

4.8

HYDROLOGY, WATER QUALITY, AND DRAINAGE

INTRODUCTION

The Hydrology, Water Quality, and Drainage section of the EIR describes existing drainage and water resources for the project site, and evaluates potential impacts of the project with respect to flooding, surface water resources, and groundwater resources. The Hydrology, Water Quality, and Drainage section is based primarily on the *Water, Sanitary Sewer and Storm Drain Conceptual Improvements Memo* prepared by Cunningham Engineering¹ and submitted by the project applicant to the City of Davis. Information was also drawn from the *City of Davis General Plan*.²

EXISTING ENVIRONMENTAL SETTING

The section below describes the existing hydrological features of the surrounding region and the project site, and the water quality of the existing resources in and around the project site.

Regional Flooding

Flooding tends to increase in the Davis area when either or both of the following occur: 1) flood waters from western Yolo County exceed the capacity of creeks and sloughs flowing easterly near Davis (e.g., flows in Dry Creek west of Davis have frequently caused flooding in the Davis area); and 2) flood waters from the Sacramento River back up into the Yolo and Willow Slough Bypasses, impeding gravity flow from these systems. Floodwaters from local drainages subsequently back up and pond behind the levees of the bypasses until flood flows in the bypasses recede. In addition, a dam inundation study prepared for the Bureau of Reclamation shows that flooding would occur in Davis if Monticello Dam (Lake Berryessa) on Putah Creek, 23 miles west of Davis, were to fail (City of Davis 1987a).

Catastrophic flood protection for the City from the Sacramento River is provided by storage and flood control projects upstream on the Sacramento River and on tributaries to the Sacramento River. Internal drainage within the Davis City Limits is captured by various storm drain collection systems and detention ponds. The ponds provide storage and reduce peak flood flows to the channels that flow to Willow Slough Bypass or the Yolo Bypass.

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 Willow Slough, Dry Slough, and Davis area watersheds north of Putah Creek. Yolo County has been mapped by the Federal Emergency Management Agency (FEMA) as being part of the National Flood Insurance Program (NFIP). This program identifies areas of potential flooding and their associated risks.

Regional Drainage

The City of Davis lies within 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 to 105 degrees Fahrenheit. Annual average rainfall in this region is around 16 inches and occurs primarily between November and March.

The City is situated on the valley floor where slopes are as flat as 5 to 10 feet per mile. Yolo County is drained by the Sacramento River and the Yolo Bypass, which is part of the Sacramento River Flood Control Project. The major streams that drain the unincorporated County areas around Davis are Putah Creek to the south and Willow Slough Bypass to the North, both of which empty into the Yolo Bypass. Willow Slough Bypass is a leveed channel that drains approximately 204 square miles and receives flows from Willow, Cottonwood, Chickahominy, and Dry Sloughs south of Cache Creek.

Local Flooding

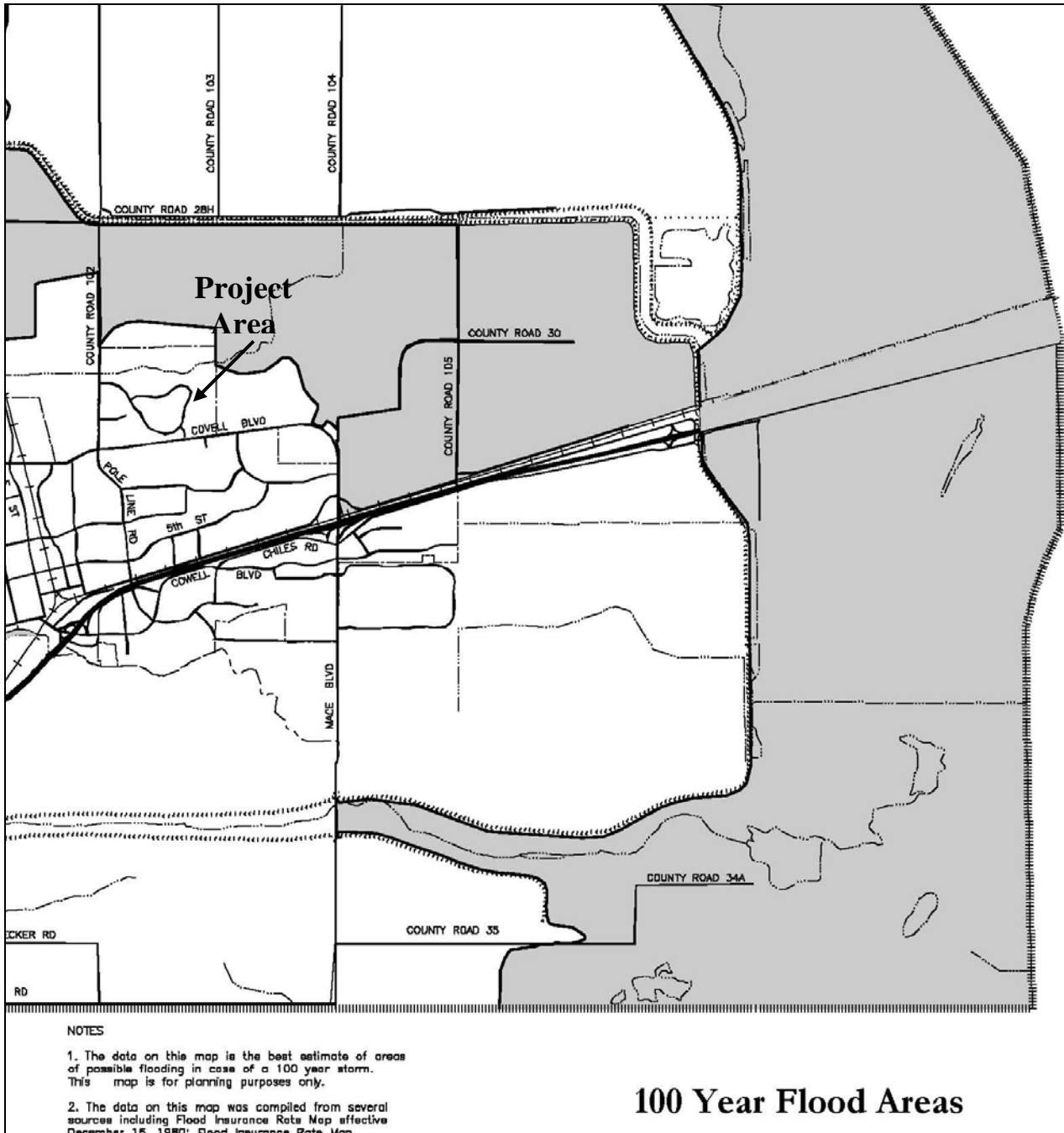
The City of Davis General Plan indicates that the project site does not lie in the 100-year floodplain (See Figure 4.8-1). Figure 4.8-1 was compiled from multiple sources including the FEMA Flood Insurance Rate Maps (FIRM) for the City of Davis and Yolo County. Areas north and east of the project site do lie within the 100-year flood plain as identified by FEMA.

Local Drainage

The project site comprises a drainage area of approximately 25 acres, and is currently undeveloped land. The project site is located within the Covell Drain watershed, near the downstream end of the drainage basin. The project site drains in a northern direction, discharging to an inlet near the site's northeast corner. The inlet drains to an existing 36-inch storm drain pipe, which outfalls into Channel "A" near the northeast corner of the adjacent Wildhorse residential development. The 36-inch pipe was originally designed to convey the project site's 10-year peak discharge, assuming agricultural use. The 36-inch pipe was sized to convey 6.2 cubic feet per second (cfs) of flow from the project site. Channel "A" carries drainage waters to the Willow Slough Bypass (WSB), and is connected to the WSB via three 48-inch diameter flap-gated culverts.

The Covell Drain is a channel that diverts runoff north of Davis from roughly an 11-square-mile watershed west of the City, including storm flows from the western portion of Davis as well as portions of Yolo County west of Davis. The Covell Drain was designed for the 100-year runoff event, to carry flows on the order of 1,500 cfs. The Channel "A" undercrossing at Pole Line Road and the Wildhorse golf course reach of Channel "A" were both sized to accommodate upstream flows (1,400 cfs). However, east of the Wildhorse Ranch site, Channel "A" follows a historic drainage route to the Willow Slough Bypass. The capacity of this historical conveyance is less than the 100-year existing peak runoff rate.

**Figure 4.8-1
100-Year Flood Areas**



Source: City of Davis General Plan, May 2001.

In addition to flow from Covell Drain, Channel “A” receives drainage water from the City via a channel along F Street, and also from the North Area Detention Pond. The F Street Channel drains most of central Davis between SR 113 and J Street (via the H Street pumping station), and the North Area Pond receives waters from the northern portion of the City. Channel “A” receives additional urban runoff from storm drain outfalls collecting stormwater from the Davis Manor drainage Shed. These outfalls are located north of Manzanita Lane.

Local Surface Water Quality

The General Plan Update EIR (p. 5G-3) states that pollutant concentrations in Davis surface water are highly variable, depending on urban densities, land uses, and the time since the last rains that produced surface runoff. The Covell Drain, Channel “A,” and other surface drainage ditches are typically intermittent and often do not have appreciable surface flow during the dry season. During the low-flow periods, surface water from the Covell Drain and Channel “A” may contain detectable amounts of agricultural pollutants, such as pesticides, herbicides, and fertilizers from agricultural return water. The Covell Drain could also contain some pollutants associated with urban runoff from the Stonegate watershed in west Davis. Surface water from the F Street Channel contains pollutants from central Davis urban runoff.

Urban runoff is typically higher in concentrations of copper, lead, cadmium, chromium, and zinc than U.S. Environmental Protection Agency (EPA) water quality criteria for the protection of aquatic life. The sources of these metals are typically linked to automobile use. In addition, new land development and improvements can have impacts on storm water quality as human activity can contribute many pollutants to receiving waterways, including oils and hydrocarbons from automobile use, pesticides, fertilizers, and sediment.

According to the U.S. EPA National Pollutant Discharge Elimination System (NPDES),³ the Stormwater Phase II Final Rule (December 8, 1999) requires operators of regulated small municipal separate storm sewer systems (MS4s) to obtain a National Pollutant Discharge Elimination System (NPDES) permit and develop a stormwater management program designed to prevent harmful pollutants from being washed by stormwater runoff into the MS4 (or from being dumped directly into the MS4) and then discharged from the MS4 into local waterbodies. The City of Davis is considered an operator of a regulated small municipal separate storm sewer system.

The U.S. EPA NPDES stormwater program requires operators of municipal storm drainage systems to implement a stormwater management program designed to reduce pollutants being discharged from their systems. According to the U.S. EPA NPDES, a stormwater management plan must include the following six minimum control measures:

1. Public Outreach and Education;
2. Public Participation and Involvement;
3. Illicit Discharge Detection and Elimination;
4. Construction Site Runoff Control;
5. Post-Construction Runoff Control; and
6. Pollution Prevention/Good Housekeeping.

Construction-related runoff and post-construction runoff control have the potential to result in a direct impact on the facilities that the Wildhorse Ranch project would discharge to. In order to maintain water quality, the storm drainage system operator is required to develop and implement strategies that include a combination of structural and/or non-structural Best Management Practices (BMPs).

Non-structural controls include planning procedures that manage growth in sensitive areas and minimize the imperviousness of developments. These types of BMPs, if implemented, would be incorporated into the onsite design of the project.

Structural BMPs include: detention basins that allow suspended particles to settle out prior to discharge, infiltration practices which promote percolation of runoff through the soil, and vegetative BMPs which are landscaping features such as grassy swales and artificial wetlands which promote pollutant removal. The City of Davis' current treatment system in this watershed relies on the artificial wetlands approach. Low flows are pumped out of Channel "A" just upstream of the Willow Slough Bypass and delivered to a wetland area just west of the Yolo Bypass.

Site Surface Water Quality

The proposed project would include approximately three acre-feet of distributed onsite stormwater detention storage for flooding protection and water quality purposes. Onsite runoff would be conveyed to distributed local detention areas via overland drainage and underground piping. A portion of the detention storage would be within the proposed onsite neighborhood greenbelt, and the remainder in the western part of the expanded Davis Greenbelt, abutting the east edge of the site. Instead of relying on detention ponds, the project would incorporate vegetative swales, rain gardens, and pervious pavement to detain stormwater flows.

Groundwater Quality

Groundwater in the Davis Planning Area is generally high in total dissolved solids and hardness, causing scaling in plumbing systems and affecting taste and odor. Over one-half of the residential homes in Davis use water softeners to lower hardness levels. Overall, groundwater in the Davis Planning Area is of fair quality when compared to current drinking water regulations. According to the General Plan Update EIR (p. 5G-4), the possibility exists that acceptable standards for certain contaminants could be exceeded in the future. Therefore, long-term development of wells over 1,500 feet deep is planned to improve total dissolved solids concentrations and to meet increasingly stringent drinking water standards. (See Section 4.9, Public Services and Facilities, for further discussion of water quality related to groundwater).

REGULATORY CONTEXT

The following is a description of federal, State, and local environmental laws and policies that are relevant to the California Environmental Quality Act (CEQA) review process.

Federal

Federal Clean Water Act

The NPDES permit system was established in the federal Clean Water Act (CWA) to regulate municipal and industrial discharges to surface waters of the U.S. Sections 401 and 402 of the CWA contain general requirements regarding NPDES permits. Section 307 of the CWA describes the factors that EPA must consider in setting effluent limits for priority pollutants.

Nonpoint sources are diffuse and originate over a wide area rather than from a definable point. Nonpoint pollution often enters receiving water in the form of surface runoff, but is not conveyed by way of pipelines or discrete conveyances. As defined in the federal regulations, such nonpoint sources are generally exempt from federal NPDES permit program requirements.

However, three types of nonpoint source discharges are controlled by the NPDES program: nonpoint source discharge caused by general construction activities, the general quality of stormwater in municipal stormwater systems, and discharges associated with industrial operations. The 1987 amendments to the CWA directed the federal EPA to implement the stormwater program in two phases. Phase I addressed discharges from large (population 250,000 or above) and medium (population 100,000 to 250,000) municipalities and certain industrial activities. Phase II addresses all other discharges defined by EPA that are not included in Phase I.

Construction Site Runoff Management

In accordance with NPDES regulations, in order to minimize the potential effects of construction runoff on receiving water quality, the State requires that any construction activity affecting one (1) acre or more must obtain a General Construction Activity Stormwater Permit. Permit applicants are required to prepare a Stormwater Pollution Prevention Plan (SWPPP) and implement BMPs to reduce construction effects on receiving water quality by implementing erosion control measures. Because construction of the Wildhorse Ranch project, through buildout, would collectively disturb more than one acre, the project would be subject to permit requirements. Implementation of such measures would be included in contract specifications.

Examples of typical BMPs completed in SWPPPs include: using temporary mulching, seeding, or other suitable stabilization measures to protect uncovered soils; storing materials and equipment to ensure that spills or leaks cannot enter the storm drain system or surface water; developing and implementing a spill prevention and cleanup plan; installing traps, filters, or other devices at drop inlets to prevent contaminants from entering storm drains; and using barriers, such as straw bales or plastic, to minimize the amount of uncontrolled runoff that enter drains or surface water.

State

State Water Resources Control Board

The State Water Resources Control Board (SWRCB) develops statewide policy and regulations for water quality control and allocates water rights. The Regional Water Quality Control Boards (RWQCBs) provide local implementation of policy and regulations, develop long-range plans for their areas, issue waste discharge permits and take enforcement actions against violators.¹ The project site is situated within the jurisdiction of the Central Valley RWQCB (Region 5). The Central Valley RWQCB (CVRWQCB) has the authority to implement water quality protection standards through the issuance of permits for discharges to waters at locations within the CVRWQCB's jurisdiction.

Water quality objectives for the Sacramento River and the Sacramento River's tributaries (e.g., Cache Creek, Willow Slough, and Yolo Bypass) are specified in the Water Quality Control Plan for the Sacramento River Basin and San Joaquin River Basin (Basin Plan) prepared by the CVRWQCB in compliance with the federal CWA and California's Porter-Cologne Act. The Basin Plan establishes water quality objectives and implementation programs to meet stated objectives and to protect the beneficial uses of water in the Sacramento-San Joaquin River Basin. Because the City of Davis is located within the CVRWQCB's jurisdiction, all discharges to surface water or groundwater are subject to the Basin Plan requirements.

Local Regulations

The following applicable goals and policies related to hydrology, water quality, and drainage are taken from the Water Element of the *City of Davis General Plan Update*.

Water Element

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

¹ http://www.swrcb.ca.gov/publications_forms/publications/factsheets/docs/dozenthings.pdf

- 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.
- Goal WATER 4 Monitor issues in the region that affect quality and quantity of water in the Davis Planning Area.
- Policy WATER 4.1 Research, monitor, and participate in issues in Yolo County and the area of origin of the City's groundwater that affect the quality and quantity of water.
- Policy WATER 4.2 Maintain contact with other appropriate State, Federal, and local agencies.

City of Davis Pollution Prevention Program

The City of Davis established its Pollution Prevention Program (also known as the Pollution Load Reduction Program) in 1994 to protect the environmental integrity of wetland resources. The program's goal is to reduce pollutant discharges to sewers and storm drains. The reduction is being accomplished through increased residential, business, and municipal awareness and practice of pollution prevention methods.

In 1994, the program's initial work effort was associated with identifying pollutants that have the potential to cause a detrimental impact to local wetlands and the sources of these pollutants. Based on the pollutant and source identification, implementation plans have been developed that specifically address tributyltin, selenium, and pesticides. Specific program elements include control strategies for commercial sources of tributyltin, an environmental business program, and a residential pesticide outreach program (i.e., the Healthy Gardens Program).

IMPACTS AND MITIGATION MEASURES

Standards of Significance

For the purposes of this EIR, impacts are considered potentially significant if implementation of the proposed project would:

- Result in a change in absorption rates or drainage patterns that would substantially increase the rate and amount of onsite or offsite surface runoff, or expose downstream locations to increased risk of flooding;

- Substantially degrade groundwater or surface water quality as a result of construction or operation of the project by exceeding adopted RWQCB Basin Plan water quality objectives, applicable NPDES permit requirements, or local standards; or
- Result in a net increase in downstream volumes.

Methods of Analysis

The information contained in this section was derived primarily from the Water, Sanitary Sewer and Storm Drain Conceptual Improvements Memo prepared for the project by Cunningham Engineering (December 2008). Cunningham Engineering used the 100-year flood with a 24-hour duration for the design storm in the development of the HEC-HMS hydrologic model for the preliminary design.

The storm drainage and water quality infrastructure designs proposed for the project are evaluated against the standards of significance listed above. Impacts are identified if the proposed design would result in a standard of significance being exceeded. As the project design is conceptual, the EIR analyzes impacts related to hydrology, water quality, and drainage at a program level. A more detailed analysis will be submitted concurrent with the submission of the Tentative Map.

Project Impacts and Mitigation Measures

4.8-1 Exposure of people and structures to flood hazards on the project site.

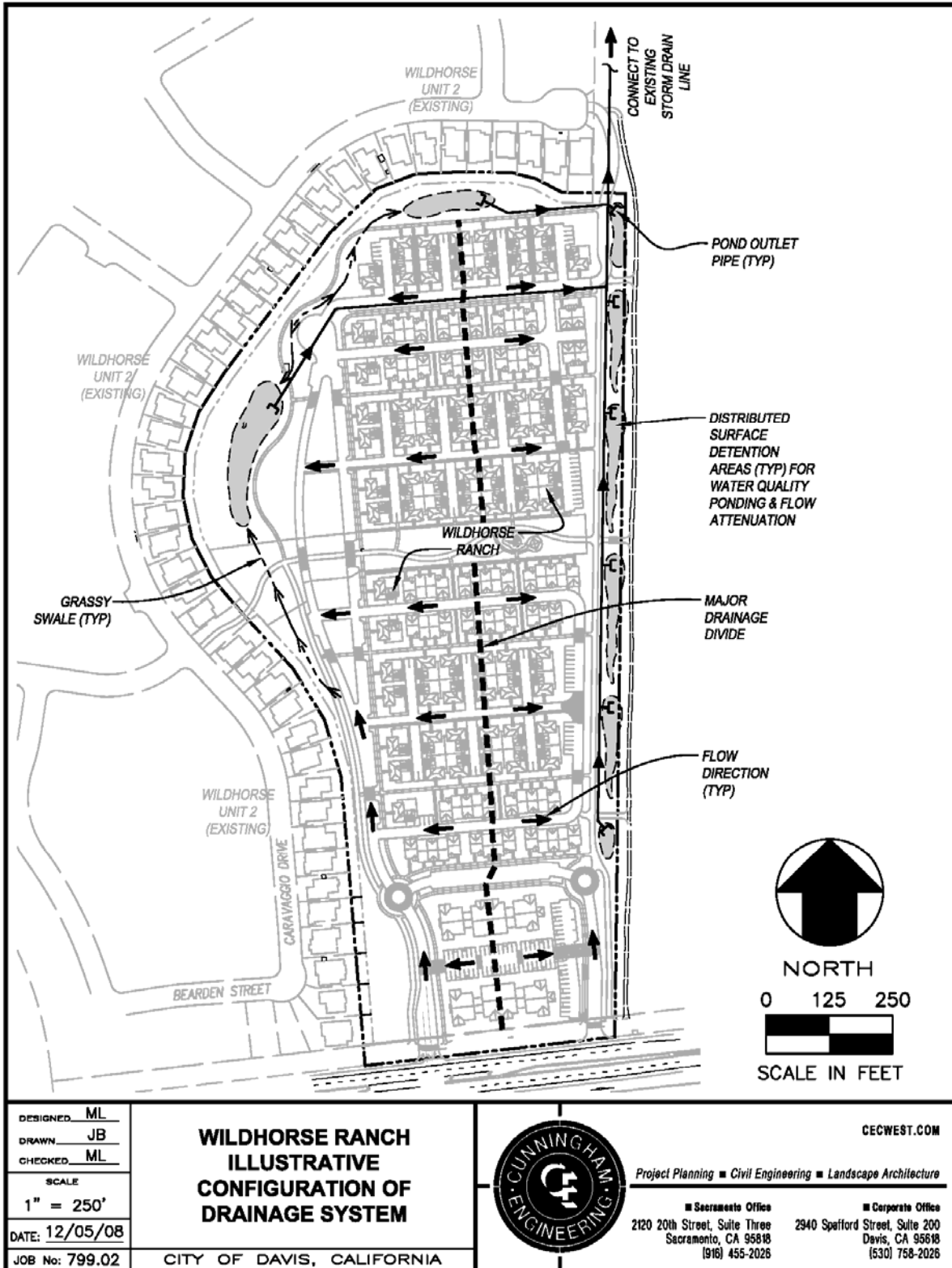
As indicated above in Figure 4.8-1, the project site is not located within the 100-year floodplain as identified in the Davis General Plan. The proposed project would incorporate on-site storm drain infrastructure, including gravity drainage pipes, to collect stormwater runoff and convey it into Channel “A” (See Figure 4.8-2).

The proposed project site is not located within the 100-year floodplain. In addition, preliminary drainage plans indicate that the proposed project would be able to detain post-development peak flows onsite so that peak flows leaving the developed site would equal current peak flows (peak flows from the undeveloped site). Detaining stormwater flows reduces the peak flow leaving the site such that the capacity of the 36-inch pipe to which the site will discharge will not be exceeded. Therefore, the project would not expose people or structures to flood hazards, and a *less-than-significant* impact would occur.

Mitigation Measure(s)

None required.

**Figure 4.8-2
 Conceptual Storm Drain System**



4.8-2 Increased stormwater runoff from the project site contributing to downstream flooding.

Currently, the project site's drainage outlet to Channel "A" is sized for a maximum of 6.2 cfs. Development of the project site with urban uses would increase the amount of impervious surfaces, and would result in an increase in the volume of peak stormwater flows. Hydrological calculations, conducted using the HEC-HMS computer model, found that post development flows for the 100-year 24-hour design storm would result in a peak flow of 54 cfs. In order to reduce peak flows to the drainage outlet to a maximum of 6.2 cfs, a reduction of 47.8 cfs would be required. To achieve this reduction, the project incorporates three acre-feet of onsite detention storage. Stormwater detention ponds are not included in the project design. Rather a distributed stormwater detention system is planned that would incorporate designs emphasizing the Low Impact Development standards of the City of Davis, including gently sloping vegetative swales, rain gardens, and pervious pavements.

Onsite runoff would be conveyed to the local detention areas via overland drainage and underground piping. A portion of the three acre-feet of detention storage would be within the proposed orchard area, and the remainder in the western part of the expanded 200-foot agricultural buffer abutting the east edge of the site.

The project's contribution to peak flows within Channel "A" was evaluated to ensure that the proposed project would not result in Channel "A" exceeding its design capacity. Cunningham Engineering compared the timing of peak flows into and within Channel "A" for the 100-year, 10-day storm. The project site's peak outflow would precede peak flows within Channel "A" by approximately six hours. By the time peak flows within Channel "A" are attained, the project site's outflow had receded by approximately 50 percent. As such, the project site's post-development flows are not expected to have an adverse effect on 100-year peak flows in Channel "A."

The incorporation of new drainage infrastructure, including detention areas would result in a reduced chance of flooding downstream from the project site. However, the drainage plans do not include site-specific design features or a complete engineering evaluation to ensure that the project site does not result in flooding risks to project residents from insufficient stormwater conveyance and detention infrastructure. Therefore, should the final project design not incorporate sufficient drainage infrastructure, including detention areas, a *significant* flooding impact could result.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level by ensuring that the proposed project would not contribute to downstream flooding.

4.8-2 *In conjunction with the submittal of a tentative map, the project applicant shall submit a design-level engineering report on the stormwater detention and conveyance system to the City Engineer demonstrating that the*

proposed project peak flows into the existing 36-inch storm drain would not exceed 6.2 cfs. The report shall also demonstrate that peak flows from the site do not coincide with peak flows within Channel "A" and demonstrate how the system would function to adequately treat stormwater runoff prior to being discharged into Channel "A." Stormwater detention and conveyance plans shall be reviewed and approved by the City Engineer.

4.8-3 Construction-related impacts to surface water quality.

The development of the proposed project would involve the construction of houses, roadways, parking lots, and infrastructure, which would require grading, excavation, and other construction-related activities that could cause soil erosion at an accelerated rate during storm events. All of these activities have the potential to affect water quality by contributing to localized violations of water quality standards, if stormwater runoff from construction sites enters receiving waters.

Construction activities such as grading, excavation, and trenching for site improvements would result in disturbance of soils at the project site or at offsite locations (including proposed connections to the drainage and wastewater systems and roadway areas). Construction site runoff can contain soil particles and sediments from these activities. Dust from construction sites can also be transported to other nearby locations, where the dust can enter runoff or water bodies. Spills or leaks from heavy equipment and machinery, staging areas, or building sites can also enter runoff. Typical pollutants could include petroleum products and heavy metals from equipment and products such as paints, solvents, and cleaning agents that could contain hazardous constituents. Sediment from erosion of graded or excavated surface materials, leaks or spills from equipment, or inadvertent releases of building products could result in water quality degradation if runoff containing the sediment entered receiving waters in sufficient quantities to exceed water quality objectives. Impacts from construction-related activities would generally be short-term and of limited duration.

Because the proposed project would require construction activities resulting in a land disturbance of more than one acre, the applicant is required by the State to obtain a NPDES General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit), which pertains to nonpoint source pollution from grading and project construction. Compliance with the Permit requires the project applicant to file a Notice of Intent (NOI) with the SWRCB and prepare a Storm Water Pollution Prevention Plan (SWPPP) prior to construction. The SWPPP would incorporate BMPs to prevent, or reduce to the greatest feasible extent, adverse impacts to water quality from erosion and sedimentation. BMPs may include: scheduling or limiting activities to certain times of year, prohibitions of practices, maintenance procedures, and other management practices.

Although impacts from construction-related activities would generally be short-term and of limited duration, should appropriate stormwater BMPs not be implemented, a *significant* impact would result.

Mitigation Measure(s)

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

4.8-3 *Prior to commencement of construction, the applicant shall obtain a NPDES General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit), which pertains to pollution from grading and project construction. Compliance with the Permit requires the project applicant to file a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) and prepare a Storm Water Pollution Prevention Plan (SWPPP) prior to ground disturbance. The SWPPP would incorporate Best Management Practices (BMPs) in order to prevent, or reduce to the greatest extent feasible, adverse impacts to water quality from erosion and sedimentation. A copy of the SWPP including BMP implementation provisions shall be submitted to the Chief Building Official.*

4.8-4 Long-term water quality degradation associated with urban runoff from the project site.

Implementation of the proposed project would be expected to result in long-term impacts to surface water quality due to urban runoff from the site. The increased impervious area created by the development of the proposed project would alter the types and levels of pollutants that could be present in project site runoff. Runoff from streets, driveways, parking lots, and landscaped areas typically contains nonpoint source pollutants such as oil, grease, heavy metals, pesticides, herbicides, fertilizers, and sediment. Concentrations of pollutants carried in urban runoff are extremely variable, depending on factors such as the following:

- Volume of runoff reaching the storm drains;
- Time since the last rainfall;
- Relative mix of land uses and densities; and
- Degree to which street cleaning occurs.

The City of Davis General Plan Update contains specific policies designed to avoid impacts to water quality. Specifically, General Plan Policy WATER 3.2 (“Maintain surface water quality”) includes the following actions, designed in part to ensure compliance with applicable federal, State, and local water quality regulations:

- Continue to implement best management practices and policies incorporated in the Urban Water Management Plan and other adopted plans;

- Continue to monitor and enforce, at the local level, provisions to control nonpoint source water pollution contained in the United States Environmental Protection Agency NPDES program; and
- Continue to enforce provisions to control erosion and sediment from construction sites.

The proposed project would incorporate appropriate BMPs for minimizing long-term urban runoff impacts, including but not necessarily limited to the following:

- Street and parking lot cleaning;
- Oil traps on stormwater inlets;
- Vegetated swales; and
- Public outreach and education materials.

In addition, on-site runoff would be conveyed to distributed local detention areas via overland drainage and underground piping. A portion of the detention storage would be within the proposed on-site neighborhood greenbelt, and the remainder in the western part of the expanded Davis Greenbelt, abutting the east edge of the site. Instead of relying on detention ponds, the project would incorporate vegetative swales, rain gardens and pervious pavement to detain stormwater flows. Furthermore, implementation of Mitigation Measure 4.8-2 would ensure that the stormwater system is adequately designed to minimize pollutants entering the downstream water system. Therefore, the proposed project would have a *less-than-significant* impact.

Mitigation Measure(s)

None required.

Cumulative Impacts and Mitigation Measures

4.8-5 Long-term increases in peak stormwater runoff flows from the proposed project in combination with existing and future developments in the Davis area.

Implementation of the proposed project would result in the construction of up to 191 residential units on the project site, thereby creating impervious surfaces where none currently exist. The addition of impervious surfaces to the project site could increase peak stormwater runoff rates and volumes on and downstream of the site. However, the proposed project would include on-site collection and detention facilities to accommodate the increased flows.

As indicated on page 5G-15 of the General Plan Update EIR, a proposed land use would be considered to have a significant impact if the new land use 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 effect of the proposed project plus other development in the project area, leading to buildout of the General

Plan, could be to increase stormwater flows to a degree that would exceed existing drainage system capacity and cause flooding downstream. The proposed project would include a stormwater detention system that would ensure that the proposed project would not result in a cumulatively considerable incremental increase in stormwater flows that would result in flooding downstream of the project site. Furthermore, future development within the City of Davis would be required to comply with City drainage plans and polices to ensure that each project would not cause a significant negative impact to other drainage facilities in the watershed. Although the final design of the storm drainage system is conceptual at this time, final storm drainage design would be reviewed by the City Engineer for consistency prior to implementation of the project. Therefore, a *less-than-significant* cumulative impact would result from implementation of the proposed project.

Mitigation Measure(s)

None required.

4.8-6 Cumulative impacts related to degradation of water quality.

Construction of the proposed project would contribute to a cumulative increase in urban pollutant loading, which would adversely affect water quality. Cumulative development in the Davis area, including the proposed project, would also result in increased impervious surfaces that could increase the rate and amount of runoff, thereby potentially adversely affecting existing surface water quality through increased erosion and sedimentation. The primary sources of water pollution include: runoff from roadways and parking lots; runoff from landscaping areas; non-stormwater connections to the drainage system; accidental spills; and illegal dumping. Runoff from roadway and parking lots could contain oil, grease, and heavy metals; additionally, runoff from landscaped areas could contain elevated concentrations of nutrients, fertilizers, and pesticides.

The mitigation measures for the project-specific impacts identified in Impact Statements 4.8-3 and 4.8-4 would reduce the pollutants in the stormwater from this project to a level lower than in the runoff from most developed areas within the Davis area, because most of these areas were constructed before stormwater quality BMPs were required. Additionally, future development projects would be required to implement BMPs comparable to the BMPs identified in this project. However, without implementation of proper BMPs, this project and other future projects would result in a continued decrease in the water quality of the local Davis natural drainage system. As a result, the incremental contribution from the proposed project to the cumulative water quality impact is *significant*.

Mitigation Measure(s)

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

4.8-6 *Implement Mitigation Measures 4.8-2 and 4.8-3.*

Endnotes

¹Cunningham Engineering, *Parlin Wildhorse Ranch – Water, Sanitary Sewer and Storm Drain Conceptual Improvements*, March 13, 2007.

²City of Davis, *City of Davis General Plan*, May 2001.

³U.S. Environmental Protection Agency, http://cfpub.epa.gov/npdes/home.cfm?program_id=3, accessed January 7, 2007.