices and policies incorporated in the Urban Water Management Plan and other adopted plans.

Goals and Policies Specific to Drainage Issues

The General Plan update identifies goals, policies, standard, and actions specific to drainage issues that would reduce offsite impacts in the planning area. In general, several new policies are included in the General Plan update that provide additional standards for development of drainage facilities within the City limits. Specific goals, policies, standards, and actions that affect the assessment of impacts include the following:

GOAL WATER 3. Design stormwater drainage and detention facilities to maximize recreational, habitat and aesthetic benefits.

- **Policy WATER 3.1.** Coordinate and integrate development of storm ponds and channels Citywide, to maximize recreational, habitat, and aesthetic benefits.

- **Policy WATER 3.2.** Coordinate and integrate design, construction, and operation of proposed stormwater retention and detention facilities City-wide, to minimize flood damage potential and improve water quality.
 - **Standard WATER 3.2a.** All new development shall include drainage facilities that are designed to accommodate a minimum of a 10-year recurrence design flow. In addition, all new development shall route the 100-year recurrence event and appropriately mitigate for both the increase in flows from the site due to development, and for runoff volumes, which have historically occurred on the site.

Storm drainage facilities with open, naturalistic channels are encouraged, where feasible. Such facilities can minimize impacts on the city's system, add to the water table, and provide an open space amenity although long-term maintenance costs must be considered. In addition, properly designed plantings in and adjacent to drainage facilities can serve to treat urban runoff, reducing downstream impacts.

Goals and Policies Specific to Flood Safety

The General Plan update identifies goals, policies, and specific actions or standards related to flood safety that would reduce impacts in the planning area. Specific goals, policies, standards, and actions that affect the assessment of impacts include the following:

GOAL HAZ 1. Provide flood protection, which minimizes potential damage, while enhancing recreational opportunities and wildlife habitats and water quality.

- **Policy HAZ 1.1.** Site and design developments to prevent flood damage.
 - **Standard HAZ 1.1a.** No development may occur in flood-prone areas, including all areas below an elevation of 25 feet, unless mitigation of flood risk is assured.
 - **Standard HAZ 1.1b.** Development shall not increase flood hazards or reduce the effectiveness of existing flood control facilities.
 - **Standard HAZ 1.1c.** New development shall be designed to include measures to protect structures from a 100-year flood.
- **Policy HAZ 1.2.** Continue to provide flood control improvements that are sensitive to wildlife habitat and open space preservation.

Goals and Policies Specific to Toxics

The General Plan update identifies goals, policies, and specific actions or standards related to toxics that would reduce impacts in the planning area. Specific goals, policies, and actions that affect the assessment of impacts include the following:

GOAL HAZ 4. Reduce the use, storage, and disposal of toxic and hazardous substances in Davis, and promote alternatives to such substances and their clean up.

- **Policy HAZ 4.2.** Provide for the proper disposal of hazardous materials in Davis

Summary of Impacts Related to Land Use Map Alternatives

This chapter evaluates hydrology and water quality impacts related to the General Plan update and establishment of a new junior high school, including the four land use map alternatives. For this evaluation, impacts have been assessed in six categories. Table 5G-2 provides an overview of the significance findings made for the General Plan update project and each of the sites being studied under each alternative. The table also shows the impacts related specifically to the proposed establishment of a new junior high school site under the heading “Signature Site” for Alternatives 4 and 5. The following paragraphs provide a brief summary of each impact.

- **Impact HYD-1. Consistency with General Plan Policies.** This impact was designed to assess the differences in policy between the existing General Plan and the General Plan update. Alternative 2 was found to have significant impacts related to lack of sufficient policy guidance needed to protect water resources. Alternatives 3 through 5 were found to improve protections related to flooding and water quality with implementation of the General Plan update.
- **Impact HYD-2. Changes to Existing Drainage Patterns and Amounts of Surface Runoff.** The analysis found that some of the sites being studied (Nishi/Gateway, Covell Center, Oeste Campus, Davis Technology Campus, and Intervening Lands sites) could generate substantial new runoff due to urban development. For Alternatives 3 through 5, the proposed General Plan update contains specific policies (WATER 3.1 and 3.2 and associated standards and actions) that require new development be designed, constructed, and operated to mitigate for drainage and runoff impacts. For Alternative 2, the policies in the existing General Plan were found to be inadequate. For Alternatives 3 through 5, modification to one General Plan update policy was made to ensure protection of downstream properties.
- **Impact HYD-3. Exposure of People and Property to Flooding Hazards.** The analysis found that the Sutter-Davis Hospital site, Oeste Campus site, portions of the City’s planning area, and a very small amount of the in-fill area (in northwest Davis) are within a FEMA-designated 100-year flood zone. Some lands east of the City with an

elevation lower than 25 feet above mean sea level also are in the inundation zone if a levee along the Yolo Bypass fails during a flood event. This includes portions of the Davis Technology Campus and the Intervening Lands sites. These impacts were found to be mitigated for all alternatives through application of General Plan policies and existing building codes.

- **Impact HYD-4. Construction-Related, Short-Term Water Quality Degradation.** All four land use map alternatives were evaluated for this impact, and none were found to have significant effects. Development of all alternative is subject to the federal NPDES regulations, which specifically target sources of water quality degradation. Alternative 3 represents limited additional development but will be subject to specific policies in the General Plan update and City regulations that are designed to avoid impacts. While Alternatives 4 and 5 increase the potential for impact because they represent greater growth potential, their impacts are also addressed by the specific policies identified in the proposed General Plan update (which include the NPDES requirements) and City grading regulations.
- **Impact HYD-5. Long-Term Water Quality Degradation Associated with Urban Runoff.** None of the four land use alternatives were found to have significant effects. Development under Alternative 2 is subject to the federal NPDES regulations, which specifically target sources of water quality degradation. Alternative 3 represents limited additional development but will be subject to specific policies in the General Plan update that are designed to avoid impacts. Although Alternatives 4 and 5 increase the potential for impact because they represent greater growth potential, but their impacts are addressed by specific policies identified in the proposed General Plan update, which include the NPDES requirements.
- **Impact HYD-6. Long-Term Changes in Groundwater Supply and Quality.** All four land use map alternatives were evaluated for this impact, and none were found to have significant effects. Groundwater supplies are sufficient to support these alternatives, and policies within the existing General Plan and proposed General Plan update provide for long-term protection and conservation.

Table 5G-2. Summary of Hydrology and Water Quality Impacts by Land Use Map Alternative

Project Impacts	Project Mitigations	Overall General Plan	Sites Being Studied								In-fill
			Nishi/Gateway	Covell Center	Signature Site	Mace Ranch	Under Second Street	Sutter-Davis	Oeste Campus	Davis Technology Intervening Lands	
Alternative 2. Buildout to 2010 Using Existing General Plan											
HYD-1. Consistency with General Plan Policies	HYD-1.1	S	S	S		S	S				S
HYD-2. Changes to Existing Drainage Patterns and Amounts of Surface Runoff	HYD-1.1 HYD-2.1	S	S	S		LS	LS				LS
HYD-3. Exposure of People and Property to Flooding Hazards	Not required	LS	NI	NI		NI	NI				LS
HYD-4. Construction-Related, Short-Term Water Quality Degradation	Not required	LS	LS	LS		LS	LS				LS
HYD-5. Long-Term Water Quality Degradation Associated with Urban Runoff	Not required	LS	LS	LS		LS	LS				LS
HYD-6. Long-Term Changes in Groundwater Supply and Quality	Not required	LS	LS	LS		LS	LS				LS
Alternative 3. Reduced Buildout Scenario											
HYD-1. Consistency with General Plan Policies	Not required	NI		NI		NI	NI				NI
HYD-2. Changes to Existing Drainage Patterns and Amounts of Surface Runoff	HYD-2.1	S		S		LS	LS				LS
HYD-3. Exposure of People and Property to Flooding Hazards	Not required	LS		NI		NI	NI				LS
HYD-4. Construction-Related, Short-Term Water Quality Degradation	Not required	LS		LS		LS	LS				LS
HYD-5. Long-Term Water Quality Degradation Associated with Urban Runoff	Not required	LS		LS		LS	LS				LS
HYD-6. Long-Term Changes in Groundwater Supply and Quality	Not required	LS		LS		LS	LS				LS
Alternative 4. Community Expansion Scenario with Davis Technology Campus											
HYD-1. Consistency with General Plan Policies	Not required	NI	NI	NI	NI	NI	NI	NI	NI		NI
HYD-2. Changes to Existing Drainage Patterns and Amounts of Surface Runoff	HYD-2.1	S	S	S	S	LS	LS	S	S		LS
HYD-3. Exposure of People and Property to Flooding Hazards	Not required	LS	NI	NI	NI	NI	NI	LS	LS		LS
HYD-4. Construction-Related, Short-Term Water Quality Degradation	Not required	LS	LS	LS	LS	LS	LS	LS	LS		LS
HYD-5. Long-Term Water Quality Degradation Associated with Urban Runoff	Not required	LS	LS	LS	LS	LS	LS	LS	LS		LS
HYD-6. Long-Term Changes in Groundwater Supply and Quality	Not required	LS	LS	LS	LS	LS	LS	LS	LS		LS
Alternative 5. Community Expansion Scenario with Davis Technology Campus											
HYD-1. Consistency with General Plan Policies	Not required	NI	NI	NI	NI	NI	NI	NI		NI	NI

Table 5G-2. Summary of Hydrology and Water Quality Impacts by Land Use Map Alternative

Project Impacts	Project Mitigations	Overall General Plan	Sites Being Studied									In-fill
			Nishi/Gateway	Covell Center	Signature Site	Mace Ranch	Under Second Street	Sutter-Davis	Oeste Campus	Davis Technology	Intervening Lands	
HYD-2. Changes to Existing Drainage Patterns and Amounts of Surface Runoff	HYD-2.1	S	S	S	S	LS	LS	S		S	S	LS
HYD-3. Exposure of People and Property to Flooding Hazards	Not required	LS	NI	NI	NI	NI	NI	LS		LS	LS	LS
HYD-4. Construction-Related, Short-Term Water Quality Degradation	Not required	LS	LS	LS	LS	LS	LS	LS		LS	LS	LS
HYD-5. Long-Term Water Quality Degradation Associated with Urban Runoff	Not required	LS	LS	LS	LS	LS	LS	LS		LS	LS	LS
HYD-6. Long-Term Changes in Groundwater Supply and Quality	Not required	LS	LS	LS	LS	LS	LS	LS		LS	LS	LS
SU = Significant unavoidable S = Significant, but can be reduced to less than significant with mitigations included		LS = Less than significant NI = No impact N/A = None available										

Project Impacts

Impact HYD-1. Consistency with General Plan Policies

Significance Criteria

- A significant impact would occur if the land use map alternative or one of its components would conflict with the environmental plans and goals of the local community or other planning regulations.
- For Alternatives 3 through 5, a significant impact would occur if a policy change in the General Plan update would result in substantial adverse change in the environment related to hydrology and water quality.

Impacts of the proposed project related to General Plan consistency were assessed with application of the above-mentioned significance criterion. Table 5G-3 provides an overview/comparison of the level of impact associated with the General Plan under the four land use map alternatives evaluated in this EIR. A more detailed discussion of each alternative is described below.

Table 5G-3. General Plan Policy Consistency under Each Land Use Map Alternative

Alternative 2	Alternative 3	Alternative 4	Alternative 5
<ul style="list-style-type: none"> • Inadequate policy guidance 	<ul style="list-style-type: none"> • Improved protection for water quality and flood issues 	<ul style="list-style-type: none"> • Improved protection for water quality and flood issues 	<ul style="list-style-type: none"> • Improved protection for water quality and flood issues

Alternative 2. Buildout to 2010 Using Existing General Plan. Implementation of Alternative 2 would maintain the goals and policies in the existing General Plan. Adopted 12 years ago, the goals and policies in this document (7.2 Flood Hazards and Drainage) have not remained current with other regulations and use of best management practices. The General Plan update provides an enhanced set of policy guidance that reflects current needs. As the guiding policy document for the City, the existing General Plan is dated, and its continued use represents a *significant* impact.

Alternative 3. Reduced Buildout Scenario. Implementation of Alternative 3 would allow growth and development in the City to 2010 only for projects that are already entitled and additions in Covell Center (Variation 3, business park). The policies in the General Plan update are intended to improve water resources, provide for greater safety, and maintain riparian areas in natural conditions. Policy has been proposed to maintain the protection of existing surface water and groundwater quality and quantity by limiting withdrawal and water consumption (Policy WATER 2.1). Other policies, standards, and actions have been designed to protect the quality of water resources from discharges and urban pollutant runoff (Policies WATER 2.2 and 2.3, Standard WATER 3.2a, Action WATER 3.2c). There are goals, policies, and standards to protect the safety of Davis residents by ensuring the reduction in flooding hazards (Policy WATER 3.2, Goal HAZ 1). The General Plan update also considers the conservation of natural riparian areas to be used for wildlife habitat, recreation, aesthetic considerations, as well as the natural treatment of water that flows through the watershed (Goal WATER 3). These policies are intended to improve hydrologic conditions, and maintain and enhance water quality and quantity, and reduce hazards in the planning area. Implementation of these policies serves to mitigate potential impacts from development and serves to provide improved protection related to flooding and water quality. Therefore, this alternative is considered to have no adverse impact (*no impact*) related to General Plan policies.

In preparing the General Plan update, City staff has identified the primary areas of policy where the proposed update differs from the existing General Plan. A list of these major changes is listed in Chapter 3 under a section labeled “New, Expanded, or Modified Goals and Policies in the General Plan Update”. While no major changes in policy were noted regarding hydrology and water quality, as pointed out in the above paragraph, the General Plan update does contain policy enhancements that protect these resources from impact. The integration of protections of natural areas and encouraged use of natural channels (Goal WATER 3) provide these protections without significant impacts on biological resources. The overall policy additions have a positive affect on hydrology and water quality, and would have no adverse impacts (*no impact*).

Alternative 4. Community Expansion Scenario with Oeste Campus.

Implementation of Alternative 4 would include inclusion of additional development area over that proposed in Alternatives 2 and 3. With the protections provided in the General Plan update (see discussion under Alternative 3, above), impacts associated with this land use map alternative would result in effects similar to those discussed above under Alternative 3. Therefore, this alternative is considered to have no adverse impact (*no impact*) related to General Plan policies.

Related to the second significance criteria (impacts related to policy changes), changes in policy will have a positive affect on hydrology and water quality issues (the same as described for Alternative 3, above), and would have no adverse impacts (*no impact*).

Alternative 5. Community Expansion Scenario with Davis Technology Campus. Implementation of Alternative 5 would involve many new development opportunities on public and private lands in the Davis planning area. Hydrology and water quality impacts associated with this alternative would result in effects similar to those discussed above under Alternative 3. Therefore, this alternative is considered to have no adverse impact (*no impact*) related to General Plan policies.

Related to the second significance criteria (impacts related to policy changes), changes in policy will have a positive affect on hydrology and water quality issues (the same as described for Alternative 4, above), and would have no adverse impacts (*no impact*).

Mitigation Measures

With implementation of the following mitigation measure, the significant impact related to Alternative 2 will be reduced to a *less-than-significant* impact. Alternatives 3 through 5 were found to have no adverse impact (*no impact*) and no mitigation was required.

HYD-1.1. Incorporate Planning Guidelines (Alternative 2)

This impact can be reduced to a less-than-significant level by incorporating the additional policy protections provided under the General Plan update to the policies contained in the existing General Plan.

<i>Funding Source:</i>	<i>Davis City Council</i>
<i>Implementing Party:</i>	<i>City of Davis Planning and Building Department and Davis City Council</i>
<i>Monitoring Agency:</i>	<i>City of Davis Planning and Building Department</i>
<i>Timing:</i>	<i>As part of a General Plan amendment presented during the year 2000</i>

Impact HYD-2. Changes to Existing Drainage Patterns and Amounts of Surface Runoff

Significance Criterion

- A proposed land use map alternative was determined to have a significant impact if the alternative would result in a substantial increase in the rate or amount of surface runoff in a manner that would result in on- or off
- site flooding; or create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage facilities.

The impacts of the proposed project related to drainage and surface runoff were assessed with application of the above-mentioned significance criterion. Table 5G-4 provides an overview/comparison of the level of impact associated with the General Plan under the four land use map alternatives evaluated in this EIR. A more detailed discussion of each alternative follows.

In assessing drainage impacts, this evaluation is programmatic in nature, and does not perform modeling of specific projects. Since details on project development are not known at this time, this type of analysis is more appropriate at the project specific level. It is assumed that development proposals on the sites being studied will be subject to further CEQA review as appropriate, and that demonstration of flood capacities, runoff rates, and impacts to downstream users are best assessed once project-specific factors are known.

Table 5G-4. Drainage and Surface Runoff Impacts under Each Land Use Map Alternative

Alternative 2	Alternative 3	Alternative 4	Alternative 5
<ul style="list-style-type: none"> • No substantial alteration of drainage patterns • Increased impervious surface • Inadequate policy guidance 	<ul style="list-style-type: none"> • No substantial alteration of drainage patterns • Increased impervious surface 	<ul style="list-style-type: none"> • No substantial alteration of drainage patterns • Increased impervious surface 	<ul style="list-style-type: none"> • Potential to substantially alter drainage patterns • Increased impervious surface

Alternative 2. Buildout to 2010 Using Existing General Plan. Implementation of the proposed alternative would not substantially alter drainage patterns in the planning area. Specific project development would increase stormwater runoff rates and volumes during rainfall events due to increases in impervious surfaces, such as roads, buildings, and parking lots.

Due to their limited site area and the fact they are within developed areas, the Mace Ranch and Under Second Street sites, and the in-fill area will not generate substantial runoff or substantially

modify existing drainage patterns. The runoff from these sites can be handled within existing systems. The Nishi/Gateway and Covell Center sites could generate substantial new runoff due to urban development, but would not substantially alter drainage patterns in the planning area. The City's General Plan provides some basic policy guidance on surface runoff from future projects (7.2 Flood Hazards and Drainage, Policies C and D). These policies are very broad (protection of existing flood control facilities and a requirement for projects to provide adequate storm drainage), and do not provide adequate direction or include provisions to reduce flows into flood control structures. These controls are seen as being insufficient to avoid significant impacts. Therefore, this impact is considered *significant*.

Alternative 3. Reduced Buildout Scenario. Due to their limited site area and the fact they are within developed areas, the Mace Ranch and Under Second Street sites, and the in-fill area will not generate substantial runoff or substantially modify existing drainage patterns. The runoff from these sites can be handled within existing systems. The Covell Center site (Variation 3, Business Park) could generate substantial new runoff due to urban development, but would not be expected to substantially alter drainage patterns in the planning area. The other variations proposed at Covell Center maintain the site in agricultural uses, and would not alter existing conditions. The proposed General Plan update contains specific policies (WATER 3.1 and 3.2 and associated standards and actions) that require new development be designed, constructed, and operated to mitigate for drainage and runoff impacts. Policy protection of downstream properties was determined to be inadequate. As a result, development at Covell Center (and therefore this alternative) was determined to have a *significant* impact.

Alternative 4. Community Expansion Scenario with Oeste Campus. Overall, this alternative would increase the developed area of the City in comparison to Alternatives 2 and 3, resulting in an increase in stormwater runoff rates and volumes.

Due to their limited site area and the fact they are within developed areas, the Signature, Mace Ranch, and Under Second Street sites, and the in-fill area will not generate substantial runoff or substantially modify existing drainage patterns. The runoff from these sites can be handled within existing systems. The Nishi/Gateway, Covell Center, and Oeste Campus sites could generate substantial new runoff due to urban development, but would not be expected to substantially alter drainage patterns in the planning area. The proposed General Plan update contains specific policies (WATER 3.1 and 3.2 and associated standards and actions) that require new development be designed, constructed, and operated to mitigate for drainage and runoff impacts. Policy protection of downstream properties was determined to be inadequate. As a result, development at Nishi/Gateway, Covell Center, Signature, Sutter-Davis, and Oeste Campus sites (and therefore this alternative) were determined to have a *significant* impact.

Alternative 5. Community Expansion Scenario with Davis Technology Campus. Overall, this alternative would have the greatest increase in developed area of the City in comparison to the other land use map alternatives, resulting in an overall increase in stormwater runoff rates and volumes.

Due to their limited site area and the fact they are within developed areas, the Signature, Mace Ranch, and Under Second Street sites, and the in-fill area will not generate substantial runoff. The runoff from these sites can be handled within existing systems. The Nishi/Gateway, Covell Center, Davis Technology Campus, and Intervening Lands sites could generate substantial new runoff due to urban development. The proposed General Plan update contains specific policies (WATER 3.1 and 3.2 and associated standards and actions) that require new development be designed, constructed, and operated to mitigate for drainage and runoff impacts. Policy protection of downstream properties was determined to be inadequate. As a result, development at Nishi/Gateway, Covell Center, Signature, Sutter-Davis, Davis Technology Campus, and Intervening Lands sites (and therefore this alternative) was determined to have a *significant* impact.

Regarding drainage patterns, the majority of the sites being studied with this land use alternative (Nishi/Gateway, Covell Center, Signature, Mace Ranch, Under Second Street, and in-fill sites) were found to not substantially modify existing drainage patterns in the planning area. Portions of the Davis Technology and Intervening Lands sites are at an elevation lower than 25 feet, and are within the potential inundation area that would result from the failure of levees on the Yolo Bypass. Standard HAZ 1.1a states that “No development may occur in flood-prone areas, including all areas below an elevation of 25 feet, unless mitigation of flood risk is assured.” Steps to reduce this risk could include raising developed areas above the 25 foot elevation level. Application of this technique could substantially modify drainage in the area, and is considered a *significant* impact on drainage patterns.

Mitigation Measure

Implementation of mitigation measure HYD-1.1 and HYD-2.1 would reduce the significant impact related to Alternative 2 to a *less-than-significant* impact. Implementation of mitigation measure HYD-2.1 would reduce the significant impact related to Alternatives 3 through 5 to a *less-than-significant* level.

HYD-1.1. Incorporate Planning Guidelines (Alternative 2)

HYD-2.1. Modification to Standard HAZ 1.1a (Alternatives 2 through 5)

This impact can be reduced to a less-than-significant level by modifying the language in Standard HAZ 1.1a to include protection of drainage patterns as follows:

“No development may occur in flood-prone areas, including all areas below an elevation of 25 feet, unless mitigation of flood risk is assured. Any mitigation proposed by the project proponent to mitigate flood risks shall demonstrate that the mitigation/design does not adversely impact other properties.”

Funding Source: Davis City Council

Implementing Party: City of Davis Planning and Building Department and Davis City Council

Monitoring Agency:
Timing:

*City of Davis Planning and Building Department
Prior to adoption of General Plan update for Alternative 3
through 5, and as part of a General Plan amendment
presented during the year 2000*

Impact HYD-3. Exposure of People and Property to Flooding Hazards

Significance Criterion

- A land use map alternative was determined to have a significant impact if the alternative would expose people or property to water-related hazards, such as flooding.

The impacts of the proposed land use map alternatives related to flood hazards were assessed with application of the above significance criterion. Table 5G-5 provides an overview/comparison of the level of impact associated with the General Plan under the four land use map alternatives evaluated in this EIR. A more detailed discussion of each alternative follows.

Table 5G-5. Exposure to Flood Hazards under Each Land Use Map Alternative

Alternative 2	Alternative 3	Alternative 4	Alternative 5
<ul style="list-style-type: none">• Potential exposure to flooding hazards (small portions of the in-fill area)	<ul style="list-style-type: none">• Potential exposure to flooding hazards (small portions of the in-fill area)	<ul style="list-style-type: none">• Potential exposure to flooding hazards (Sutter-Davis Hospital, Oeste Campus, and in-fill area)	<ul style="list-style-type: none">• Potential exposure to flooding hazards (Sutter-Davis Hospital, Davis Technology Campus, Intervening Lands, and in-fill area)

Alternative 2. Buildout to 2010 Using Existing General Plan. Portions of the planning area that are in a FEMA-designated 100-year floodplain include lands adjacent to the Covell Drain system northwest of the Covell/Highway 113 interchange and lands north and east of the City aligned with Dry Slough Bypass and extending to the Yolo Bypass (see Figure 5G-1). Lands east of the City at an elevation lower than 25 feet above mean sea level are considered to be in the inundation zone of the Yolo Basin that could occur with failure of the levee system along the basin.

Development in a floodplain can decrease onsite flood storage capacity; interrupt and redirect overland flows; and increase the depth, area, and duration of inundation during a flooding event. Increased areas or duration of flooding also can affect emergency access routes and result in other safety hazards. None of the sites being studied as part of this alternative are in the 100-year floodplain and would therefore not be affected. Portions of the City's planning area and a very small

amount of the in-fill area (in northwest Davis) are in the 100-year floodplain and are subject to flood damage.

The City's General Plan requires new development to locate outside of flood-prone areas unless mitigation is assured (7.2 Flood Hazards and Drainage, Policy A). While the policies in the existing General Plan should be strengthened (see discussion of Impacts HYD-1 and -2), the overall program impact is considered *less than significant* because the existing General Plan, as well as City development and building codes, control floodplain development and require adherence to numerous standards if an area of the floodplain is to be developed.

Alternative 3. Reduced Buildout Scenario. Development in a FEMA-designated floodplain or the inundation area of the Yolo Bypass could decrease flood storage capacity; interfere with floodflow routes; and increase the depth, area, and duration of inundation during a flooding event. None of the sites being studied as part of this alternative are in either hazard area, and therefore would not be impacted. Portions of the City's planning area and a very small amount of the in-fill area (in northwest Davis) are in the 100-year floodplain and are subject to flood damage. However, this impact is considered *less than significant* because the City's proposed General Plan update contains policies (e.g., HAZ 1.1 and 1.2) and their associated actions that discourage floodplain development and require adherence to numerous standards if an area of the floodplain is developed. For example, Standard HAZ 1.1c requires new development to include design measures to protect structures from a 100-year flood. The City development and building codes also control floodplain development and require adherence to numerous standards if an area of the floodplain is to be developed.

Alternative 4. Community Expansion Scenario with Oeste Campus. Unregulated development in a FEMA-designated floodplain can decrease flood storage capacity; interfere with floodflow routes; and increase the depth, area, and duration of inundation during a flooding event. Under this alternative, the Sutter-Davis Hospital and Oeste Campus sites are both in a FEMA-designated 100-year floodplain. In addition, portions of the City's planning area and a very small amount of the in-fill area (in northwest Davis) are in the 100-year floodplain and are subject to flood damage. However, this impact is considered *less than significant* because the City's proposed General Plan update contains policies (e.g., HAZ 1.1 and 1.2) and their associated actions that discourage floodplain development and require adherence to numerous standards if an area of the floodplain is developed. For example, Standard HAZ 1.1c requires new development to include design measures to protect structures from a 100-year flood. The City development and building codes also control floodplain development and require adherence to numerous standards if an area of the floodplain is to be developed.

Alternative 5. Community Expansion Scenario with Davis Technology Campus. Under this alternative, the Sutter-Davis Hospital project site is in the FEMA-designated 100-year floodplain. In addition, portions of the planning area and a very small portion of the in-fill area (in Northwest Davis) are in the 100-year floodplain and would be subject to damage. Some lands east of the City with an elevation lower than 25 feet above mean sea level also are in the inundation zone if a levee along the Yolo Bypass fails during a flood event. This includes portions

of the Davis Technology Campus and the Intervening Lands sites. However, this impact is considered *less than significant* because the City’s proposed General Plan update contains policies (e.g., HAZ 1.1 and 1.2) and their associated actions that discourage floodplain development and require adherence to numerous standards if an area of the floodplain is developed. For example, Standard HAZ 1.1c requires new development to include design measures to protect structures from a 100-year flood, and HAZ 1.1a provides guidance on development in the inundation area.

Mitigation Measure

Because this impact is *less than significant* under all of the alternatives, no mitigation is required.

Impact HYD-4. Construction-Related, Short-Term Water Quality Degradation

Significance Criterion

- A land use map alternative was determined to have a significant impact if the alternative would substantially degrade water quality.

The impacts of the proposed alternatives related to water quality degradation were assessed with application of the above significance criterion to the short term. Table 5G-6 provides an overview/comparison of the level of impact associated with the General Plan under the four land use map alternatives evaluated in this EIR. A more detailed discussion of each alternative follows.

Table 5G-6. Short-Term Water Quality Degradation under Each Land Use Map Alternative

Alternative 2	Alternative 3	Alternative 4	Alternative 5
<ul style="list-style-type: none"> • Potential erosion and construction materials handling could impact water quality if not controlled 	<ul style="list-style-type: none"> • Potential erosion and construction materials handling could impact water quality if not controlled • Smallest potential disturbance area 	<ul style="list-style-type: none"> • Potential erosion and construction materials handling could impact water quality if not controlled • Larger disturbance area than Alternatives 2 and 3 	<ul style="list-style-type: none"> • Potential erosion and construction materials handling could impact water quality if not controlled • Largest disturbance potential

Alternative 2. Buildout to 2010 Using Existing General Plan. Uncontrolled soil erosion resulting from construction and grading activities can result in short-term impacts on surface water quality through increased turbidity and sediment loading. Other pollutants also can be released

during construction and transported to storm drains, ditches, and streams. Improper handling practices (e.g., dumping wash water or solvents, cleaning machinery and tools close to waterways) also can affect surface water quality. Soil and associated contaminants that enter stream channels can increase turbidity, stimulate the growth of algae, increase sedimentation of aquatic habitat, and introduce compounds that are toxic to aquatic organisms.

The degree to which construction practices adversely affect water quality is determined by the size and intensity of soil disturbances, storage and handling practices of construction materials, training of construction personnel, and seasonal timing of construction activities in relation to the periods of rainfall. Short-term, construction-related water quality impacts related to the existing General Plan and future development of the sites being studied are considered to be *less than significant*. This finding was determined based on the need for developments over five acres proposed would be subject to NPDES permit requirements (which addresses erosion), and all sites would be subject to the City of Davis' grading regulations and the City's Urban Water Management Plan.

Alternative 3. Reduced Buildout Scenario. Uncontrolled soil erosion resulting from construction and grading activities can result in short-term impacts on surface water quality through increased turbidity and sediment loading. Improper handling practices can be a transport mechanism for other pollutants, such as concrete, petroleum products, paints, and other toxic substances, that could be discharged to watercourses. Both Citywide development and development in the sites being studied under the General Plan update could adversely affect water quality if it is unregulated. However, this impact is considered *less than significant* because the City's proposed General Plan update identifies policies (WATER 2.3) and associated actions that provide explicit actions for reducing construction-related water quality impacts, including continued application and enforcement of NPDES regulations for sites over five acres. Sites would also be subject to the City of Davis' grading regulations and the City's Urban Water Management Plan.

Alternative 4. Community Expansion Scenario with Oeste Campus. As described above, new development can result in short-term impacts on surface water quality because of soil erosion, which may accompany grading and other construction activities. Development of the sites being studied and other portions of the in-fill area would affect undeveloped farmland, so this alternative would increase the land being developed in the City's planning area. However, this impact is considered *less than significant* because the City's proposed General Plan update identifies policies (WATER 2.3) and associated actions that provide explicit actions for reducing construction-related water quality impacts, including continued application and enforcement of NPDES regulations for sites over five acres. Sites would also be subject to the City of Davis' grading regulations and the City's Urban Water Management Plan.

Alternative 5. Community Expansion Scenario with Davis Technology Campus. As described above, new development can result in short-term impacts on surface water quality as a result of soil erosion. This alternative would increase the area being developed in the City. As with the other alternatives, development would be subject to the regulatory requirements of the NPDES permit (for sites over five acres), as well as the other actions required under the

proposed policy WATER 2.3, which serves to minimize surface runoff during construction. Sites would also be subject to the City of Davis' grading regulations and the City's Urban Water Management Plan. As a result, the impact would be *less than significant*.

Mitigation Measure

Because this impact is *less than significant* for each of the four alternatives, no mitigation is required.

Impact HYD-5. Long-Term Water Quality Degradation Associated with Urban Runoff

Significance Criterion

- A land use map alternative was determined to have a significant impact if the alternative would substantially degrade water quality.

The impacts of the proposed alternatives related to long-term water quality degradation were assessed with application of the above significance criterion to the long term. Table 5G-7 provides an overview/comparison of the level of impact associated with the General Plan under the four land use map alternatives evaluated in this EIR. A more detailed discussion of each alternative follows.

Table 5G-7. Long-Term Water Quality Degradation under Each Land Use Map Alternative

Alternative 2	Alternative 3	Alternative 4	Alternative 5
<ul style="list-style-type: none"> • Long-term, development-related effects 	<ul style="list-style-type: none"> • Long-term, development-related effects • Lowest potential development 	<ul style="list-style-type: none"> • Long-term, development-related effects • Larger potential development than Alternatives 2 and 3 	<ul style="list-style-type: none"> • Long-term, development-related effects • Largest potential development

Alternative 2. Buildout to 2010 Using Existing General Plan. Urban runoff from streets, driveways, parking lots, and landscaped areas can contain oil, grease, heavy metals, pesticides, herbicides, fertilizers, and sediment. Concentrations of pollutants carried in urban runoff are extremely variable, depending on factors such as volume of runoff reaching the storm drains, time since the last rainfall, relative mix of land uses and densities, and amount of street cleaning conducted. Pollutants tend to collect during dry periods and then create a pulse of high concentration with the first storm. Development over five acres proposed under this alternative would be subject to NPDES permit requirements, which would require project proponents to address long-term water quality impacts. Additional City programs, such as marking stormdrains to remind people not to

flush wastes into them and Citywide collection of waste oil also reduces the potential for polluted runoff. Therefore, water quality degradation related to implementation of the existing General Plan is considered *less than significant*.

Alternative 3. Reduced Buildout Scenario. Development of the planning area and the projects proposed under this alternative has the potential to increase long-term water quality impacts resulting from stormwater runoff and associated discharges of pollutants. Urban runoff from streets, driveways, parking lots, and landscaped areas can contain oil, grease, heavy metals, pesticides, herbicides, fertilizers, and sediment. Impacts from these substances is considered *less than significant* because the City's proposed General Plan update identifies policies and related standards and actions that provide explicit actions for reducing water quality impacts. These include policy WATER 2.3, which limits the entry of polluted runoff into the drainage system; policy HAZ 4.1, which will reduce and manage toxic substances; and policy HAZ 4.2, which will require the proper disposal of toxic substances.

Alternative 4. Community Expansion Scenario with Oeste Campus. Development under this land use map alternative would have similar impacts to Alternatives 2 and 3, although the area of development would be larger. Impacts from this development is considered *less than significant* because the City's proposed General Plan update identifies policies and related standards and actions that provide explicit actions for reducing water quality impacts. These include policy WATER 2.3, which limits the entry of polluted runoff into the drainage system; policy HAZ 4.1, which will reduce and manage toxic substances; and policy HAZ 4.2, which will require the proper disposal of toxic substances.

Alternative 5. Community Expansion Scenario with Davis Technology Campus. Development under this land use map alternative would have similar impacts to Alternatives 2 through 4, although the area of development would be the largest of the alternatives. Impacts from this development is considered *less than significant* because the City's proposed General Plan update identifies policies and related standards and actions that provide explicit actions for reducing water quality impacts. These include policy WATER 2.3, which limits the entry of polluted runoff into the drainage system; policy HAZ 4.1, which will reduce and manage toxic substances; and policy HAZ 4.2, which will require the proper disposal of toxic substances.

Mitigation Measure

Because this impact is *less than significant* for each of the four alternatives, no mitigation is required.

Impact HYD-6. Long-Term Changes in Groundwater Supply and Quality

Significance Criterion

- A land use map alternative was determined to have a significant impact if the alternative would substantially deplete groundwater resources, degrade groundwater quality, or cause a potential public health hazard.

The impacts of the proposed land use map alternatives related to groundwater supply and quality were assessed with application of the above significance criteria. Table 5G-8 provides an overview/comparison of the level of impact associated with the General Plan under the four land use map alternatives evaluated in this EIR. A more detailed discussion of each alternative follows.

Table 5G-8. Changes in Groundwater Supply and Quality under Each Land Use Map Alternative

Alternative 2	Alternative 3	Alternative 4	Alternative 5
• Overall increase in long-term demand	• Overall increase in long-term demand	• Overall increase in long-term demand	• Overall increase in long-term demand

Alternative 2. Buildout to 2010 Using Existing General Plan. Development of the planning area under this alternative would increase the long-term demand and use of groundwater supplies if other sources of water are not developed and demand rates remain constant. Long-term withdrawal of groundwater could alter the quality of water for taste and mineral content in some wells. The City is currently evaluating development of alternative supplies. The City is also evaluating the feasibility of continuing and expanding use of water from deeper wells that generally provide higher quality water.

The existing General Plan contains policies under section 6.4 Water Quality and Conservation that address protection of groundwater resources, require conservation methods with new development, and develop groundwater recharge. In addition, water levels in City wells have been relatively stable (Weir pers. comm.) and are not expected to be substantially changed by the incremental development potential proposed within in the planning timeframe of the General Plan. Therefore, changes in groundwater supply related to future development of project sites under this land use map alternative are considered *less than significant*

Alternative 3. Reduced Buildout Scenario. Development of the planning area and the sites being studied as part of this alternative would increase the long-term demands and use of groundwater supplies if other sources of water are not developed and rates of use remain constant. Water levels in City wells have been relatively stable (Weir pers. comm.) and are not expected to be substantially changed by the incremental development potential proposed within in the planning

timeframe of the General Plan. Because the City's proposed General Plan update identifies policies and actions to conserve existing supplies and to manage supplies in the face of increased demand, this alternative will have a *less-than-significant* impact. Specifically, policies WATER 1.1 and 1.2 require the City to reduce the rate of water consumption by 20% from existing levels. Policy WATER 1.3 prohibits the approval of new development projects unless water is available or will be developed before occupancy. Policy WATER 2.2 requires the City to develop a groundwater management ordinance to ensure maintenance of groundwater quality and to implement the coordination of groundwater and surface water uses.

Alternative 4. Community Expansion Scenario with Oeste Campus. This alternative would increase the area being developed over Alternatives 2 and 3 by adding additional projects, including the sites being studied and other portions of the in-fill area. Water levels in City wells have been relatively stable (Weir pers. comm.) and are not expected to be substantially changed by the incremental development potential proposed within in the planning timeframe of the General Plan. Because the City's proposed General Plan update identifies policies and actions to conserve existing supplies and to manage supplies in the face of increased demand, this alternative will have a *less-than-significant* impact. Specifically, policies WATER 1.1 and 1.2 require the City to reduce the rate of water consumption by 20% from existing levels. Policy WATER 1.3 prohibits the approval of new development projects unless water is available or will be developed before occupancy. Policy WATER 2.2 requires the City to develop a groundwater management ordinance to ensure maintenance of groundwater quality and to implement the coordination of groundwater and surface water uses.

Alternative 5. Community Expansion Scenario with Davis Technology Campus. This land use map alternative has the highest growth potential, and would therefore put the greatest demands on groundwater resources. Water levels in City wells have been relatively stable (Weir pers. comm.) and are not expected to be substantially changed by the incremental development potential proposed within in the planning timeframe of the General Plan. Because the City's proposed General Plan update identifies policies and actions to conserve existing supplies and to manage supplies in the face of increased demand, this alternative will have a *less-than-significant* impact. Specifically, policies WATER 1.1 and 1.2 require the City to reduce the rate of water consumption by 20% from existing levels. Policy WATER 1.3 prohibits the approval of new development projects unless water is available or will be developed before occupancy. Policy WATER 2.2 requires the City to develop a groundwater management ordinance to ensure maintenance of groundwater quality and to implement the coordination of groundwater and surface water uses.

Mitigation Measure

Because this impact is *less than significant* for each of the four land use map alternatives, no mitigation is required.

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