

3.10 HYDROLOGY AND WATER QUALITY

This section examines impacts associated with the West Village Expansion component of the 2018 LRDP on local and regional hydrologic characteristics, including flooding and drainage, groundwater recharge, and surface and groundwater quality.

In response to the NOP, comments were received regarding concerns regarding floodplain management, drainage plans, wastewater discharge, stormwater runoff, dewatering discharge, and groundwater resources. As they pertain to implementation of the West Village Expansion component of the 2018 LRDP, these impacts are described and addressed within this section.

3.10.1 Regulatory Setting

Plans, policies, regulations, and laws (applicable to and/or considered for the project) are provided in Volume 1 of this EIR. As the regulatory setting provided in Volume 1 considers potential development, including the project, within the entirety of the UC Davis campus as envisioned through the 2018 LRDP, no additional regulatory setting is provided for the project.

3.10.2 Environmental Setting

Section 3.10, "Hydrology and Water Quality," (Volume 1) presents the hydrology and water quality environmental setting for the entire UC Davis campus, including the West Village Expansion component. The West Village Expansion site and the remote parking area are characterized by relatively flat topography and have historically supported agricultural operations since the early 1900s. Under natural conditions, the West Village Expansion site and remote parking area may have served as floodplain area to the adjacent Putah Creek riparian corridor. There are no natural drainage features on either site today. The closest stream is the South Fork of Putah Creek, which lies about 5800 feet south of the southern margin of the West Village Expansion site and 3,000 feet south of the southern margin of the remote parking area.

The West Village Expansion site is irrigated and served by outflow from Lake Berryessa and two wells. Irrigation well, E3B, was constructed prior to 1952 and is on the west half of the site. The second irrigation well, E3D, which was constructed in 1972, is on the east half of the West Village Expansion site. Both well pumps are electrically powered. Well water is distributed through an underground concrete-pipe irrigation system and is connected to a detention pond located to the southwest of the project site. The detention pond is fed by Lake Berryessa, which serves as the primary irrigation water source, while wells serve as a backup source. A portable linear-move irrigation system is located just north of the Western Center for Equipment facility.

3.10.3 Environmental Impacts and Mitigation Measures

SIGNIFICANCE CRITERIA

Refer to Volume 1, Section 3.10, "Hydrology and Water Quality," for a discussion of applicable Significance Criteria.

ANALYSIS METHODOLOGY

See Volume 1, Section 3.10, “Hydrology and water Quality,” for analytical methods relative to hydrology and water quality impacts.

ISSUES NOT EVALUATED FURTHER

The following impacts were identified as part of the analysis of the 2018 LRDP and are either (1) adequately evaluated at the program level of analysis of the 2018 LRDP, or (2) not applicable to the West Village Expansion component.

Construction-Related Water Quality and Erosion

Construction of the West Village Expansion component may require grading of the entire West Village Expansion site and the remote parking area. Given that construction of the West Village Expansion component would occur over a single 24-month phase commencing August 2018, it is expected that both areas would be graded or exposed at one time. Grading would expose and disturb soils which could cause a temporary increase in erosion during storm events and reduce runoff water quality. As noted in Impact 3.10-1 of Volume 1, any development under the 2018 LRDP that would disturb one or more acres of land, such as the West Village Expansion component, would be required to obtain coverage under the General Construction Permit prior to construction. To comply with the General Construction Permit, a stormwater pollution prevention plan (SWPPP) would be prepared detailing measures to control soil erosion and waste discharges from project construction areas. As part of the UC Davis Environmental Health and Safety stormwater program, UC Davis would provide a SWPPP checklist for contractors to follow to ensure that their plan meets campus and regulatory requirements. The contractor for the West Village Expansion component would be required to implement the SWPPP to control soil erosion and waste discharges. In compliance with existing regulations, UC Davis would also inspect the construction sites, prepare written reports documenting compliance, and require additional stormwater controls where necessary to ensure compliance. As a result, no impacts beyond those identified in Volume 1 would occur, and no additional project-level analysis is necessary.

Long-Term Water Quality and Water Quality Standards

As discussed in Section 3.10, “Hydrology and Water Quality,” of Volume 1, water quality impacts associated with an increase in impervious surface coverage and altered drainage patterns from implementation of the 2018 LRDP (2018 LRDP Impact 3.10-2) would be less than significant through compliance with municipal separate storm sewer systems (MS4) Phase II General Stormwater Permit. The remote parking area would add approximately 20 acres of paved, impervious surface coverage and would also comply with the provisions of MS4 Phase II General Stormwater Permit. Consistent with MS4 requirements, implementation of the West Village Expansion component would include low-impact-development measures and site design measures to reduce runoff and treat stormwater. As discussed under 2018 LRDP Impact 3.10-3, implementation of the 2018 LRDP would result in an increase in the amount of wastewater generated. By continuing to adhere to the provisions of National Pollutant Discharge Elimination System permit CA0077895, it is expected that the wastewater treatment plant would continue to comply with waste discharge requirements, and therefore impacts associated with water quality standards would be less than significant. No additional project-level analysis is necessary.

Shallow/Intermediate Groundwater Supply and Recharge

Impacts associated with implementation of the 2018 LRDP, including the West Village Expansion component, to the shallow/intermediate aquifer were found to be less than significant in Volume 1. Groundwater withdrawals from the shallow/intermediate aquifer would not substantially increase under the 2018 LRDP, and development would not increase the amount of impervious surface such that recharge rates would be affected. While there would be an increase in impervious surface

coverage, the West Village Expansion component, including the remote parking area, would be required to implement post-construction stormwater control (discussed below under Impact 3.10-2), which would enhance the infiltration capacity of the area. As a component of the 2018 LRDP, development of additional student housing at the West Village Expansion site would also not result in a significant impact to groundwater and groundwater recharge rates within the shallow/intermediate aquifers. No additional project-level analysis is necessary.

Flood Risk

The West Village Expansion site and the remote parking area are not located on the 100-year floodplain and would therefore not experience outside risk associated with the placement of housing within a floodplain. This issue does not need to be further analyzed in this project-specific analysis.

Risk of Dam Failure

As noted in Section 3.10, “Hydrology and Water Quality,” of Volume 1, the plan area, including the West Village Expansion component, is located within the inundation zone of Berryessa Dam. However, the dam is regularly monitored and maintained by state and federal agencies such that the risk of dam failure at the site is considered to be minimal. This issue does not need to be further analyzed in this project-specific analysis.

Inundation by Tsunami, Seiche, or Mudflow

As noted in Section 3.10, “Hydrology and Water Quality,” of Volume 1, the plan area, including the West Village Expansion component, is not located in an area subject to tsunamis, seiches, or mudflows. As a result, no impact would occur, and this issue does not need to be further analyzed in this project-specific analysis.

PROJECT-SPECIFIC IMPACTS AND MITIGATION MEASURES

Impact 3.10-1: Impacts to the deep aquifer groundwater supply and recharge.

Development and occupancy of the West Village Expansion site would increase the amount of water extracted from the deep aquifer. However, this increase in demand is not anticipated to result in a net deficit in the aquifer or a continued lowering of the groundwater table. This impact would be **less than significant** impact.

As discussed in Section 3.10, “Hydrology and Water Quality” of Volume 1, current domestic water consumption on campus is estimated to be approximately 573 million gallons per year. During normal years, when water is available from the Davis Woodland Water Supply Project (DWWSP), this demand is met by surface water. During dry periods, water continues to be drawn from the six wells that tap the deep aquifer. The West Village Expansion component of the 2018 LRDP would place additional demand on water from the deep aquifer for domestic use. The deep aquifer is a high-quality drinking water source, understood to be of limited lateral and vertical recharge, and overlain by impermeable clay layers that restrict direct recharge from the overlying campus.

As discussed in Section 3.10, “Hydrology and Water Quality” of Volume 1, the UC Davis campus will continue to draw groundwater as a domestic water source during periods of low flow in the Sacramento River, when water is not available from the DWWSP (i.e., during Term 91 conditions). The West Village Expansion component of the 2018 LRDP would connect to the campus domestic water system via the installation of approximately 7,500 linear feet of new 10-inch, 8-inch, 6-inch, and 2-inch pipes to accommodate the new buildings. However, as noted in Volume 1, groundwater supplies within the deep aquifer are not considered to be in decline by the California Department of Water Resources, and as implementation of the 2018 LRDP, inclusive of the West Village Expansion

component, is not anticipated to increase the potential for groundwater levels to decline, impacts would be **less than significant**.

Mitigation Measures

No mitigation measures are necessary.

Impact 3.10-2: On-site and off-site flood-related impacts.

Development and occupancy of the West Village Expansion site would result in an overall increase in impervious surfaces and produce changes to site-specific stormwater infrastructure. If new stormwater infrastructure is not appropriately designed to accommodate site runoff, or existing campus infrastructure cannot accommodate increased flows, impacts related to local and off-site flooding would be **significant**.

As discussed in Section 3.10, “Hydrology and Water Quality” of Volume 1, surface water generated on campus during heavy precipitation events normally results in localized on-site ponding at storm drain inlets and along roadsides and does not generally result in property damage. In the absence of stormwater improvements at new development sites, storm events could result in an increase in the frequency or magnitude of localized flooding, causing property damage. Large storm events have resulted in shallow overland flows in parts of the central campus in the past. The central campus drainage system involves a system of underground pipes that drain to the Arboretum Waterway (which provides the only major detention storage in the system), from which stormwater is pumped to the South Fork of Putah Creek during large storm events.

With implementation of the West Village Expansion component, approximately 6,000 linear feet of new storm drain pipes would be added to accommodate the new buildings, with new pipes ranging from 8-inches to 36-inches in diameter. Bio-swailes and small stormwater infiltration basins would be installed adjacent to parking areas and in landscaped areas of the project site to capture, infiltrate, and offset increases in stormwater runoff generated by the West Village Expansion component.

Surface water flows across the remote parking area currently flow through roadside drainages along Old Davis Road; paving this 20-acre area would not affect this drainage pattern but would result in an increase in the amount of flow across the site as a result of a change from pervious to impervious. Further, development of the West Village Expansion site would result in an increase in impervious surface areas and would involve changes to stormwater infrastructure. The pattern of drainage, infrastructure connectivity, and the locations of specific features could change. Stormwater infrastructure that is not replaced or redesigned could contribute to problems associated with drainage and flooding. This would be a **significant** impact.

WVE Mitigation Measure 3.10-2: Implement project-level stormwater controls.

Implement 2018 LRDP Mitigation Measure 3.7-4.

Significance after Mitigation

Implementation of WVE Mitigation Measure 3.10-2 would require drainage studies for the West Village Expansion and would ensure that necessary stormwater systems and/or on-site detention facilities would be engineered and constructed with appropriate sizing for anticipated storm events. This mitigation would reduce potential impacts associated with localized flooding to **less-than-significant** levels.