

4.2 Water Resources

4.2.1 Overview

This section describes the regulatory setting applicable to water resources and the potential effects of the alternatives on water resources in the study area, including water quality, surface water drainage patterns, groundwater recharge, and wetlands. As described in Section 3.2, Water Resources, the study area includes all surface waters and wetlands within the Covered Lands, their associated watersheds, and the groundwater basins that underlie the Covered Lands. As described in Section 4.2.7, Cumulative Effects, the cumulative effects analysis area for water resources is concurrent with the study area.

4.2.1.1 Regulatory Setting

Activities proposed in the study area under all the alternatives would be required to conform to Federal, state, and local laws and regulations that protect water resources, as described below.

Federal Clean Water Act

The Federal Clean Water Act (CWA) was enacted to protect the nation's waters. It identifies water quality standards, criteria, and guidelines for protecting water quality, and requires a Federal permit for discharges to waters of the United States. Specifically, Section 404 of the CWA authorizes the Secretary of the Army, acting through the U.S. Army Corps of Engineers (USACE), to issue permits regulating the discharge of dredged or fill materials into the “navigable waters at specified disposal sites.” Waters of the United States are broadly defined in the Code of Federal Regulations (CFR), Title 33, Section 328.3, subdivision (a) to include navigable waters, perennial and intermittent streams, lakes, rivers, and ponds, as well as wetlands, marshes, and wet meadows. Section 404 also extends additional protection to certain rare and/or sensitive aquatic habitats, including wetlands, which occur in the study area. Authorization to discharge dredge or fill materials into wetlands, or other waters of the United States, would require the applicant to demonstrate that the project has been designed to avoid, minimize and mitigate for all unavoidable effects on water of the United States, and comply with the Federal *no net loss of wetlands* policy (Compensatory Mitigation for Losses of Aquatic Resources, 73 *Federal Register* [FR] 19594 [April 10, 2008]; Executive Order 11990 [1977]). Of note, wetlands that are jurisdictional for CWA purposes may differ from habitat areas that include wetland values; for purposes of this Supplemental Draft EIS, the term wetland is used to describe wetland habitat areas and not only CWA jurisdictional wetlands.

Section 401 of the CWA requires an applicant requesting a Federal permit (including a Section 404 permit) for an activity that may result in any discharge into navigable waters to provide state certification that the proposed activity will not violate state and Federal water quality standards.

Finally, the CWA also establishes the National Pollutant Discharge Elimination System (NPDES), which is implemented by the state and regulates discharges of pollutants into waters of the United States. All proposed construction activities in the study area would be subject to the California NPDES General Construction Permit, which, among other things, requires the use of measures to replicate the preproject water balance so that surface flow runoff does not increase. Certain other activities could be subject to other general permits issued under the NPDES program, including any municipal separate storm sewer system (MS4) requirements. At present, no portion of the study area is subject to an adopted or proposed MS4 permit.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne) establishes nine regional water quality control boards (RWQCBs) under the auspices of the State Water Quality Control Board (SWRCB), each of which administers state and Federal water quality programs for discrete areas in California. As discussed in Section 3.2, Water Resources, most of the study area is subject to the jurisdiction of the Central Valley RWQCB and regulated under the Tulare Lake Basin Plan. The southeastern-draining portions of the study area are within the jurisdiction of the Lahontan RWQCB and are regulated under the Lahontan Basin Plan. In accordance with Porter-Cologne, the SWRCB implements the NPDES program through its RWQCBs and has jurisdiction to regulate discharges to wetlands or other waters of the state, including implementation of the state's *no net loss of wetlands* policy (Executive Order W-59-93). The RWQCB also issues Waste Discharge Requirements (WDRs) and the California General NPDES Construction Permit, through which they protect the beneficial uses of the state's waters as identified in the applicable basin plan.

California Department of Health Services

The California Department of Health Services (DHS) is responsible for enforcing Federal and state laws that protect drinking water quality. DHS also administers Title 22 of the California Code of Regulations (CCR), which regulates the treatment and discharge of wastewater.

Kern County Laws, Policies, Ordinances, Regulations, and Standards

Kern County has established several policies and requirements related to water quality. These development policies and implementation measures related to the protection of water quality are found in the Land Use, Open Space, Conservation Element and Safety Element of the Kern County General Plan (Kern County 2009a). Kern County also has construction and grading codes and standards to protect against water quality impacts (Kern County Grading Guidelines; Kern County Code of Building Regulations Chapter 17.28).

4.2.1.2 Methods

The analysis of direct, indirect, and cumulative effects on water resources is considered in terms of whether each alternative would exceed Federal or state water quality standards, result in hydromodification that would significantly change the pattern of runoff or groundwater recharge or otherwise affect groundwater levels, or result in fill of wetlands that would fail to meet the Federal and state *no net loss of wetlands* policies. In general, potential effects on surface flow and groundwater recharge were assumed to be associated with ground-disturbing activities. Potential effects on wetlands were assumed to be associated with activities resulting in disturbance or fill of wetland areas, or activities that could result in erosion or runoff into these areas. Finally, water quality effects were assessed by analyzing the likely sources of contaminants in water flows, whether from construction, development-related uses, or Existing Ranch Uses or Plan-Wide Activities, as applicable.

4.2.2 No Action Alternative

4.2.2.1 Surface Water Flow and Groundwater Recharge

Commercial and Residential Development Activities

No Commercial or Residential Development Activities would occur under the No Action Alternative, and there would be no direct or indirect effects on surface water flow or groundwater recharge from such activities.

Existing Ranch Uses

As discussed in Section 3.2.1.2, Surface Water, surface waters in the study area are primarily ephemeral streams that flow for short periods of time following significant storm events. Most are dry the majority of the time. When surface flows occur, water can percolate through the pervious stream channel bottoms and recharge groundwater basins that underlie the watercourse. Potential effects on drainage and flow patterns can occur from modifying the extent of impervious surfaces, increasing the amount of precipitation that flows from the landscape, or reducing the rate of subsurface recharge or otherwise affecting groundwater levels.

Under the No Action Alternative, Existing Ranch Uses would continue to occur in similar areas and at similar levels as they do currently. Existing Ranch Uses that may affect surface water flows and groundwater recharge would be the ongoing use of stock ponds and irrigation for farming. Best management practices (BMPs) and use restrictions to protect and preserve existing conservation values, including water resources, would be implemented pursuant to the requirements of the Ranchwide Agreement, as currently set forth in the Interim Ranch-Wide Management Plan (Interim RWMP) (Tejon Ranch Company 2009). For example, the Interim RWMP currently includes water resource management BMPs that require water systems for livestock and farming be adequately maintained and used efficiently, and that drip irrigation and other water efficiency measures (e.g., miniature jet fan sprinklers) be employed to reduce water use in farmed areas. Furthermore, water diversion activities are limited by the Ranchwide Agreement, so there would be no significant expansion of groundwater extraction practices and no major alterations or improvements of the ranch surface for water storage, including water storage in underground aquifers. All future RWMPs would be required to similarly reflect BMPs that protect the conservation values of the land, and would be reflected in the conservation easements required by the Ranchwide Agreement.

Permanent ground disturbance associated with construction or maintenance of new infrastructure (ancillary ranch structures, back-country cabins) could also affect surface flow or groundwater recharge. These effects are expected to be minor, however, and would comply with state and local grading requirements (e.g., effects on jurisdictional surface waters would require a permit from USACE and/or the RWQCB, which require hydromodification limits and BMPs for adverse effects on surface water flows).

Other Existing Ranch Uses, such as road and utility repair and maintenance, ancillary ranch activities, film production, and private recreation, are expected to continue to occur mostly in existing disturbed areas, roads, or trails, and would not affect surface water flows or groundwater recharge. Similarly, grazing would not be expected to affect surface water flows or groundwater recharge, particularly given the BMPs and use restrictions required pursuant to the Ranchwide Agreement, which would reduce potential grazing effects on riparian and stream areas (e.g., distribution of water sources across the study area to reduce demand for water from stream and riparian areas, and widespread distribution of salt and mineral supply blocks to draw livestock away from natural water sources and distribute them more evenly across the landscape).

The continuation of Existing Ranch Uses under the No Action Alternative would result in minor effects on surface water flows and groundwater recharge, all of which would be reduced through the implementation of BMPs and use restrictions required pursuant to the Ranchwide Agreement. Existing Ranch Uses under the No Action Alternative would not result in hydromodification that would significantly change the pattern of runoff or groundwater recharge or otherwise affect groundwater levels.

4.2.2.2 Wetlands

Commercial and Residential Development Activities

No Commercial or Residential Development Activities would occur under the No Action Alternative, and there would be no direct or indirect effects on wetlands from such activities.

Existing Ranch Uses

As described above, Existing Ranch Uses would continue to occur in similar areas and at similar levels under the No Action Alternative. Wetlands could be affected by Existing Ranch Uses that result in ground disturbance (roads, utilities, back-country cabins) if construction or maintenance activities were to occur in or around wetland areas, or if construction runoff, sediment, or debris were to enter wetland areas. Grazing could generate nutrients, bacteria, and/or pathogens, which could be introduced to wetlands areas by surface water runoff. Grazing could also damage soil surfaces near wetlands, which could result in increased erosion and siltation of wetlands areas. Other ongoing activities, such as film production and private recreation, would occur mostly in existing disturbed areas, roads, and trails, outside of wetland areas.

Construction or maintenance activities that could result in temporary or permanent fill of wetland areas would be subject to Federal and state permitting requirements, including the requirement to meet the *no net loss of wetlands* policies. State or local grading permits, if needed, also require implementation of soil erosion and water quality protection measures that protect wetlands. Similarly, BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP) would continue to be implemented and would include provisions to minimize the effects of grazing on the landscape in general and sensitive communities in particular, such as the required rotation of livestock across Tejon Ranch using fences, distribution of salt and mineral supplements away from water sources, additional distribution of a variety of water sources across the land, and seasonal rotation of the livestock to lower elevations during winter and higher elevations during summer (Tejon Ranch Company 2009). These BMPs would minimize effects on wetlands from grazing.

The continuation of Existing Ranch Uses under the No Action Alternative could result in minor effects on wetlands; however, these effects would be reduced through the BMPs and use restrictions required by the Ranchwide Agreement and through the no net loss requirements and water quality protection requirements prescribed as part of the Federal, state, or local permitting processes. All proposed fill would be required to meet the *no net loss of wetlands* policy.

4.2.2.3 Water Quality

Commercial and Residential Development Activities

No Commercial or Residential Development Activities would occur under the No Action Alternative, and there would be no direct or indirect effects on water quality.

Existing Ranch Uses

Existing Ranch Uses would continue to occur under the No Action Alternative. Grazing would continue in the study area, and could contribute nutrients, bacteria, and/or pathogens to surface waters, or through the soil to the underlying groundwater basin. Grazing activities may also increase siltation in waters in the study area if animals trample or damage vegetation and soil surfaces near surface waters. Other ongoing activities that could involve construction, such as road and utility repair and maintenance and ancillary ranch activities, could contribute contaminated runoff during storm events. Private recreation and film production are expected to occur mostly in existing disturbed areas, ranch roads, and trails and are not likely to have an effect on water quality.

As described above, BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP), such as the selective use of fencing, distribution of salt and mineral supplements and water sources across the study area and away from stream and riparian corridors, and the seasonal rotation of livestock, would reduce potential water quality effects from grazing by limiting direct livestock interactions with natural water sources. Similarly, construction-related BMPs prescribed by Federal, state and local jurisdictions would limit adverse water quality effects resulting from construction or maintenance uses. As noted above, these BMPs could include requirements that soil erosion and water quality protection measures be implemented to protect water quality.

Existing Ranch Uses under the No Action Alternative would not exceed Federal or state water quality standards, and effects would be minor.

4.2.3 Proposed TU MSHCP Alternative

4.2.3.1 Surface Water Flow and Groundwater Recharge

Commercial and Residential Development Activities

Potential effects on drainage and flow patterns from Commercial and Residential Development Activities associated with the Proposed TU MSHCP Alternative could occur as a result of permanent ground disturbance of up to 5,533 acres. Specifically, development facilitated by the proposed action could contribute to surface water flow or groundwater effects by modifying the extent of impervious surfaces in the study area and increasing the amount of precipitation that flows from the landscape, or by reducing the rate of subsurface recharge or otherwise affecting groundwater levels. It is anticipated that the local approval process would include provisions to preserve natural open space and reduce impervious surfaces in developed areas. In addition the California NPDES General Construction Permit issued by the State Board requires, among other things, measures to replicate the preproject water balance so that the surface flow runoff does not increase. For example, Kern County's approval of the TMV Project required that reduced road widths and permeable paving surfaces be incorporated into the project design where feasible (Kern County 2009b, Mitigation Measure 4.8-34), and that the amount of directly connected impervious surfaces be reduced by using vegetated and open area buffers, including roadside swales and vegetation strips, to the extent feasible (Kern County 2009b) (Appendix J, Mitigation Measure 4.8-33).

Most of the residential development considered under the Proposed TU MSHCP Alternative would occur in the TMV Planning Area. Development in the TMV Planning Area would result in the provision of project-wide water supply services and implementation of restrictions regarding residential use of surface and groundwater. Specifically, the TMV Project Approvals, which establish Tejon Castac Water District (TCWD) for residential and commercial water supply, prohibit use of groundwater and establish a water budget for all residential uses (Appendix J, Mitigation Measures 4.16-1 through 4.16-5) (Kern County 2009b). Similarly, although specific development has not been

proposed in other portions of the study area (e.g., Lebec / Existing Headquarters Area), it is anticipated that provisions to protect surface water flow and groundwater recharge would be required for other developments. In all cases, groundwater is not expected to be the sole source of water supply for any development, and all development would be subject to review and approval by other Federal and state agencies and the local jurisdiction.

Commercial and Residential Development Activities under the Proposed TU MSHCP Alternative would have a moderate effect on surface water flows in developed areas due to increases in impervious surfaces. These effects would be reduced by minimization measures prescribed during the local permitting process (Section 4.2.3.4, Mitigation Measures), and would be further reduced by the conservation measures in the TU MSHCP, which include, for example, incorporating design features to avoid and minimize urban runoff. As such, Commercial and Residential Development Activities under the Proposed TU MSHCP Alternative would not result in hydromodification that would significantly change the pattern of runoff or groundwater recharge or otherwise affect groundwater levels in the study area.

Plan-Wide Activities

The extent and nature of Plan-Wide Activities under the Proposed TU MSHCP Alternative would be similar to Existing Ranch Uses under the No Action Alternative, except permanent ground disturbance from these activities would be limited to 200 acres. Plan-Wide Activities would not substantially alter any drainage patterns or increase runoff, flooding, or groundwater recharge in the study area. Some Plan-Wide Activities, including the use of stock ponds and irrigation for farming, have the potential to affect surface water flow or groundwater recharge. However, similar to the No Action Alternative, BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP) would continue to require that water systems for livestock and farming be adequately maintained and used efficiently, reducing potential effects on surface water flows and groundwater recharge. In addition, these activities would be subject to the Ranchwide Agreement use restrictions, which limit water diversion activities beyond those in place at the time the Ranchwide Agreement was signed (June 17, 2008), and prohibits major alterations or improvements of the ranch surface for water storage, including water storage in underground aquifers.

As described for the No Action Alternative, permanent ground disturbance associated with construction or maintenance of infrastructure, ancillary ranch structures, or back-country cabins could also affect surface flow or groundwater recharge, but are expected to be minor and comply with state and local grading requirements. Plan-Wide Activities would occur mostly in existing disturbed areas, roads, or trails, and would not affect surface water flows or groundwater recharge. Similarly, grazing would not be expected to affect surface water flows or groundwater recharge, particularly given the Ranchwide Agreement BMPs and use restrictions intended to reduce grazing impacts in riparian and stream areas. As such, the effects of Plan-Wide Activities under the Proposed TU MSHCP are expected to be minor, and would be comparable to those described for the No Action Alternative, with the exception that they would be limited to a 200-acre disturbance area so may be somewhat reduced. These activities would not result in hydromodification that would significantly change the pattern of runoff or groundwater recharge or otherwise affect groundwater levels.

4.2.3.2 Wetlands

Commercial and Residential Development Activities

The Proposed TU MSHCP Alternative would permanently disturb up to 5,533 acres of land in the study area, and require cut-and-fill of approximately 75 million cubic yards of material. Construction-related activities associated with development could result in the direct fill of

wetlands, or indirectly affect their existing function by introducing runoff, sediment, and/or construction debris into sensitive areas.

As noted previously, all development under the Proposed TU MSHCP Alternative would be subject to project-specific approvals from Federal and state agencies and local jurisdictions. Permanent or temporary fill of wetlands would require approval from USACE and RWQCB, both of which mandate *no net loss of wetlands*. While this Supplemental Draft EIS conservatively assumes disturbance of up to 25% of the wetlands in the study area (Section 4.1, Biological Resources), actual development effects on this habitat type would likely be much less. For example, the proposed TMV Project, as approved by Kern County (Kern County 2009b), would fully avoid all Federal jurisdictional wetlands and permanently affect up to 1.18 acres of state-jurisdictional wetlands after mitigation, or 1% of wetlands in the TMV Planning Area (Central Valley Regional Water Quality Control Board 2011). In addition, the Proposed TU MSHCP Alternative would conserve 129,318 acres of land in the study area, some of which is presumed to support existing wetland areas, which, in turn, would be preserved in perpetuity. Conservation measures in the TU MSHCP would further reduce effects on wetlands by requiring construction in wetland and riparian habitat for the Covered Species to be avoided to the maximum extent practicable (generally anticipated to be under 3 to 5% of modeled habitat). In consideration of the proposed open space areas under the Proposed TU MSHCP Alternative, and with implementation of the TU MSHCP conservation measures and the mitigation measures discussed in Section 4.2.3.4, Mitigation Measures, it is anticipated that potential effects on wetlands from proposed Commercial and Residential Development Activities under the Proposed TU MSHCP Alternative would be minor, and would not result in a net loss of wetland habitat.

Plan-Wide Activities

Similar to Existing Ranch Uses under the No Action Alternative, Plan-Wide Activities under the Proposed TU MSHCP Alternative would have a limited potential to adversely affect wetland areas. Ground-disturbing activities (e.g., construction or maintenance of roads, ancillary structures, or back-country cabins) in or around wetland areas could introduce runoff, sediment, or debris into sensitive habitat types. Grazing would have the potential to contribute nutrients, bacteria, and/or pathogens to wetlands by surface water runoff, and could damage vegetation or increase erosion if cattle graze in wetlands areas. Other Plan-Wide Activities would occur mostly in existing disturbed areas, roads, and trails, outside of wetland areas.

Construction or maintenance activities with the potential to result in temporary or permanent fill of wetland areas would be subject to Federal and state permitting requirements, including *no net loss of wetlands* policies. In addition, construction-related BMPs prescribed by the local jurisdiction as part of the construction, grading, or building permit review processes, would likely be required to minimize potential water quality effects as a result of ground-disturbing activities (Appendix J). Ranchwide Agreement BMPs and use restrictions (as currently set forth in the Interim RWMP) would continue to be implemented and would include provisions to minimize the effects of grazing on sensitive communities, including riparian and stream areas.

Although Plan-Wide Activities under the Proposed TU MSHCP Alternative could result in minor effects on wetlands, these effects would be reduced through implementation of Ranchwide Agreement BMPs and use restrictions, conservation measures in the TU MSHCP that limit construction in wetlands and riparian areas, as well as requirements of the Federal, state, or local permitting processes (Section 4.2.3.4, Mitigation Measures) and would not result in a net loss of wetland habitat. These effects would be comparable to those associated with Existing Ranch Uses under the No Action Alternative, although they may be slightly less given the acreage limitation for ground disturbance (200 acres) provided under the Proposed TU MSHCP Alternative.

4.2.3.3 Water Quality

Commercial and Residential Development Activities

The total development disturbance acreage associated with Commercial and Residential Development Activities under the Proposed TU MSHCP Alternative would be approximately 5,533 acres and would be concentrated in two areas: the TMV Planning Area and the Lebec/Existing Headquarters Area. The population would increase by 11,441 persons. Construction-related water quality effects would be associated with erosion, increased turbidity in receiving waters, and introduction of debris and/or pollutants into surface waters, such as paint, chemicals, liquid products, petroleum products, or concrete. Operation of the developed areas and increased population could also result in the potential introduction of pollutants, such as sediment, oil, and grease from road runoff, household and commercial chemicals, and trash, to surface or groundwater.

Construction of the developed infrastructure would be subject to Federal, state, and local laws to protect water quality. Specifically, an NPDES permit from the RWQCB would be required prior to construction to protect the beneficial uses of the receiving waters through mandated protective construction practices. Construction-related BMPs prescribed by the local jurisdiction as part of the grading or building permit review processes would be required to minimize potential water quality effects. Representative construction BMPs to protect water quality could include use of soil stabilizers such as straw mulch or erosion control blankets to reduce the potential for erosion; use of designated onsite vehicle or equipment storage, repair and maintenance areas, located away from drainages, to minimize potential discharges of oil or hazardous materials into waters; and wet weather control measures that would be applied prior to an anticipated storm event to limit the exposure of disturbed soil areas to heavy rainfall (Appendix J). In addition, the conservation measures in the TU MSHCP would require design features at the development and habitat interface to minimize urban runoff into habitat areas, which would reduce associated water quality effects.

Commercial and Residential Development Activities under the Proposed TU MSHCP Alternative could result in moderate construction and operation water quality effects, greater than those associated with the No Action Alternative (where no development is proposed). However, implementation of the mitigation discussed in Section 4.2.3.4, Mitigation Measures, and the conservation measures associated with the TU MSHCP, would reduce these effects and ensure that this alternative would not exceed Federal or state water quality standards.

Plan-Wide Activities

The effects of the Plan-Wide Activities on water quality under the Proposed TU MSHCP Alternative would be similar to those described for Existing Ranch Uses under the No Action Alternative. Some of these activities, including livestock grazing, farming, and irrigation, have the potential to adversely affect surface or groundwater quality by contributing nutrients, bacteria, and/or pathogens to surface waters or to the underlying groundwater basin, or through vegetation damage and soil compaction near surface waters. In addition, Plan-Wide Activities that involve construction, such as road and utility repair and maintenance, could result in effects on water quality from runoff.

Similar to the No Action Alternative, Ranchwide Agreement BMPs and use restrictions (as currently set forth in the Interim RWMP), such as the selective use of fencing, distribution of salt and mineral supplements and supplemental water sources across the study area and away from stream and riparian corridors, and the seasonal rotation of livestock, would reduce potential water quality effects associated with grazing by limiting direct livestock interactions with natural water sources. Additionally, the terms of the TU MSHCP would require review and approval of the BMPs in the RWMP by the Service, and would limit permanent ground disturbance effects associated with the

Plan-Wide Activities to 200 acres. Construction-related requirements prescribed by Federal, state, and the local jurisdiction, such as those summarized in Appendix J, would reduce adverse water quality effects resulting from construction or maintenance uses.

Water quality effects associated with Plan-Wide Activities would be minor, and could be less than those associated with the No Action Alternative given the above conservation measures and the 200-acre limitation of ground disturbance in open space under this alternative. The mitigation measures discussed in Section 4.2.3.4, Mitigation Measures, would further reduce water quality effects under the Proposed TU MSHCP Alternative and ensure that the Proposed TU MSHCP Alternative would not exceed Federal or state water quality standards, or have a substantial effect on water quality.

4.2.3.4 Mitigation Measures

As described above, the BMPs and use restrictions required pursuant to the Ranchwide Agreement (as currently set forth in the Interim RWMP), would reduce the effects of the Proposed TU MSHCP Alternative on water resources. The Proposed TU MSHCP Alternative would also include species-specific conservation measures (Tables 2-3 and 2-4 in Chapter 2, Proposed TU MSHCP and Alternatives), such as minimizing ground disturbance activities in riparian and wetland areas and incorporating design features to avoid and minimize urban runoff, which would further reduce potential effects on water resources. If the Service issues an ITP to TRC for incidental take of the 27 species covered under the TU MSHCP, these measures would be enforceable under the Endangered Species Act (ESA) through the incidental take permit (ITP) and applicable conservation easements.

The following mitigation measure would reduce potential effects on water resources that may be associated with the Proposed TU MSHCP Alternative.

- ***Comply with Applicable Federal, State, and Local Water Quality Protection Requirements.*** All development in the study area will comply, at a minimum, with applicable Federal, state, and local water quality protection laws and regulations, including the CWA, Porter-Cologne, basin plans adopted by the Central Valley RWQCB and the Lahontan RWQCB, and the Kern County General Plan. Specifically, all development will identify and implement structural and treatment BMPs, such as detention basins, bioswales, and stormwater filters or other project design features, as required by applicable Federal, state, and local water quality protection laws and regulations. In addition, development will avoid, minimize, and mitigate for effects on wetland areas, as required by applicable Federal, state, or local laws and regulations, and, as required by those laws and regulations, not result in a net loss of wetlands in the study area.

4.2.4 Condor Only HCP Alternative

4.2.4.1 Surface Water Flow and Groundwater Recharge

Commercial and Residential Development Activities

Potential surface water flow and groundwater recharge effects associated with Commercial and Residential Development Activities under the Condor Only HCP Alternative would be the same as described for the Proposed TU MSHCP Alternative.

Plan-Wide Activities

Potential surface water flow and groundwater recharge effects from Plan-Wide Activities under the Condor Only HCP Alternative would be the same as those associated with the Proposed TU MSHCP Alternative.

4.2.4.2 Wetlands

Commercial and Residential Development Activities

Potential effects on wetlands associated with Commercial and Residential Development Activities under the Condor Only HCP Alternative would be the same as described for the Proposed TU MSHCP Alternative.

Plan-Wide Activities

Potential effects on wetlands from Plan-Wide Activities under the Condor Only HCP Alternative would be the same as those associated with the Proposed TU MSHCP Alternative.

4.2.4.3 Water Quality

Commercial and Residential Development Activities

Potential water quality effects associated with Commercial and Residential Development Activities under the Condor Only HCP Alternative would be the same as described for the Proposed TU MSHCP Alternative.

Plan-Wide Activities

Potential water quality effects from Plan-Wide Activities under the Condor Only HCP Alternative would be the same as those associated with the Proposed TU MSHCP Alternative.

4.2.4.4 Mitigation Measures

The mitigation measure listed in Section 4.2.3.4, Mitigation Measures, for the Proposed TU MSHCP Alternative would also be implemented under the Condor Only HCP Alternative.

4.2.5 CCH Avoidance MSHCP Alternative

4.2.5.1 Surface Water Flow and Groundwater Recharge

Commercial and Residential Development Activities

The total development disturbance acreage associated with Commercial and Residential Development Activities under the CCH Avoidance MSHCP Alternative would be approximately 4,496 acres. Proposed development could contribute to surface water flow or groundwater recharge effects by modifying the extent of impervious surfaces in the study area and increasing the amount of precipitation that flows from the landscape, or by reducing the rate of subsurface recharge or otherwise affecting groundwater levels. It is anticipated that these effects would be reduced during the state and local approval process, which would likely require preservation of natural open space and a reduction of impervious surfaces in residential areas, to the extent possible (Appendix J), and through species-specific conservation measures that would likely, for example, require the incorporation of design features to avoid and minimize urban runoff. Finally, similar to the Proposed TU MSHCP Alternative, development under the CCH Avoidance MSHCP Alternative would rely on TCWD for its water supply, rather than individual groundwater wells, so groundwater supplies would not be depleted.

Commercial and Residential Development Activities under the CCH Avoidance MSHCP Alternative would have a moderate effect on surface water flows in developed areas due to increases in impervious surfaces, which would be greater than under the No Action Alternative, in which no development is proposed. These effects would be reduced by the minimization measures prescribed during the local permitting process (Section 4.2.5.4, Mitigation Measures), and the conservation measures prescribed by the TU MSHCP. As such, Commercial and Residential Development Activities would not result in hydromodification that would significantly change the pattern of runoff or groundwater recharge or otherwise affect groundwater levels in the study area.

Plan-Wide Activities

The extent and nature of Plan-Wide Activities under the CCH Avoidance MSHCP Alternative would be similar to Existing Ranch Uses under the No Action Alternative, except that permanent ground disturbance from these activities would be limited to 200 acres. Plan-Wide Activities would not substantially alter any drainage patterns or increase runoff, flooding, or groundwater recharge in the study area. Some Plan-Wide Activities, including the use of stock ponds and irrigation for farming, have the potential to affect surface water flow or groundwater recharge. However, similar to the No Action Alternative, Ranchwide Agreement BMPs and use restrictions (as currently set forth in the Interim RWMP) would continue to require that water systems for livestock and farming be adequately maintained and used efficiently, reducing potential effects on surface water flows and groundwater recharge. In addition, these activities would be subject to the limitations in the Ranchwide Agreement, which limits water diversion activities beyond those in place at the time the Ranchwide Agreement was signed, and prohibits major alterations or improvements of the ranch surface for water storage, including water storage in underground aquifers. As such, Plan-Wide Activities would not significantly change the pattern of runoff or groundwater recharge or otherwise affect groundwater levels in the study area.

4.2.5.2 Wetlands

Commercial and Residential Development Activities

Potential effects on wetlands associated with Commercial and Residential Development Activities under the CCH Avoidance MSHCP Alternative would be similar to those described for the Proposed TU MSHCP Alternative. This alternative would permanently disturb up to 4,496 acres of land in the study area, and construction activities could result in permanent fill of wetland areas or introduction of runoff into sensitive wetland areas. All development under the CCH Avoidance MSHCP Alternative would be subject to project-specific approvals from Federal and state agencies and local jurisdictions, as well as species-specific conservation measures that would protect wetland and riparian habitats. In addition, up to 130,339 acres of land in the study area would be preserved, some of which is presumed to support existing wetland areas, which, in turn, would be preserved in perpetuity. In consideration of the proposed open space areas provided under the CCH Avoidance MSHCP Alternative, and with implementation of the TU MSHCP conservation measures and mitigation measures discussed in Section 4.2.5.4, Mitigation Measures, it is anticipated that potential effects on wetlands from the proposed Commercial and Residential Development Activities would be minor, and would not result in a net loss of wetland habitat. Potential effects on wetlands would be greater than the No Action Alternative, however, because development would not occur under that alternative.

Plan-Wide Activities

Similar to Existing Ranch Uses under the No Action Alternative, Plan-Wide Activities under the CCH Avoidance MSHCP Alternative would have a limited potential to adversely affect wetland areas.

Specifically, ground disturbing activities in or around wetland areas could introduce runoff, sediment, or debris into sensitive habitat types, and grazing could contribute nutrients, bacteria, or pathogens, and/or increase erosion if cattle graze in or near wetland areas. Construction or maintenance activities with the potential to result in temporary or permanent fill of wetland areas would be subject to Federal and state permitting requirements, and construction-related BMPs, prescribed by the local jurisdiction would likely be required to reduce potential water quality effects (Appendix J). Similarly, Ranchwide Agreement use restrictions and BMPs, as currently set forth in the Interim RWMP, would continue to be implemented and include provisions to minimize the effects of grazing on sensitive communities, including riparian and stream areas.

Although Plan-Wide Activities under the CCH Avoidance MSHCP Alternative could result in minor effects on wetlands, these effects would be reduced through implementation of Ranchwide Agreement BMPs and use restrictions, conservation measures in the TU MSHCP that limit construction in wetlands, as well as requirements of the Federal, state, or local permitting processes (Section 4.2.5.4, Mitigation Measures) and would not result in a net loss of wetland habitat. These effects would be comparable to those associated with Existing Ranch Uses under the No Action Alternative.

4.2.5.3 Water Quality

Commercial and Residential Development Activities

The total development disturbance acreage associated with Commercial and Residential Development Activities under the CCH Avoidance MSHCP Alternative would be approximately 4,496 acres and would occur in the Lebec/Existing Headquarters Area and the TMV Planning Area. The population would be anticipated to increase by 9,957. Construction-related water quality effects would be associated with erosion, increased turbidity in receiving waters, and introduction of debris and/or pollutants to surface waters. Operation of the developed areas and an increased population could also result in the potential introduction of pollutants, such as sediment, oil, grease from road runoff, household and commercial chemicals, and trash to surface or groundwater.

Commercial and Residential Development Activities under the CCH Avoidance MSHCP Alternative could result in moderate construction and operation-related water quality effects. Similar to the Proposed TU MSHCP Alternative, all development would be subject to the project-specific approvals from Federal and state agencies and local jurisdictions, as provided in Section 4.2.5.4, Mitigation Measures, and ESA-related conservation measures prescribed by the TU MSHCP, which would reduce potential construction and/or operation related water quality effects. Implementation of these mitigation measures would reduce effects on water quality and ensure that this alternative would not exceed Federal or state water quality standards, or have a substantial effect on water quality. Potential water quality effects from Commercial and Residential Development Activities, however, would be greater than those associated with the No Action Alternative where development in the study area would not occur.

Plan-Wide Activities

The effects of the Plan-Wide Activities on water quality under the CCH Avoidance MSHCP Alternative would be similar to those described for Existing Ranch Uses under the No Action Alternative. These effects, which would generally be associated with livestock grazing, farming, irrigation, and limited ground disturbing activities, would be minor, subject to the limitations prescribed in the Ranchwide Agreement, further reduced by the mitigation measure discussed in Section 4.2.5.4, Mitigation Measures, and would not exceed Federal or state water quality standards.

4.2.5.4 Mitigation Measures

The mitigation measures in Section 4.2.3.4, Mitigation Measures for the Proposed TU MSHCP Alternative would also be implemented under the CCH Avoidance MSHCP Alternative.

4.2.6 Kern County General Plan Buildout Alternative

4.2.6.1 Surface Water Flow and Groundwater Recharge

Commercial and Residential Development Activities

The total development disturbance acreage associated with Commercial and Residential Development Activities under the Kern County General Plan Buildout Alternative would be approximately 12,142 acres. Proposed development could alter existing drainage patterns and affect flows by modifying the extent of impervious surfaces in the study area or otherwise affect groundwater levels. Unlike the other action alternatives described above, development under this alternative would not be part of an integrated, planned project. As a result, it is possible that individual landowners could attempt to exercise riparian, appropriative, or groundwater rights to meet water demand, which could adversely affect surface water flows or groundwater supplies. Nevertheless, future groundwater use under this alternative is speculative, and cannot be estimated. All development activities would be subject to review and approval by Federal, state, and local agencies, which would likely require additional provisions to protect surface waters and groundwater resources (Appendix J).

Commercial and Residential Development Activities under the Kern County General Plan Buildout Alternative would have a moderate effect on surface water flows in developed areas due to increases in impervious surfaces, and could have some level of effect on groundwater supplies if they are used to supply individual landowner lots. These effects would be reduced by the minimization measures prescribed during the Federal, state and/or local permitting process (Section 4.2.6.4, Mitigation Measures). Commercial and Residential Development Activities would not, therefore, result in hydromodification that would significantly change the pattern of runoff in the study area. Given the speculative nature of the development under this alternative, it is unknown if groundwater levels would be affected in the study area. Effects on surface water flow and groundwater recharge would be greater than those associated with the No Action Alternative where no development is proposed.

Existing Ranch Uses

The extent and nature of the Existing Ranch Uses under the Kern County General Plan Buildout Alternative would be similar to the No Action Alternative. Existing Ranch Uses would not substantially alter any drainage patterns or increase runoff, flooding, or groundwater recharge in the study area. Some Existing Ranch Uses, including the use of stock ponds and irrigation for farming, or construction activities (i.e., permanent ground disturbance) have the potential to affect surface water flow or groundwater recharge. Other activities, such as road and utility repair and maintenance, ancillary ranch activities, and film production, are expected to occur mostly in existing disturbed areas, and are not likely to result in substantial effects on surface water flow or groundwater recharge.

As described in Chapter 2, Proposed TU MSHCP and Alternatives, the limitations of the Ranchwide Agreement would not apply under this alternative. However, even in the absence of the Ranchwide Agreement, historic ranch practices as reflected in the Interim RWMP are anticipated to continue

(although they cannot be assured), and compliance with legal requirements governing ground-disturbing activities directly affecting surface waters would apply.

Because most Existing Ranch Uses would have only minor effects on surface and ground water flows, it is unlikely that Existing Ranch Uses under the Kern County General Plan Buildout Alternative would significantly change the pattern of runoff or groundwater recharge or otherwise affect groundwater levels in the study area. The effects of Existing Ranch Uses under this alternative would be comparable to those described for the No Action Alternative.

4.2.6.2 Wetlands

Commercial and Residential Development Activities

The Kern County General Plan Buildout Alternative would permanently disturb 12,142 acres of land in the study area and require cut-and-fill of approximately 222 million cubic yards of material. Construction-related activities associated with development could result in the direct fill of wetlands or indirect effects on existing functions by introducing runoff, sediment, or construction debris into sensitive wetland areas. As noted previously, all development activities would be subject to project-specific approvals from Federal, state, and local agencies, including provisions to ensure there is *no net loss of wetland* habitats. In addition, up to 119,392 acres of land in the study area could be preserved under this alternative, some of which is presumed to support existing wetland areas.

In consideration of the assumed open space areas under the Kern County General Plan Buildout Alternative, and with implementation of the mitigation measures discussed in Section 4.2.6.4, Mitigation Measures, it is anticipated that potential effects on wetlands from Commercial and Residential Development Activities would be minor, and would not result in a net loss of wetland habitat. These effects would be greater than the No Action Alternative, however, where no development is proposed.

Existing Ranch Uses

Similar to Existing Ranch Uses under the No Action Alternative, Existing Ranch Uses under the Kern County General Plan Buildout Alternative would have a limited potential to adversely affect wetlands in the study area. Potential effects would primarily be associated with ground-disturbing activities (e.g., roads and utilities), which could fill wetlands, and grazing, which could result in compaction, sedimentation, or nutrient loading of wetlands areas. As noted above, the limitations of the Ranchwide Agreement would not apply under this alternative. However, even in the absence of the Ranchwide Agreement, historic ranch practices as reflected in the Interim RWMP are anticipated to continue (although they cannot be assured).

Given that most Existing Ranch Uses would have only minor effects on wetlands, most of which would be minimized and mitigated through Federal, state, or local permitting and review processes (Section 4.2.6.4, Mitigation Measures), potential effects on wetlands from Existing Ranch Uses under the Kern County General Plan Buildout Alternative would be minor, and *no net loss of wetlands* would occur. The effects of Existing Ranch Uses under this alternative would be comparable to those described for the No Action Alternative.

4.2.6.3 Water Quality

Commercial and Residential Development Activities

Under the Kern County General Plan Buildout Alternative, approximately 12,142 acres of the study area would be permanently disturbed by development, with development generally dispersed

across the study area. The population would increase by 22,800. Potential effects of construction and operation of the development under this alternative would be generally the same as those described for the Proposed TU MSHCP Alternative and would include construction-related erosion, increased turbidity in receiving waters, and introduction of debris and/or pollutants to surface waters.

The project-by-project development approach reflected in this alternative and the large number of dispersed rural development (one dwelling unit per 20 or 80 acres) that would occur in the study area would likely result in the permanent conversion of currently unpaved roads and vacant lands to permanent paved roads and other impervious surfaces, which have the potential to increase levels of runoff into surface waters. However, similar to the other alternatives, all development would be subject to project-specific approvals from Federal and state agencies and local jurisdictions.

It is anticipated that Commercial and Residential Development Activities under the Kern County General Plan Buildout Alternative could result in moderate construction and operation-related water quality effects, most of which would be reduced by the mitigation measure prescribed in Section 4.2.6.4, Mitigation Measures. Regardless, these effects would be greater than under the No Action Alternative where no development is proposed. This alternative would not exceed Federal or state water quality standards, or have a substantial effect on water quality.

Existing Ranch Uses

Similar to Existing Ranch Uses under the No Action Alternative, Existing Ranch Uses under the Kern County General Plan Buildout Alternative would have a limited potential to adversely affect water quality in the study area. Potential effects would primarily be associated with livestock grazing, farming, and irrigation, and ground-disturbing activities, such as construction and maintenance of roads and utility structures. As noted above, the limitations of the Ranchwide Agreement would not apply under this alternative. However, even in the absence of the Ranchwide Agreement, historic ranch practices as currently reflected in the Interim RWMP are anticipated to continue (although they cannot be assured).

Given that most Existing Ranch Uses would have only minor effects on water quality, and that construction in or near surface waters would likely be subject to Federal, state, or local permitting and review processes (Section 4.2.6.4, Mitigation Measures), potential effects on water quality from Existing Ranch Uses under the Kern County General Plan Buildout Alternative would be minor, and would not exceed state or Federal water quality standards. The effects of Existing Ranch Uses under this alternative would be comparable to those described for the No Action Alternative.

4.2.6.4 Mitigation Measures

The mitigation measures listed in Section 4.2.3.4, Mitigation Measures, for the Proposed TU MSHCP Alternative would also be implemented under the Kern County General Plan Buildout Alternative.

4.2.7 Cumulative Effects

Cumulative effects on water resources (surface and ground waters, wetlands, and water quality) may result from increased development and changes in land use. The cumulative effects analysis area for this section encompasses all surface waters and wetlands within the Covered Lands, their associated watersheds, and the groundwater basins that underlie the Covered Lands. Cumulative effects on water resources are analyzed in the context of the criteria discussed in Section 4.2.1.2, Methods, and consider whether each alternative, when considered in the context of other reasonably foreseeable actions, would exceed a Federal or state water quality standards, result in

hydromodification that would significantly change the pattern of runoff or groundwater recharge or otherwise affect groundwater levels, or result in fill of wetlands that would fail to meet the Federal and state *no net loss of wetlands* policies. Cumulative effects on water resources are considered to be indirect effects of the proposed action, in that they are related to future development that may be facilitated by issuance of an ITP by the Service. Whether or not such effects are substantial cumulatively is primarily dependent on the mitigation measures put in place by other Federal, state, and local authorities pursuant to their project-specific approval process. Refer to Section 4.0.4, Methods for Assessing Cumulative Effects, for additional information on the approach summarized above and for a description of the reasonably foreseeable future projects considered in this cumulative effects analysis.

4.2.7.1 Surface Water Flow and Groundwater Recharge

As described in Section 3.2.1.1, Watersheds, most of the watersheds in the study area drain to the north and terminate in alluvial soils located in the foothills of the San Joaquin Valley. Figure 3.2-1 depicts the hydrologic regions and the major watercourses in the study area. Section 3.2.1.3, Groundwater, and Figure 3.2-2 describe the groundwater basins in the vicinity of the study area. The majority of the study area overlies the Castac Lake Valley Basin.

Cumulative changes to surface water and underlying groundwater hydrology are most likely to occur in the Tulare Hydrologic Region where most of the proposed development in the study area, as well as the approved Tejon Ranch Commerce Center and Frazier Park Estates projects and the conceptual Grapevine project, would occur. The No Action Alternative would not result in any development, and therefore would not result in a cumulative effect on water flow or groundwater recharge. Due to state law requirements that limit post-construction flows and protect water quality, effects on surface water and underlying groundwater are not expected to be cumulatively substantial for the Proposed TU MSHCP Alternative, Condor Only HCP Alternative, CCH Avoidance MSHCP Alternative, or Kern County General Plan Buildout Alternative. Additionally, while project-specific factors may differ based on the conditions existing at the particular location and actual land use, it is anticipated that all other reasonably foreseeable development projects would be subject to regulatory requirements similar to the development proposed under the action alternatives, including those required by the SWRCB under Porter-Cologne and the CWA (e.g., the California General Construction Permit), and by Kern and Los Angeles Counties under the California Environmental Quality Act (CEQA) and relevant ordinances and policies. Thus, the Proposed TU MSHCP Alternative, Condor Only HCP Alternative, CCH Avoidance MSHCP Alternative, and Kern County General Plan Buildout Alternative, in combination with other reasonably foreseeable projects, are not expected to result in substantial cumulative effects on surface water flow or groundwater recharge.

4.2.7.2 Wetlands

Several regional projects involve development that could affect regional wetlands. Cumulative changes to wetlands are most likely to occur in the Tulare Hydrologic Region watershed where most of the proposed development in the study area, as well as the approved Tejon Ranch Commerce Center and Frazier Park Estates projects and the conceptual Grapevine project, would occur. The Tejon Ranch Commerce Center would not affect any wetlands habitats under state and/or Federal jurisdiction, and the Frazier Park Estates project would fully mitigate its potential effects on jurisdictional areas. The final layout of the Grapevine project is unknown, but that project is expected to affect some regional wetlands.

All projects would be subject to Federal, state, and local *no net loss of wetlands* requirements. The No Action Alternative would not result in development, and therefore would not result in a cumulative effect on wetlands. Although the CCH Avoidance MSHCP Alternative would have the

smallest development footprint and population increase of the proposed action alternatives, the proposed development would be denser and concentrated around Castac Lake. As a result, development under this alternative may result in additional combined effects on wetlands when considered in combination with other regional projects in the Tulare Hydrologic Region watershed. The Proposed TU MSHCP Alternative and Condor Only HCP Alternative would have a larger development footprint and a larger population increase. As a result, development under these alternatives may result in additional combined effects on wetlands. Compliance with Federal and state laws and regulations focused on wetland protection, as well as implementation of the use restrictions and BMPs required pursuant to the Ranchwide Agreement and species-specific conservation measures (see Tables 2-3 and 2-4 in Chapter 2, Proposed TU MSHCP and Alternatives) that would indirectly benefit wetland habitats, no substantial cumulative effects are expected from the Proposed TU MSHCP, Condor Only, or CCH Avoidance MSHCP Alternatives. Finally, although the Kern County General Plan Buildout Alternative would have a larger development footprint, development under this alternative would also be subject to all applicable regulatory requirements, including *no-net-loss of wetlands* requirements. Because all potential fill of wetlands within the study area, as well as fill associated with other reasonably foreseeable projects, would meet the Federal and state *no net loss of wetlands* policies, cumulative effects on wetlands would not be anticipated.

4.2.7.3 Water Quality

As described in Section 3.2.1.1, Watersheds, most of the watersheds in the study area drain to the north and terminate in alluvial soils located in the foothills and lowlands of the San Joaquin Valley. The northerly draining portions of the study area are in the Tulare Lake Hydrologic Region, subject to the jurisdiction of Central Valley RWQCB. Portions of the study area located south of the Garlock fault range drain to the southeast in the Antelope Valley, an area in the South Lahontan Hydrologic Region and under the jurisdiction of Lahontan RWQCB.

In addition to expansion in the Tehachapi Uplands from the Frazier Park Estates and Gorman Post Ranch projects, more urban-type development is anticipated to occur in the valley and foothill areas outside the study area, including projects such as Centennial, Grapevine, and the Tejon Ranch Commerce Center. With respect to specific projects, the Tejon Ranch Commerce Center, Frazier Park Estates, and Grapevine projects are located in the Tulare Hydrologic Region, and the Centennial project is primarily located in the South Lahontan Hydrologic Region. Gorman Post Ranch and a small portion of the Centennial project are located in the South Coast Hydrologic Region and the Los Angeles–San Gabriel Hydrologic Region. Development-related effects in the study area would be concentrated in the Tulare Hydrologic Region, where the TMV Project would be located. With respect to the other projects located in this hydrologic region, the Tejon Ranch Commerce Center and the Frazier Park Estates projects have fully mitigated their effects as discussed in their respective environmental impact reports (EIRs) prepared in compliance with CEQA (Kern County 2002, Kern County 2009c). The Grapevine project is expected to be subject to the same level of mitigation required for the TMV Project, Tejon Ranch Commerce Center Project, and Frazier Park Estates Project, such that they would not together exceed state or Federal water quality standards in the Tulare Hydrologic Region. Thus, although project-specific effects of such other developments would be different based on actual conditions and land use, it is anticipated that all other reasonably foreseeable development would be subject to the water quality standards provided in the CWA, Porter-Cologne, DHS regulations, and Kern County and Los Angeles County ordinances and policies, and that water quality effects would be required to be mitigated.

From a cumulative effects perspective, the No Action Alternative is not anticipated to result in a cumulative effect on water quality because no development would occur. Despite varying levels of developed area, development under the Proposed TU MSHCP, Condor Only HCP, CCH Avoidance MSHCP, and Kern County General Plan Buildout Alternatives would comply with all required laws and regulations, and would not contribute to a substantial cumulative adverse effect on water

quality either during construction, or after proposed infrastructure is in place. The Ranchwide Agreement use restrictions and BMPs as currently set forth in the Interim RWMP, as well as species-specific conservation measures, as applicable for each alternative, would further reduce the potential for water quality effects from the proposed alternatives, and, subsequently, for a cumulative effect to occur.

4.2.8 Comparison of Alternatives

Because the exact contours, locations, and building designs of the commercial and residential areas are not known, this comparison is based on the acreage of disturbance and estimates of cut-and-fill in the development areas, as well as the area that would be preserved as open space under each alternative, as summarized in Table 4.2-1.

Table 4.2-1. Proposed Disturbance and Open Space under Each Alternative

	No Action Alternative	Proposed TU MSHCP/Condor Only HCP Alternatives	CCH Avoidance MSHCP Alternative	Kern County General Plan Buildout Alternative
Ground disturbance (acres)	0	5,533	4,496	12,142
Cut-and-fill (cubic yards)	0	75 million	< 90 million	222 million
Population	0	11,441	9,957	22,800
Permanently preserved open space (acres) ¹	106,317 (75%) ²	129,318 (91%)	130,339 (92%)	119,392 (84%) ³

¹ Percentage representative of percentage of total study area (Covered Lands) (141,886 acres).

² While conservation easements would be recorded over only 106,317 acres, existing uses would continue over the remaining Covered Lands (with no commercial or residential development).

³ The Kern County General Plan Buildout Alternative includes both permanently preserved open space (34,130 acres) and Open Space (85,262 acres).

The No Action Alternative would not result in any new or substantial effects on water quality, surface water drainage patterns, groundwater recharge, or wetlands. No development would occur, and permanent ground disturbance would be limited (although not specifically limited to 200 acres, as under the Proposed TU MSHCP, Condor Only, and CCH Avoidance MSHCP Alternatives). Conversely, this alternative would result in fewer acres of area protected in conservation easements, and the Service would not have review and approval authority over the RWMP. However, because the Existing Ranch Uses would continue to be subject to BMPs and ultimately a comprehensive RWMP for permanently preserved open space areas, and because ground-disturbing activities would continue to be limited by the Ranchwide Agreement to be consistent with preserving and protecting conservation values, only minor effects on water resources from the No Action Alternative are anticipated. These effects would be less than those anticipated under the proposed action alternatives.

The Proposed TU MSHCP Alternative and the Condor Only HCP Alternative would permanently preserve more open space compared to the No Action Alternative, but would include commercial and residential development, which would result in up to 5,533 acres of permanent ground disturbance. Such ground disturbance could adversely affect surface drainage patterns and groundwater recharge, and could result in direct and indirect effects on wetlands. Additionally, development could result in effects on water quality from more urban runoff. Compliance with the proposed mitigation measure in Section 4.2.3.4, Mitigation Measures, would reduce the potential

effects associated with the Proposed TU MSHCP and Condor Only HCP Alternatives. Thus, although ground disturbance under these alternatives would be higher than the No Action Alternative, only minor to moderate effects on water resources are anticipated, none of which would exceed Federal or state water quality standards, substantially change the pattern of runoff or groundwater recharge, or otherwise affect groundwater levels, or result in a net loss of wetland habitat.

The CCH Avoidance MSHCP Alternative would permanently preserve more open space compared to the No Action Alternative, but would include commercial and residential development, which would result in up to 4,496 acres of permanent ground disturbance. It would also result in less acreage developed, but more cut-and-fill, than the Proposed TU MSHCP and Condor Only HCP Alternatives, as well as more permanently preserved open space. However, development would be consolidated and intensified in the southwestern portion of the study area around I-5 and Castac Lake, and would result in an increase in contiguous impervious surfaces in these areas. This alternative could result in an increased effect on water resources compared to the No Action Alternative and the Proposed TU MSHCP and Condor Only HCP Alternatives (with the more intense cut-and-fill near Castac Lake, where many stream systems exist, it would not be possible to avoid all the streams in the Development Area), although mitigation (compliance with Federal, state and local regulations) would reduce this effect. This alternative would not result in an exceedance of Federal or state water quality standards, substantially change the pattern of runoff or groundwater recharge or otherwise affect groundwater levels in the study area, or result in a net loss of wetland habitat.

Finally, the Kern County General Plan Buildout Alternative would have greater effects on water resources than the No Action, Proposed TU MSHCP, Condor Only HCP, and CCH Avoidance MSHCP Alternatives. With respect to Existing Ranch Uses, because there would be no limits imposed by the Ranchwide Agreement, or guarantee that BMPs and use restrictions required pursuant to the Ranchwide Agreement would be continued, it is possible that ranch practices could change and result in additional or more severe effects on water resources in the future. Development-related effects under the Kern County General Plan Buildout Alternative could also be greater because of the larger disturbance area, and because development under this alternative would occur on a project-by-project basis, in a dispersed pattern across the landscape, and potentially in the vicinity of a greater number of stream systems and watersheds. The dispersed nature of development would result in the need for more roads and more impervious surfaces, therefore resulting in greater effects on water resources. Although this alternative would likely employ mitigation measures similar to other proposed action alternatives and would comply with all relevant Federal, state, and local rules and regulations, effects would still be moderate. It is anticipated that this alternative would not exceed Federal or state water quality standards or result in a net loss of wetland habitat. It is unclear what effect this alternative would have on the pattern of runoff, groundwater recharge, or groundwater levels, given that the general dispersed nature of the development is unknown, although these effects would likely be reduced through the Federal, state, and local permit processes.