

2.4 CUMULATIVE IMPACTS

2.4.1 REGULATORY SETTING

Cumulative impacts are those that result from past, present, and reasonably foreseeable future actions, combined with the potential impacts of this proposed project. A cumulative effect assessment looks at the collective impacts posed by land use plans and individual projects. Cumulative impacts can result from individually minor but collectively substantial impacts taking place over a period of time.

Cumulative impacts to resources in the project limits may result from residential, commercial, industrial, and highway development, as well as from agricultural development and the conversion to more intensive agricultural cultivation. These land use activities can degrade habitat and species diversity through consequences such as displacement and fragmentation of habitats and populations, alteration of hydrology, contamination, erosion, sedimentation, disruption of migration corridors, changes in water quality, and introduction or promotion of predators. They can also contribute to potential community impacts identified for the project, such as changes in community character, traffic patterns, housing availability, and employment.

California Environmental Quality Act (CEQA) Guidelines Section 15130 describes when a cumulative impact analysis is necessary and what elements are necessary for an adequate discussion of cumulative impacts. The definition of cumulative impacts under CEQA can be found in Section 15355 of the CEQA Guidelines. A definition of cumulative impacts under the National Environmental Policy Act (NEPA) can be found in 40 Code of Federal Regulations (CFR), Section 1508.7 of the Council on Environmental Quality (CEQ) Regulations.

2.4.2 CUMULATIVE IMPACTS

This cumulative analysis determines whether the Build Alternative in combination with other approved or foreseeable projects would result in a cumulative effect, and, if so, whether the Build Alternative's contribution to the cumulative impact would be considerable. Reasonably foreseeable future projects include land use developments and other transportation improvements that are planned and funded and would be located near the proposed Build Alternative improvements.

Under the No-Build Alternative, no changes to the I-80 freeway within the project limits would occur as a result of project implementation. The freeway travel lanes along the I-80 corridor would remain as they currently exist and no express lane would be constructed. As such, the No-Build Alternative would not contribute to any cumulative effects, and is not discussed further in this analysis.

METHODOLOGY

The following two methods were used to evaluate whether the Build Alternative would have a considerable contribution to a significant cumulative effect:

1. Projects to consider in the cumulative analysis include any past, present, and probable future projects producing related or cumulative impacts, including projects outside the control of the lead agency, or
2. The cumulative analysis would consider projections contained in an adopted local, regional, or statewide plan, or would use a prior environmental document which has been adopted or certified for such a plan.

For the majority of this analysis the second method was used, based on the City of Vacaville General Plan and City of Fairfield General Plan and associated EIRs. Where indicated, the cumulative analysis is enhanced through the consideration of specific individual projects identified from a list compiled from both the Cities of Vacaville and Fairfield.

As discussed in **Section 2.1.1, Land Use**, the predominant type of planned land use development in the area is residential. Other development projects planned in the area include commercial and industrial land uses (see **Table 2.4-1**). **Figures 2.4-1a and 2.4-1b** depict the locations of the other planned projects listed in **Table 2.4-1**. The following planned and approved transportation improvements along local routes may be implemented by local agencies:

- **The I-80/I-680/SR 12 Interchange Project , Initial Construction Package.** Realignment of westbound I-80 from east of the I-80/I-680 Interchange to SR 12 West connector, relocation of the Green Valley Road IC to the east and reconfiguration of the SR 12 West ramps and Green Valley Road on-ramp, occurring from 0.7 mile west on SR 12 West to SR 12 West/I-80 and on westbound I-80 from SR 12 West/I-80 to I-80/I-680.
- **Freeway Performance Initiative – I-80 Ramp Metering.** Installation of ramp metering equipment, traffic operating systems, metal beam guardrail, sign structures, and widen ramp along I-80 in Solano County within the cities of Vallejo, Fairfield, and Vacaville from the Contra Costa County line to I-505.
- **Alamo Creek Bridge Widening Project.** Bridge widening and construction drainage on I-80 in Solano County, in and near Vacaville.
- **Local Roadway Widening.** Local roadway widening at Peabody Road, Leisure Town Road, and Foxboro Parkway.
- **Roadway Extensions.** Roadway extensions at Railroad Avenue and Manuel Campos Parkway.
- **Capitol Corridor Station.** A new rail transit station at the Capitol Corridor Station.

Cumulative traffic forecasts were based on applications of the Solano-Napa Travel Demand Forecasting Model, with some calibration adjustments. The model provides future-year forecasts of traffic volumes for the AM and PM peak hours, based on changes to the land use and changes to the transportation network. Modifications to the model were made to accurately reflect planned and funded land-use development and transportation projects expected to be in place by 2020 and 2040, including the list of planned transportation improvements described above.

ISSUES WITH NO CUMULATIVE EFFECT

If a project would not result in a direct or indirect effect on a resource, then it will not contribute to a cumulative impact on that resource, and does not need to be further evaluated. Land use, parks & recreation, forestry resources, mineral resources, traffic and transportation/pedestrian improvements, and energy conservation were evaluated but found to have no adverse effect. Refer to **Section 2.1, Human Environment** and **Table 2-1** for a more detailed description of these resource areas.

Certain resources are not vulnerable to incremental/cumulative effects. For example, geological/seismic hazards related to future development in areas surrounding the project limits are site specific and relate to the type of building and building foundation proposed, as well as the soil composition and slope on the site. There is no additive effect of the geological/seismic hazards associated with other approved or foreseeable development and the project, and therefore no further cumulative analysis of this resource is warranted. One other resource topic that is site specific, with no additive effect, includes the risks associated with hazardous materials/hazardous wastes exposure. As such, no further cumulative analysis of hazardous materials/hazardous wastes is warranted.

ISSUES WITH THE POTENTIAL TO CONTRIBUTE TO THE CUMULATIVE EFFECT

Community Impacts

The cumulative setting for community impacts includes the 36 block groups immediately surrounding the project limits. Urbanization in the cities of Fairfield and Vacaville influenced development and growth in the area. These areas continue to be diverse communities, representing many races and ethnicities. As discussed in **Section 2.1.5, Community Impacts**, the minority population within the study area represents 54 percent of the community and approximately 6.3 percent of the study area living below the poverty level. These populations are considered environmental justice communities.

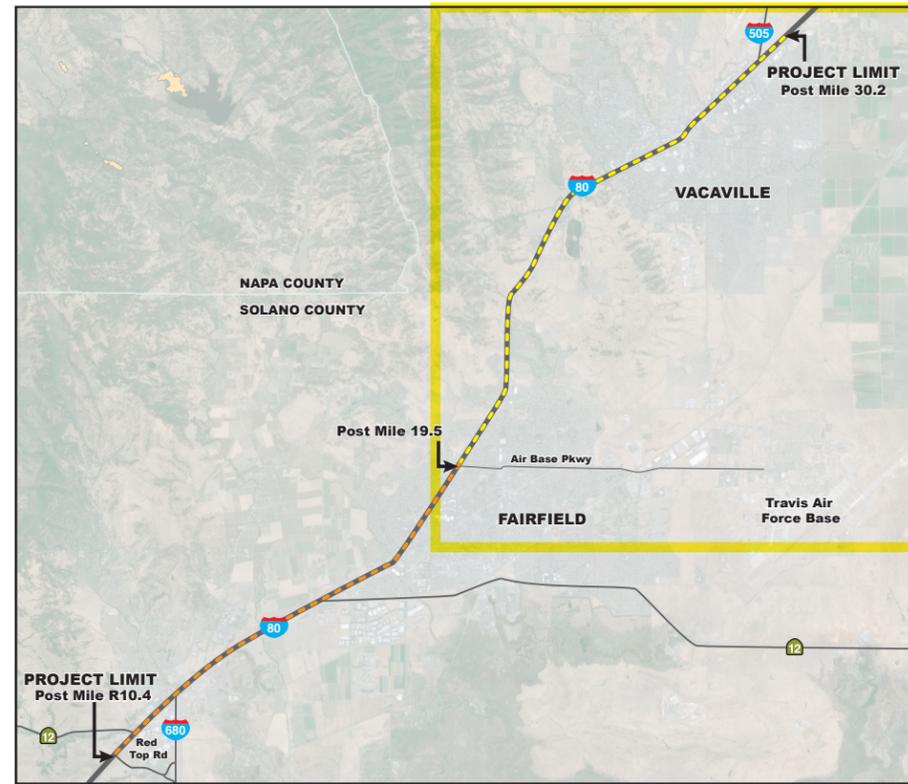
Because approximately half of the communities surrounding the project limits are environmental justice communities, the adverse effects from the approved and foreseeable development combined in these areas could have a disproportionate and cumulative effect on low income or minority populations.

Implementation of the Build Alternative would affect private and public properties listed in **Section 2.1.5, Community Impacts** (see **Table 2.1-12** and **Table 2.1-13**). None of the proposed property acquisitions, construction easements, or utility easements are in areas where there are existing structures or improvements. The remaining portions of these parcels would remain in private ownership. The effects of the Build Alternative would be borne across a wide range of communities including both environmental justice and non-environmental justice communities. No displacement of any residence or business would be required. The Build Alternative would not result in disproportionate impacts to environmental justice communities, and would not cause the displacement of any minority or low-income residences, businesses, or employees. Additionally, existing public facilities that are available to the community are located beyond the project limits and would not be affected by the Build Alternative. As such, the Build Alternative would not contribute to a cumulative effect on environmental justice communities.

Growth

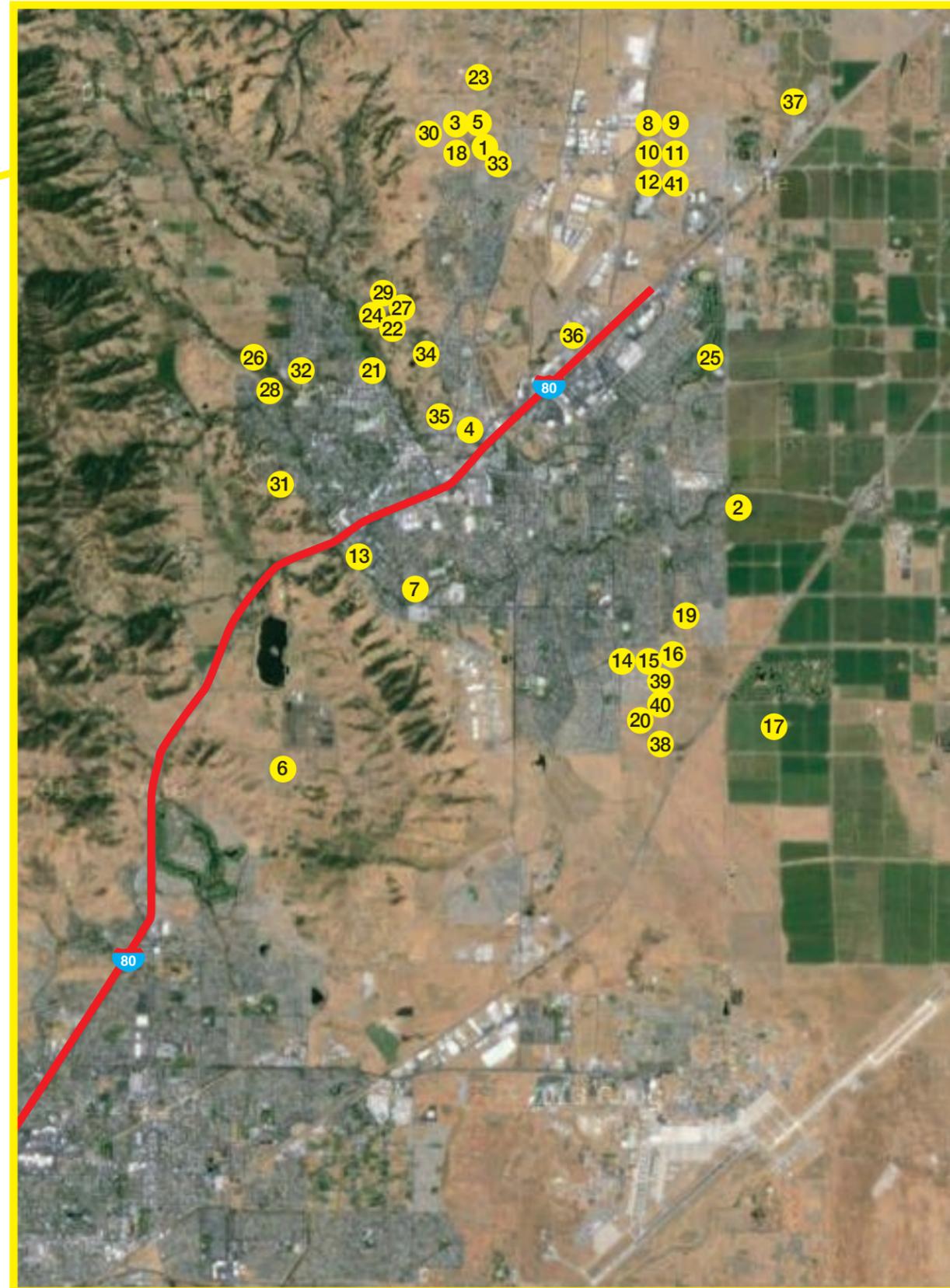
The cumulative setting for the growth is defined by the communities that encompass or are adjacent to the I-80 corridor, within the project limits. As discussed in **Section 2.1.3, Growth**, population, housing, and employment within the study area have been increasing at a stable rate for the last several years. Such growth rates are expected to continue as per many proposed residential, commercial, and industrial developments proposed within the area (**Table 2.4-1**), which is a cumulative growth effect. Furthermore, the Association of Bay Area Governments (ABAG) projects the employment rate within the study area to increase 36 to 38 percent by 2040. Growth for the surrounding communities is planned for under the applicable general plans (Solano County, Fairfield, and Vacaville).

The Build Alternative does not propose any changes to zoning or land use designations within the I-80 corridor. While the Build Alternative would improve access and highway capacity, no new on- or off-ramps to the local roadways would be constructed. Existing access points to the areas surrounding the project limits would remain the same, with the exception of the existing eastbound Travis Boulevard off-ramp being modified into two separate off-ramps to accommodate increased weaving length for the auxiliary lane extension. For these reasons, the Build Alternative would not affect the rate, amount, or type of growth envisioned in the local planning documents and future planned developments in the area. Cumulative effects to growth are not anticipated.



Legend

- █ Project Study Limits
- R - Residential Development



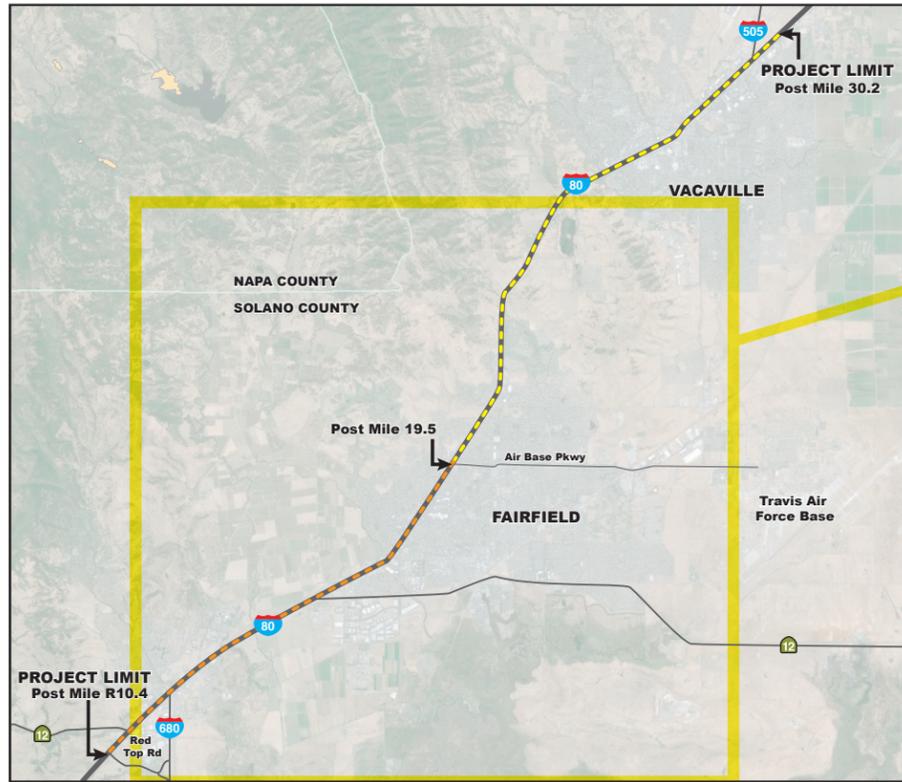
VACAVILLE PROJECTS

- 1 Amber Hills (R)
- 2 Brighton Landing (R)
- 3 Cheyenne (R)
- 4 Ivywood (R)
- 5 Knoll Creek (R)
- 6 Lagoon Valley (R)
- 7 Montessa (R)
- 8 Renaissance at North Village (R)
- 9 Casa Bella at North Village (R)
- 10 Sanctuary at North Village (R)
- 11 North Village Unit 5 (R)
- 12 North Village Unit 6 (R)
- 13 Portofino Unit 2 (R)
- 14 Barrington Estates at Southtown (R)
- 15 Carrington Manor at Southtown (R)
- 16 Southtown Phase 3 (R)
- 17 Southtown Commons (R)
- 18 Rancho Rogelio (R)
- 19 Sterling Chateau 4 (R)
- 20 Vanden Meadows (R)
- 21 Arroyo Vista (R)
- 22 Canyon View (R)
- 23 Cheyenne Estates (R)
- 24 Gibson/Vine Estates (R)
- 25 Golf Course Estates (R)
- 26 Hidden Valley (R)
- 27 Horkey Parcel Map (R)
- 28 Nob Hill Estates (R)
- 29 North Vine Street Estates (R)
- 30 Rogers Ranch (R)
- 31 Spring Lane Unit 2 (R)
- 32 Stratton Estates (R)
- 33 Verona (R)
- 34 Villages on Vine Unit 2 (R)
- 35 Vine Glen Estates (R)
- 36 Nut Tree Apartments (R)
- 37 Quinn Crossing Apartments (R)
- 38 Southtown Apartments (R)
- 39 Southtown Townhouses (R)
- 40 Vanden Meadows Apartments (R)
- 41 Villas at North Village Apartments (R)

Vacaville Planned Developments

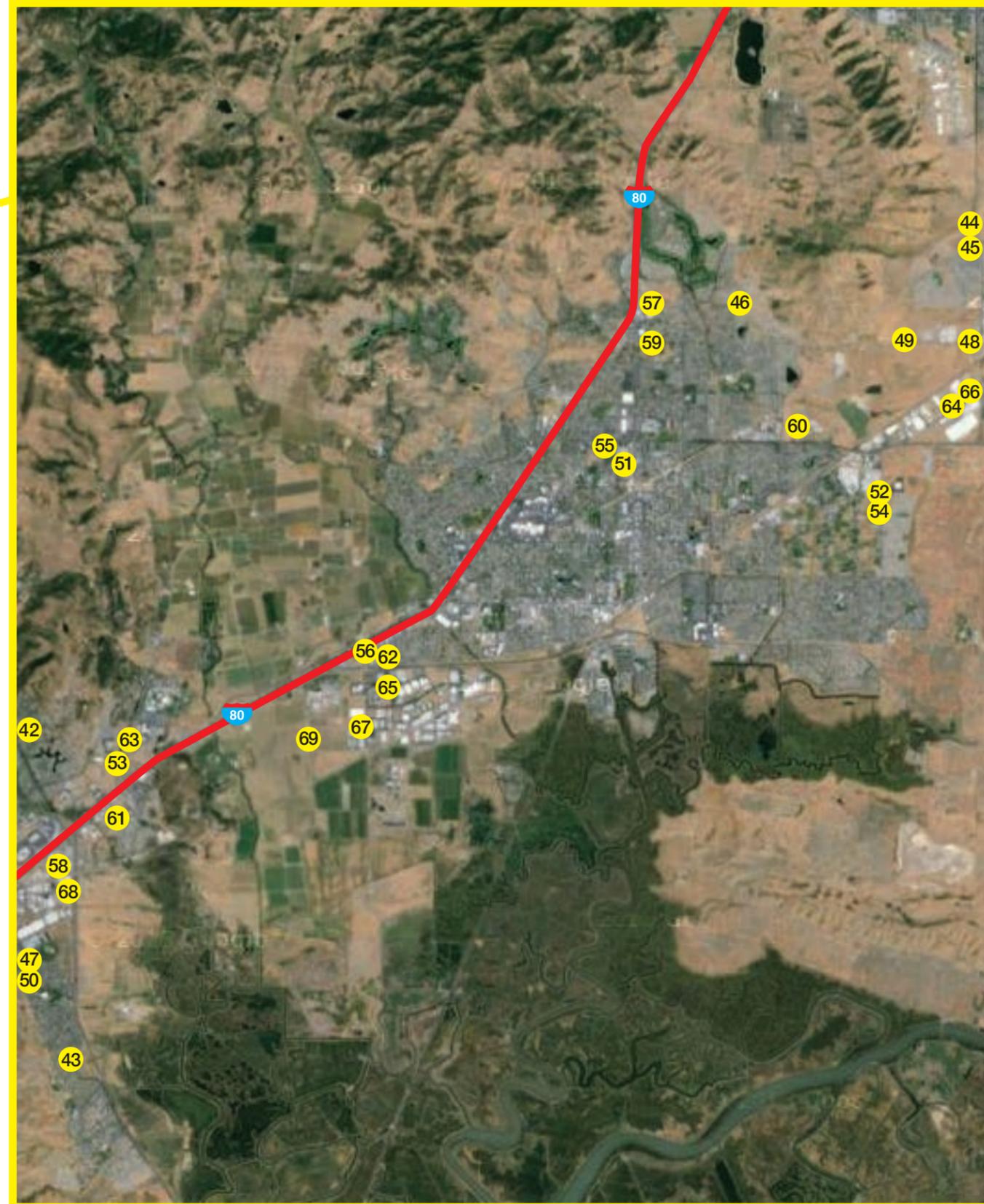
Figure 2.4-1a

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Legend

- Project Study Limits
- R - Residential Development
- C - Commercial Development
- I - Industrial Development



FAIRFIELD PROJECTS

- 42 East Ridge (R)
- 43 Garibaldi Ranch (R)
- 44 Goldridge (R)
- 45 Madison (R)
- 46 Paradise Crest (R)
- 47 Fieldcrest (R)
- 48 Train Station Specific Plan Area (R)
- 49 Villages at Fairfield (R)
- 50 Villas at Havenhill (R)
- 51 Franklin-Tabor (R)
- 52 Ivy Wreath (R)
- 53 Paesino Verde (R)
- 54 Strawberry Fields (R)
- 55 The Cottages (R)
- 56 Mercedes Benz (C)
- 57 Lowes (C)
- 58 Premium Auto Mall (C)
- 59 Sparkles Express Car Wash (C)
- 60 Laurel Creek Plaza (C)
- 61 Green Valley Ranch (C)
- 62 CarMax (C)
- 63 Green Valley Plaza (C)
- 64 Frank Lin Distillers (I)
- 65 Verizon MSC (I)
- 66 Clorox Tank Farm 1 & 2 (I)
- 67 Lincoln Cordelia Road (I)
- 68 Lopes-Fermi Industrial Flex Building (I)
- 69 JCM Industrial Park (I)

Fairfield Planned Developments

Figure 2.4-1b

(back of Figure 2.4-1b)

Table 2.4-1 Planned Developments

Name	Location	Acres	Units	Proposed Use	Status
Amber Hills	6928,6932,6950,6964 Browns Valley Road Vacaville	19.1	38	Residential	Tentative Map
Brighton Landing	SE of Elmira Road & Leisure Town Road Vacaville	125	769	Residential	Under Review
Cheyenne	Whispering Ridge Drive & W of Browns Valley Road & N of McMurty Lane Vacaville	86	221	Residential	Partially Constructed
Ivywood	201 Beard Street Vacaville	5.9	37	Residential	Partially Constructed
Knoll Creek	W. of Browns Valley Road & Whispering Ridge Drive Vacaville	10	38	Residential	Approved
Lagoon Valley	E. of I-80; S. of Lagoon Valley Road Vacaville	412	1025	Residential	Tentative Map
Montessa	1222 California Drive Vacaville	40	55	Residential	Tentative Map
Renaissance at North Village	Crescent Drive & North Village Parkway Vacaville	19.8	192	Residential	Under Construction
Casa Bella at North Village	Crescent Drive & North Village Parkway Vacaville	2.9	35	Residential	Under Construction

Name	Location	Acres	Units	Proposed Use	Status
Sanctuary at North Village	Crescent Drive & North Village Parkway Vacaville	13.4	162	Residential	Under Construction
North Village Unit 5	Crescent Drive & North Village Parkway Vacaville	11	68	Residential	Under Review
North Village Unit 6	W. of North Village Parkway Vacaville	134.9	176	Residential	Under Review
Portofino Unit 2	S. of Tocia Avenue & Butcher Road Vacaville	1.26	7	Residential	Tentative Map
Barrington Estates at Southtown	E. of Nut Tree; S. of Somerville Drive Vacaville	43.7	165	Residential	Partially Constructed
Carrington Manor at Southtown	E. of Nut Tree; S. of Somerville Drive	41.9	158	Residential	Partially Constructed
Southtown Phase 3	5709 Vanden Road Vacaville	47.9	37	Residential	Tentative Map
Southtown Commons	E. Side Leisure Town Road; & Cypresswood Drive Vacaville	39.4	215	Residential	Tentative Map
Rancho Rogelio	7019 Browns Valley Road Vacaville	20.9	40	Residential	Tentative Map
Sterling Chateau 4	SE Corner Alamo Vanden Road Vacaville	13.7	54	Residential	Tentative Map
Vanden Meadows	E. of Nut Tree Rd.; S. of Opal Way Vacaville	206	939	Residential	Under Review

Name	Location	Acres	Units	Proposed Use	Status
Arroyo Vista	SW Corner of Fruitvale Road & Gibson Canyon Road Vacaville	3.87	8	Residential	Tentative Map
Canyon View	Gibson Canyon Road & Vine Court Vacaville	14.08	15	Residential	Approved Vesting
Cheyenne Estates	NW of Shelton Lane Vacaville	15	15	Residential	Approved Final Map
Gibson/Vine Estates	SE Corner of Gibson Canyon Road/Vine Street Vacaville	9.01	8	Residential	Approved Vesting
Golf Course Estates	White Sands Drive & Whitney Court Vacaville	16.8	3	Residential	Recorded Final Map
Hidden Valley	N. Alamo Drive & Hidden Valley Lane Vacaville	25.5	31	Residential	Recorded Final Map
Horkey Parcel Map	385 Vine Street Vacaville	3.5	2	Residential	Tentative Map
Nob Hill Estates	End of Seneca Way Vacaville	12.17	9	Residential	Approved Final Map
North Vine Street Estates	N. end of Vine St.; E. of Gibson Canyon Road Vacaville	60.4	58	Residential	Approved Final Map
Rogers Ranch	N. of McMurtry Lane & Grace Feather Court Vacaville	35	28	Residential	Vesting Tentative Map
Spring Lane Unit 2	Spring Lane & Monte Verde Drive Vacaville	52.85	27	Residential	Tentative Map

Name	Location	Acres	Units	Proposed Use	Status
Stratton Estates	607 Shady Glen Road Vacaville	4	10	Residential	Partially Constructed
Verona	190 Rice Lane Vacaville	4.72	4	Residential	Tentative Map
Villages on Vine Unit 2	E. of Vine Street & Gibson Canyon Road Vacaville	12.9	25	Residential	Under Construction
Vine Glen Estates	Bresee Ave/Vine Street Vacaville	6.3	19	Residential	Tentative Map
Nut Tree Apartments	Nut Tree Road & E Monte Vista Ave Vacaville	12	216	Residential	Approved
Quinn Crossing Apartments	9999 Quinn Road Vacaville	17.3	312	Residential	Pending Submittal
Southtown Apartments	W. of Leisure Town Road & Vanden Road Vacaville	10.7	223	Residential	Tentative Map
Southtown Townhouses	W. Side Vanden Road & Cogburn Circle Vacaville	6.3	60	Residential	Tentative Map
Vanden Meadows Apartments	W. of Vanden Road; N. of Newcastle Drive Vacaville	8.17	60	Residential	Approved Planned Development
Villas at North Village Apartments	North Village Parkway & Crescent Drive Vacaville	9.9	228	Residential	Approved
Eastridge	Green Valley Road & Eastridge Drive Fairfield	N/A	217	Residential	Active

Name	Location	Acres	Units	Proposed Use	Status
Garibaldi Ranch	Lopes Road & Gold Hill Road Fairfield	N/A	520	Residential	Active
Gold Ridge	Peabody Road & Chuck Hammond Drive Fairfield	N/A	1458	Residential	Active
Madison	Peabody Road & Gramercy Circle Fairfield	N/A	221	Residential	Active
Paradise Crest	Manuel Campos Parkway & Mystic Drive Fairfield	N/A	150	Residential	Active
Fieldcrest	Red Top Road & Oakbrook Drive Fairfield	N/A	384	Residential	Future
Train Station Specific Plan Area	Peabody Road & Cement Hill Road Fairfield	N/A	N/A	Residential	Future
Villages at Fairfield	Cement Hill Road & Walters Road Fairfield	N/A	1717-2159	Residential	Future
Villas at Havenhill	Red Top Road & Oakbrook Drive Fairfield	N/A	324	Residential	Future
Franklin-Tabor	Tabor Avenue & Pacific Avenue Fairfield	N/A	23	Residential	Inactive
Ivy Wreath	East Tabor Avenue & Walters Road Fairfield	N/A	73	Residential	Inactive

Name	Location	Acres	Units	Proposed Use	Status
Paesino Verde	Business Center Drive & Suisun Valley Road Fairfield	N/A	284	Residential	Inactive
Strawberry Fields	East Tabor Avenue & Walters Road Fairfield	N/A	39	Residential	Inactive
The Cottages	Union Avenue & Peach Tree Drive Fairfield	N/A	45	Residential	Inactive
Mercedes Benz	2950 Auto Mall Fairfield	77,914 square feet		Commercial	Under Construction
Lowe's	N. Texas at Manuel Campos Fairfield	139,000 square feet		Commercial	Under Construction
Premium Auto Mall	Auto Plaza Court Fairfield	10,000 +/- square feet		Commercial	Under Construction
Sparkles Express Car Wash	3103 N. Texas Fairfield	3,000 square feet		Commercial	Approved
Laurel Creek Plaza	Air Base at Claybank Fairfield	110,186 square feet		Commercial	Approved
Green Valley Ranch	4455 Central Fairfield	N/A		Commercial	Future Phase
CarMax	2901/2955 Auto Mall Parkway Fairfield	64,000 square feet		Commercial	Approved. Awaiting Building Permit
Green Valley Plaza	200 Suisun Valley Road Fairfield	455,000 square feet		Commercial	Application Under Review
Frank Lin Distillers	2455 Huntington Drive Fairfield	N/A		Industrial	Completed

Name	Location	Acres	Units	Proposed Use	Status
Verizon MSC	2555 N. Watney Way Fairfield	49,235 square feet		Industrial	Under Construction
Clorox Tank Farm 1 & 2	2600 Huntington Drive Fairfield	N/A		Industrial	Under Construction
Lincoln Cordelia Road	2901 Cordelia Road Fairfield	119,000 square feet		Industrial	Time Extension Field
Lopes-Fermi Industrial Flex Building	555 Lopes Road Fairfield	32,509 square feet		Industrial	Time Extension Field
JCM Industrial Park	Cordelia Road at Hale Ranch Road Fairfield	841,000 square feet		Industrial	On Hold

Source: Caltrans, 2014d

Farmlands

The cumulative setting for agricultural resources includes proposed developments within Solano County that could convert open space/farmlands to urban land uses. There has been a trend of conversion of farmland to developed land in northern California that has resulted in a loss of substantial farmland. The Prime Farmland closest to the project limits is generally located west of Fairfield, in Suisun Valley. Construction of the project in combination with other planned development previously listed would contribute to the continued loss of agricultural land in the region. This is considered a cumulative effect. **Figure 2.4-1a and 2.4-1b** depict the locations of planned projects within Fairfield and Vacaville. Most of the projects would be constructed in developed and urban areas and do not affect farmland resources. However, several of the projects are located near Prime Farmland areas including, the Quinn Crossing Apartments (ID #37), Brighton Landing Residences (ID #2), Stratton Estates (ID # 32), and the JCM Industrial Park (ID #69). If these projects were to encroach onto Prime Farmland, they would also contribute to the cumulative impact to farmland resources.

As discussed in **Section 2.1.4, Farmlands/Timberlands**, the Build Alternative would convert 0.01 acres of prime farmland and Williamson Act property for a utility easement. This easement is located immediately adjacent to the I-80 corridor, where cultivation of agricultural products is limited to non-existent because of physical constraints associated with freeways (i.e., proximity to high traffic volumes). For this reason, and the relatively small acquisition anticipated, the farmland acquisition anticipated under the Build Alternative would not be a considerable contribution to the permanent loss of agricultural land in the region.

Utilities/Emergency Services

The cumulative setting for utilities and emergency services includes the service areas of the particular utility and public service providers that encompass the project limits. Water and wastewater services are provided by a combination of local special districts and private companies whose service areas extend well beyond the immediate boundaries of the project limits. Fairfield Fire Department, Fairfield Police Department, Vacaville Fire Department, and Vacaville Police Department Police provide protection and traffic enforcement services within the project limits. The California Highway Patrol (CHP) has jurisdiction over the I-80 corridor for matters involving traffic violations.

As discussed in **Section 2.1.3, Growth**, the study area has experienced stable development over the past several years. Such growth rates are expected to continue as per many proposed residential, commercial, and industrial developments proposed within the area (**Table 2.4-1**), and would continue to require public services from regional utility providers and emergency service providers. Accordingly, continued growth would require increased services, which is a cumulative effect.

As individual land use development projects are proposed, specific project-related effects associated with the provision of utilities and public services will be evaluated. The evaluation would assess the potential effects within the context of maintaining existing levels of service, budgetary constraints, and the long-term plans of service providers to adjust to anticipated population and employment growth within the region.

Future transportation projects, including the Build Alternative, are not anticipated to directly increase population in the surrounding communities, and would not contribute to a permanent increase in demand for these services. Given that utility demand and public services is accounted for in planning and resource documents that predict future demand and supply such services, and that the transportation projects would not directly increase population in the area, no cumulative effect to utilities and emergency services would occur.

Visual/Aesthetics

The area of cumulative setting for effects related to visual resources encompasses the viewshed or visible environment surrounding the project limits. The majority of future development surrounding the project limits (listed in **Table 2.4-1**) will involve redevelopment of existing areas or infill development of vacant lots within urbanized areas. Therefore, the cumulative trend will continue to predominantly be redevelopment of existing low-intensity and underutilized parcels with new urban uses. The cities along the project limits have policies in place to direct growth and development towards existing urbanized areas. In addition, the City of Fairfield has entered into a greenbelt agreement with Vacaville, to preserve approximately 4,100 acres between Vacaville and Fairfield as agricultural lands. No urban development is proposed in rural areas and would occur within the cities' urban growth boundaries. New development proposed under the Vacaville General Plan could contribute to light pollution in the region as well. However, future development in all jurisdictions are subject to the California Building Code standards that would prevent potential impacts associated with light and glare.

None of the transportation improvement projects, including the Build Alternative, would substantially affect scenic vistas or resources. Proposed projects planned within Fairfield would comply with policies OS 1.4-OS 6 in the General Plan to reduce potential development-related effects on scenic vistas. Proposed project planned within Vacaville would comply with policies LU.P.2 and LU 2.1 in the General Plan to prevent development in open space areas and reduce visual effects. Effective implementation of such policies would ensure that the future land use projects listed in **Tables 2.4-1** would not adversely affect scenic vistas or resources. The planned land use developments and future projects, including the Build Alternative, would not result in cumulative effects to the visual character and quality of the I-80 corridor.

Cultural Resources and Paleontology

The cumulative setting for cultural and paleontological resources includes the areas within and surrounding the project limits which have documented cultural and paleontological resource sites, and/or high sensitivities to unrecorded artifacts (Caltrans, 2014n). Cumulative effects to cultural and paleontological resources would occur if planned and foreseeable development results in the

removal of a substantial number of historic structures or archaeological/paleontological sites that, when taken in combination with the project, and could degrade the physical historical record of the larger project region. Since all planned and foreseeable projects, including the Build Alternative, would involve ground disturbing construction activities, all projects have the potential to adversely affect known and unknown resources. However, cultural and paleontological resources - both known and unknown - are protected by a number of federal, state, and local regulations, reinforced by goals, and policies associated with each city's general plan as well as the planning documents of the transportation agencies that would be approving the planned and foreseeable improvements.

If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall cease in any area or nearby area suspected to overlie remains, and the County Coroner contacted. Pursuant to Public Resources Code Section 5097.98, if the remains are thought to be Native American, the coroner will notify the Native American Heritage Commission (NAHC) who will then notify the most likely descendant (MLD). At this time, the person who discovered the remains will contact Caltrans Professionally Qualified Staff (PQS) Archaeologist so that they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable.

If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find. Additional study or survey will be needed if the project design changes or project limits are extended beyond the present survey limits.

Provisions to address unintentional adverse effects on archaeological resources within the project limits are included in the Avoidance, Minimization, and/or Mitigation Measures in **Section 2.1.9, Cultural Resources**. Environmentally Sensitive Areas (ESAs) and Testing/Treatment plans were established to protect known cultural resources within the area of potential effect (APE). The protective measures outlined in these plans include establishing (i.e., through protective exclusion fencing) and monitoring ESAs around the known archaeological site boundaries during construction, testing excavations and subsurface resource identification, and formal documentation of the results of the testing and data recovery. These ESAs and Testing/Treatment plans will be filed with the California State Historic Preservation Officer (SHPO) for concurrence with the protective measures. Issuance of a Finding of No Adverse Effect is dependent on the results of the planned subsurface testing during project construction. Pending their review and approval of completed construction phase testing, SHPO will issue a letter of concurrence for the Finding of No Adverse Effect if no resources are discovered. If resources are discovered during the construction phase subsurface testing, additional protective and/or avoidance plans would be prepared and submitted to SHPO for concurrence. The Build Alternative is not expected to cause an adverse effect to known archaeological sites with the implementation of the ESA and Testing/Treatment plans.

All of the future transportation improvements would also be required to adhere to Caltrans standard approach to project-related paleontological resource efforts, which involves the identification, evaluation, and, as necessary, mitigation. These three steps generally entail preparation of five separate documents that are:

- Paleontological Identification Report (PIR)
- Paleontological Evaluation Report (PER)
- Paleontological Mitigation Plan (PMP)
- Paleontological Mitigation Report (PMR)
- Paleontological Stewardship Summary (PSS)

Implementation of the regulations and standard Caltrans resource identification efforts, as prescribed under the Build Alternative, would ensure no cumulative effect to cultural or paleontological resources. As such, the planned development in combination with the Build Alternative would not result in a cumulative effect to cultural or paleontological resources.

Hydrology and Floodplain/Water Quality and Storm Water Runoff

The cumulative setting for hydrology, floodplains, water quality, and storm water runoff includes water resources and floodplains within the project limits. Historically, agriculture has impacted runoff patterns in the areas adjacent to the I-80 corridor in the West Segment of the project limits. Along the East Segment, runoff patterns are affected by the urban development. Anticipated development in the region (i.e., projects listed in **Table 2.4-1** and planned transportation projects), including the Build Alternative, would contribute to an increase in impervious surface in the watershed area that could increase the quantity and velocity of storm water runoff and reduce groundwater recharge. For those developments that appear to be located on higher elevations/hillside (ID Nos. 6, 13, 31, 44, 46, and 57), based on US topographic maps, groundwater recharge is not an issue given the depth to groundwater can range up to 20 feet deep. Certain land use development projects planned for in low-density urban areas may potentially convert natural ground cover to impervious structures and/or paved surfaces. Any additional impervious areas would decrease the amount of rainfall expected to infiltrate into the ground and would result in higher peak flows in area drainages. Increased peak flows could exacerbate flooding problems along the drainage lines that experience flooding under existing conditions.

All future and planned projects in the region would be required to comply with the requirements of the State Water Resource Control Board (SWRCB) C.3 regulations and coordinate with City and County construction and flooding regulations. The SWRCB regulations require the incorporation of post-construction storm water controls, which include measures to reduce storm water pollutants, or otherwise minimize the change in rate and flow of storm water runoff. Each project would convey its storm water runoff via different drainage systems, which would be required to have adequate capacity for any increased runoff. The Build Alternative would not violate any water quality standards, deplete groundwater supplies, alter drainage patterns, or create capacity exceeding runoff through the implementation of standard long-term pollution prevention and control measures be incorporated into the final design (see **Measures WQ-1** through **WQ-3**). Based on a review of the foreseeable projects, with implementation of state and local regulations,

such projects would not result in an adverse effect to hydrology and water quality. Thus, anticipated development in combination with the Build Alternative would not result in a cumulative effect to hydrology, floodplains, and water quality.

Air Quality

The cumulative setting for air quality includes the Sacramento Valley Air Basin and the San Francisco Air Basin. Past and present development within both air basins has contributed to increased levels of traffic congestion and degrading air quality conditions. The operation of the planned land use development projects listed in **Table 2.4-1** would generate additional traffic emissions. In addition, improved freeway operations would result in an increase in vehicle miles traveled (VMT) and related increases in vehicle emissions. Therefore, air quality impacts associated with transportation and other development projects in the Sacramento and San Francisco Air Basins would result in cumulative effects to air quality for permanent operational pollutant emissions. The projects listed in **Table 2.4-1** are required to comply with the Bay Area 2010 Clean Air Plan. The Bay Area 2010 Clean Air Plan (CAP) takes into account future growth projections to 2035 and serves to:

- Update the Bay Area 2005 Ozone Strategy in accordance with the requirements of the California Clean Air Act to implement “all feasible measures” to reduce ozone
- Provide a control strategy to reduce ozone, particulate matter, air toxics, and greenhouse gases in a single, integrated plan
- Review progress in improving air quality in recent years
- Establish emission control measures to be adopted or implemented in the 2010-2012 timeframe.

The Cities of Vacaville and Fairfield must ensure that the projects are in compliance with the CAP and that the project implements control measures to improve air quality and protect public health.

Transportation plans that conform with the State Implementation Plan (SIP) are not considered to cause or contribute to violations of ambient air quality standards. Furthermore, a project included in a conforming plan would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard. Conforming transportation plans are subject to a threshold of no net increase in emissions. The proposed project is included in Plan Bay Area, the Regional Transportation Plan (RTP), and the Regional Transportation Improvement Program (RTIP), which conform to the SIP. Therefore, the Build Alternative would not result in a cumulatively considerable net increase of any criteria pollutant.

Noise

The cumulative setting for noise is equivalent to the noise study area evaluated in **Section 2.2.7, Noise**, and encompasses all developed land uses surrounding the proposed Build Alternative improvements, with a focus on noise-sensitive receivers. Noise-sensitive land uses in the vicinity of the project limits include single- and multi-family residences, active recreational areas, day care centers, churches and hotels. The noise study that was prepared for the project utilized projected (2040) traffic noise conditions from the Solano-Napa Travel Demand Forecasting Model, which represent cumulative conditions within the study area.

Planned developments considered in the cumulative noise analysis include those residential projects that have received final development approval are within approximately 500 feet of the centerline of I-80, where traffic noise levels from the highway could dominate the noise environment. Future developments located beyond this distance are excluded from further analysis. Most of the proposed developments near the study area are located within developed areas, as shown in **Figures 2.4-1 and 2.4-2**.

The majority of adjacent land uses approach or exceed noise abatement criteria (NAC) levels.¹ With more planned regional development, noise levels are anticipated to be almost equal to existing conditions in most locations, with a slight increase of 1 A-weighted decibel (dBA) for some areas. However, these changes are not considered a substantial increase in noise (defined as 12 dBA or more increase). With the exception of Segment 6 (located between Allison Drive to Leisure Town Road), all of the noise study area segments would experience noise levels that approach or exceed the NAC under the 2040 Build Alternative conditions, requiring noise abatement consideration. A total of 21 potential noise barriers were evaluated for feasibility, and reasonable allowance (see **Appendix G**). Ten of the twenty-one barriers were found to be both acoustically feasible and achieve the Caltrans noise reduction design goal (minimum 7 dBA reduction for at least one receptor). Two of the ten barriers were deemed feasible and reasonable, as identified in **Mitigation Measure NOI-A** and in **Table 2.2-37**. Barrier SW11 would be located on the north side of Davis Street/Hickory Lane on-ramp to westbound I-80. Barrier SW12a would be located along the eastbound I-80 edge of shoulder, in front of the Sunset Circle Mobile Homes Complex.

The implementation of the noise abatement options determined to be feasible and reasonable would effectively reduce noise levels below the NAC thresholds to a level that would completely offset the Build Alternative's contribution to cumulative noise levels. The chosen abatement type would be the construction of noise barriers. If conditions substantially change during final design, noise barriers might not be provided. The views and opinions of the residents living immediately adjacent to the I-80 corridor and affected by the traffic noise would be considered in reaching a decision on noise abatement measures. Caltrans' policy is to not provide noise barriers if 50 percent or more of those affected residents do not want them. The opinions of these residents would be obtained through public and community meetings or other means, as appropriate. The final decision regarding noise abatement would be made upon completion of the project design and public involvement processes.

¹ NAC are used to determine when a noise impact would occur, depending on the type of land use under analysis.

Biology

The area of cumulative analysis for biological resources includes the Biological Study Area (BSA) identified for the Build Alternative plus any immediately adjacent lands and waterways containing sensitive biological resources (sensitive habitats or protected plant or animal species).

Development within the area from nearby past, current, and reasonably foreseeable future projects have affected biological resources in the region. Continued development trends would increase such disturbance to the California red-legged frog (*Rana draytonii*), American Badger (*Taxidea taxus*), western pond turtle (*Actinemys marmorata*), burrowing owl (*Athene cunicularia*), valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), and others discussed in **Section 2.3, Biological Environment**.

Future transportation improvements and land use developments have an unknown and unquantifiable effect on special-status species and potential biologically sensitive habitats. Although not quantifiable, it is assumed that the implementation of the planned and foreseeable improvements may result in the degradation of wildlife habitat through a variety of actions which, when combined with the Build Alternative, may result in a cumulative impact to biological resources as described below.

According to the Vacaville General Plan EIR, development allowed under the General Plan could contribute to the cumulative loss of habitat for a number of plant and animal species and sensitive habitats, including riparian habitats and wetlands. Similar effects could potentially occur in Fairfield. The Cities of Vacaville and Fairfield are participants in the Solano Habitat Conservation Plan (HCP). The Solano HCP anticipates that within the next 30 years, 16,000 acres of agricultural lands, grasslands, oak savannas, woodlands, vacant lots, and riparian habitats within the County could be converted to urban uses. Accordingly, the Vacaville and Fairfield have policies in place to reduce cumulative impacts to such land. However, proposed development within the General Plan area could result in significant effects to the Vacaville-Fairfield Greenbelt corridor, a key wildlife corridor for species. This wildlife corridor land is owned by Solano Irrigation District (SID). Because SID would not be able to use this land for purposes that would be compatible with a wildlife corridor, cumulative impacts to habitat for a number of plant and animal species is anticipated. However, the effects of the planned and programmed projects would be assessed as part of their separate agency consultation and permitting processes. Compliance with the regulations and adherence to the required permitting processes would ensure that there are no unmitigated effects resulting from the planned projects in the region.

The physical footprint of the proposed Build Alternative improvements may result in direct impacts to suitable habitat for a variety of sensitive natural communities, wetlands and other waters, and special-status species. The proposed project activities would include impacts outside the Caltrans right-of-way that would permanently convert mixed oak woodlands and riparian woodland. Permanent impacts to wetlands would include direct placement of fill within wetlands and loss of wetland vegetation due to shading effects. Any permanent loss of wetlands or habitat would be mitigated through creation of wetlands at an approved mitigation bank or conservation lands. The Build Alternative would not impact the Vacaville-Fairfield Greenbelt corridor because proposed work is limited to the I-80 corridor and its immediate right-of-way.

Water quality during project operation would be protected by best management practices (BMPs) that would be developed and approved prior to construction (see **Section 2.2.2, Water Quality; Measures WQ-1, WQ-2, and WQ-3** for further details regarding temporary and permanent BMPs). Implementation of the BMPs would ensure that the natural beneficial values of the waterways within the BSA were maintained for the special-status species that could be present in this aquatic habitat. In addition to the measures that would protect the water quality of aquatic habitats, the Build Alternative includes a number of avoidance and minimization measures that are considered part of the project design and apply to all of the proposed improvements under the Build Alternative (see **Section 2.3.7, Avoidance and Minimization Measures and Project Mitigation Measures**). In summary, these measures include provisions that would require:

- assignment of qualified biological monitor during construction
- implementation of worker environmental awareness training
- implementation of seasonal restrictions and work windows for certain construction activities
- installation of temporary fences and barriers around ESAs
- implementation of standard Caltrans BMP during construction
- conducting of pre-construction surveys
- coordination with agencies as needed
- proper use of vehicle use near sensitive natural communities
- restoration of damaged buffer areas after construction

These avoidance measures would be implemented prior to and during construction activities, and would be included as part of the special provisions of the construction bid package for the project. Implementation of the avoidance and minimization measures included in the project design would avoid adverse effects to the majority of the wildlife species within the BSA. Adverse effects that would not be avoided and/or reduced through the implementation of the avoidance measures include the direct displacement of oak woodlands; jurisdictional water features; and habitats suitable for burrowing owl and California red-legged frog. Therefore, compensatory mitigation measures have been proposed. See **Impacts BIO-A through BIO-F in Section 2.3.7, Avoidance and Minimization Measures and Project Mitigation Measures**. Implementation of **Mitigation Measures BIO-A through BIO-F**, in combination with the avoidance measures, would offset adverse impacts to the direct displacement of oak woodlands, jurisdictional water features, and special-status species. Thus, the Build Alternative would not have a considerable contribution to cumulative biological effects.

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