

Middle Green Valley Specific Plan Project

Recirculated Draft Environmental Impact Report
State Clearinghouse #2009062048



PREPARED FOR:
Solano County, Department of Resource Management
675 Texas Street, Suite 5500
Fairfield, CA 94533-6341

August 2013

NOTICE OF AVAILABILITY OF A RECIRCULATED DRAFT ENVIRONMENTAL IMPACT REPORT

Date: August 27, 2013
To: Responsible Agencies, Agencies with Jurisdiction by Law, Trustee Agencies, Involved Federal Agencies, and Agencies/People Requesting Notice
Subject: **Notice of Availability of a Recirculated Draft Environmental Impact Report for the Proposed Middle Green Valley Specific Plan Project**

NOTICE IS HEREBY GIVEN that the County of Solano has prepared a recirculated draft environmental impact report (Recirculated DEIR) for the proposed Middle Green Valley Specific Plan Project, located in unincorporated Solano County. The Recirculated DEIR was prepared in accordance with the requirements of the California Environmental Quality Act (CEQA), and is now available for public review.

The Middle Green Valley Specific Plan Project is a proposed mixed-use development that includes up to 400 new residences, agricultural tourism, local neighborhood retail and community facility uses, and over 1,400 acres of protected agriculture and open space. The plan area is generally located on Green Valley Road; north of I-80, Jameson Canyon, and the Hidden Meadows subdivision (City of Fairfield); south of existing unincorporated subdivisions and the Green Valley Country Club in upper Green Valley; west of Suisun Valley and the Rockville Hills; and northwest of the East Ridge subdivision (City of Fairfield).

An EIR was prepared for the project and certified by Solano County in July 2010. A lawsuit challenging the adequacy of the EIR, specifically the water supply analysis, was subsequently filed and the Court ruled in favor of the petitioner. In response to the Court's ruling, the County has prepared a revised water supply analysis and Recirculated DEIR. Consistent with the requirements of Section 15088.5(c) of the State CEQA Guidelines, this Recirculated DEIR contains only that technical section of the EIR required to be recirculated, Public Services and Utilities – Water, and the changes address only those issues required by the ruling to be remedied.

The Recirculated DEIR is being circulated for a 45-day public review and comment period that begins on August 27, 2013 and ends on October 10, 2013. During this period, the general public, agencies, and organizations may submit written comments on the content of the Recirculated DEIR to the County. If you represent a public agency, please provide information that is germane to your statutory responsibilities as they may be affected by this project. Responsible and trustee agencies will need to use the Recirculated DEIR when considering approvals they may grant related to the project.

Pursuant to procedures set forth in Section 15088.5(f)(2) of the State CEQA Guidelines, reviewers are directed to limit their comments to the information contained in the Recirculated DEIR that was revised and recirculated. Specifically, comments should be limited to the revised discussion of the project's potential impacts related to the provision of water.

Your comments must be received by the County by **5:00 p.m. on October 10, 2013**. Please submit your written comments, including the name, address, and telephone number of a contact person to: Matt Walsh, Solano County Department of Resource Management, Planning Services Division, 675 Texas Street, Suite 5500, Fairfield, CA 94533; or email MWalsh@solanocounty.com.

Copies of the Recirculated DEIR can be reviewed at the Department of Resource Management, Planning Services Division at the above address. Additional copies can be reviewed at the Fairfield Cordelia Library, 5050 Business Center Drive, Fairfield; the Fairfield Civic Center Library, 1150 Kentucky Street; and at http://www.co.solano.ca.us/depts/rm/boardscommissions/middle_green_valley_cac/documents.asp.

After the close of the comment period, the County will consider all comments received on the Recirculated DEIR, and prepare written responses as required. The Final EIR (FEIR) will consist of the DEIR, Recirculated DEIR, written responses to comments on the DEIR, written responses to comments on the Recirculated DEIR, and any text changes. The FEIR will be considered anew by the County for certification if it is determined that the FEIR has been completed in compliance with CEQA. Following certification of the EIR, the County will consider the proposed project for approval.

For additional information needs or to request a copy of the Recirculated DEIR, please contact Matt Walsh; telephone: (707) 784-6765; FAX: (707) 784-4805.

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August 27, 2013

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ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
af	acre-feet
afy	acre-feet per year
CDPH	California Department of Public Health
CFPD	Cordelia Fire Protection District
CHSC	California Health and Safety Code
County	Solano County
County Code	Solano County Code
CSA	County Services Area
DEIR	Draft Environmental Impact Report
DWP	Drinking Water Program
DWR	California Department of Water Resources
EPA	U.S. Environmental Protection Agency
FEIR	Final Environmental Impact Report
FOBs	Field Operations Branches
gpm	gallons per minute
LAFCO	Local Agency Formation Commission
M&I	municipal and industrial
MCLs	maximum allowable contaminant levels
MDD	maximum day demand
mg/L	milligrams per liter
mgd	million gallons per day
Plan Area	Specific Plan Area
PSC	Putah South Canal
RWQCBs	Regional Water Quality Control Boards

SB	Senate Bill
SCWA	Solano County Water Agency
SWRCB	State Water Resources Control Board
TDR	transfer of development rights
TDS	Total Dissolved Solids
TMF	technical, managerial, and financial
USBR	U.S. Bureau of Reclamation
UWMP	urban water management plan
WSA	water supply assessment

1. INTRODUCTION

1.1 BACKGROUND AND PURPOSE OF THE RECIRCULATED DRAFT ENVIRONMENTAL IMPACT REPORT

In December 2009, Solano County published the Middle Green Valley Specific Plan Draft Environmental Impact Report (DEIR), which assessed the potential environmental impacts of implementing the proposed Middle Green Valley Specific Plan. The proposed project would be a mixed-use development on approximately 1,905 acres located along Green Valley Road, in unincorporated Green Valley, near the western boundary of Solano County. The proposed development would include up to 400 new residences, agricultural tourism, local neighborhood retail and community facility uses, and over 1,400 acres of protected agriculture and open space.

The DEIR was circulated for public review and comment for a period of 60 days that began on December 28, 2009 and ended on February 25, 2010. During and up to the end of the review period, comments were received on the DEIR. The County reviewed those comments to identify specific environmental concerns and determine whether any additional environmental analysis would be required to respond to issues raised in the comments. Responses to all comments received on the DEIR were prepared and included in the Final EIR (FEIR). The FEIR was certified and the project was approved on July 27, 2010. A lawsuit challenging the adequacy of the EIR was filed by the Upper Green Valley Homeowners Association on August 25, 2010.

In a ruling issued by the Superior Court of Solano County on October 25, 2011 (*Upper Green Valley Homeowners Association v. County of Solano* [Super. Ct. Solano County, 2011, No. FCS036446]), the County was directed to remedy the water supply analysis in the EIR. In response to the judicial order and resulting writ, this Recirculated DEIR contains a revised analysis of the project's water supply. As in the previous DEIR, the following two water supply options are being evaluated: water supplied by the City of Fairfield (Option A) and water supplied through the use of groundwater wells within the Specific Plan area (Option B).

As discussed below, after reviewing and responding to any comments received on this Recirculated DEIR, the FEIR will be considered anew by the County to determine whether it should be certified as having been prepared in compliance with CEQA. Following certification of the EIR, the County will consider the proposed project for approval.

1.2 SUMMARY DESCRIPTION OF THE PROPOSED PROJECT

Pursuant to the *Solano County General Plan* (2008) objectives, the County is proposing to adopt and implement a Middle Green Valley Specific Plan.¹ The project, as articulated in the *Preliminary Draft Middle Green Valley Specific Plan*, December 21, 2009 (Draft Specific Plan), is intended to carry out the goals and policies identified by the *Solano County General Plan* for the approximately 1,905-acre Middle Green Valley "special study area." The project description remains unchanged from the description contained in the original DEIR. The following provides a brief summary.

¹ Solano County. 2008 (November). Solano County General Plan. Available: http://www.co.solano.ca.us/depts/rm/planning/general_plan.asp.

1.2.1 Existing Plan Area

The “special study area,” the approximately 1,905-acre Plan Area, is located along Green Valley Road, in unincorporated Green Valley, near the western boundary of Solano County (Figures 1.1 and 1.2).

The Plan Area consists of a valley floor with two drainage corridors, Green Valley Creek and Hennessey Creek, surrounded by foothills including steep slope areas and oak woodland. The Plan Area includes grazing lands in the hills, a mixture of cultivated and cultivable agricultural land on the valley floor, over 200 acres of vineyard, and a number of existing rural building and infrastructure elements.

The Plan Area is located north of Interstate 80, Jameson Canyon, and the Hidden Meadows subdivisions (City of Fairfield); south of existing unincorporated subdivisions and the Green Valley Country Club in upper Green Valley; west of Suisun Valley and the Rockville Hills; and northwest of the Eastridge subdivision (City of Fairfield). The Plan Area is highly valued for its rural character and scenic qualities.

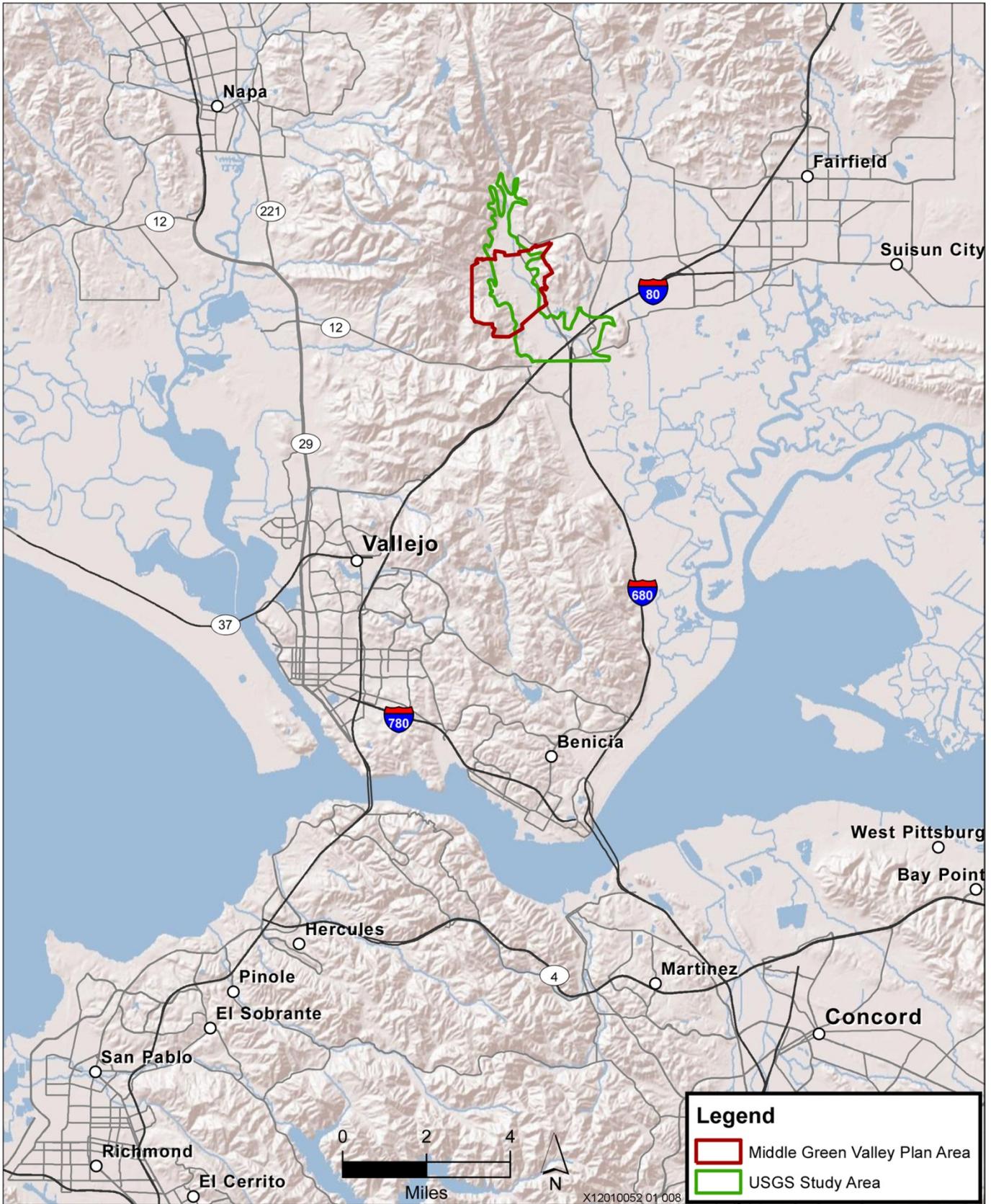
1.2.2 Relationship of the Plan Area, the Thomasson Study Area, and the USGS Study Area

As used in this Recirculated DEIR and in Appendix B, the “Thomasson study area (north/south)” refers to portions of Green Valley addressed by Thomasson (1960)², excluding the Plan Area. On Figure 1.1, those are the two areas delineated in green and located directly north and south of the Plan Area. The total area studied by Thomasson in the Green Valley area was about 2,400 acres, 900 acres of which lie within the Plan Area. The balance, the “Thomasson study area (north/south),” totals about 1,500 acres. For clarity, the entire 2,400-acre portion of Green Valley studied by Thomasson is referred to herein as the “USGS study area.”

Although the proposed project-related development would be limited to the Plan Area, the available water sources for the project, particularly groundwater sources, extend beyond the Plan Area boundary. Sources available throughout Green Valley would include the contiguous Suisun-Fairfield groundwater basin and various water systems’ infrastructure. The U.S. Geological Survey (USGS) study by Thomasson (1960) provides the most thorough and foundational characterization of the geology and hydrogeology of Green Valley, as confirmed by the *Consolidated Final Program Environmental Impact Report for the Central Valley Flood Protection Plan* (DWR 2012)³. In addition to reviewing previous studies of geology and hydrogeology in the Suisun-Fairfield area of Solano County, which includes Green Valley, Thomasson (1960) conducted detailed geologic mapping and groundwater assessments based on data collected through a canvass of well construction, groundwater level, and groundwater quality data from existing wells in Green Valley and throughout Solano and Yolo Counties. Furthermore, Thomasson (1960) described the groundwater resources in Green Valley as distinct from other portions of the Suisun-Fairfield area due to the physical structure of Green Valley, an alluvial valley bounded to the north, east, and west by outcropped bedrock.

² Thomasson, H.G., Olmsted, F.H., and E.F. LeRoux. 1960. Geology, Water Resources and Usable Ground-Water Storage Capacity of Part of Solano County, California, U.S. Geological Survey Water Supply Paper 1464.

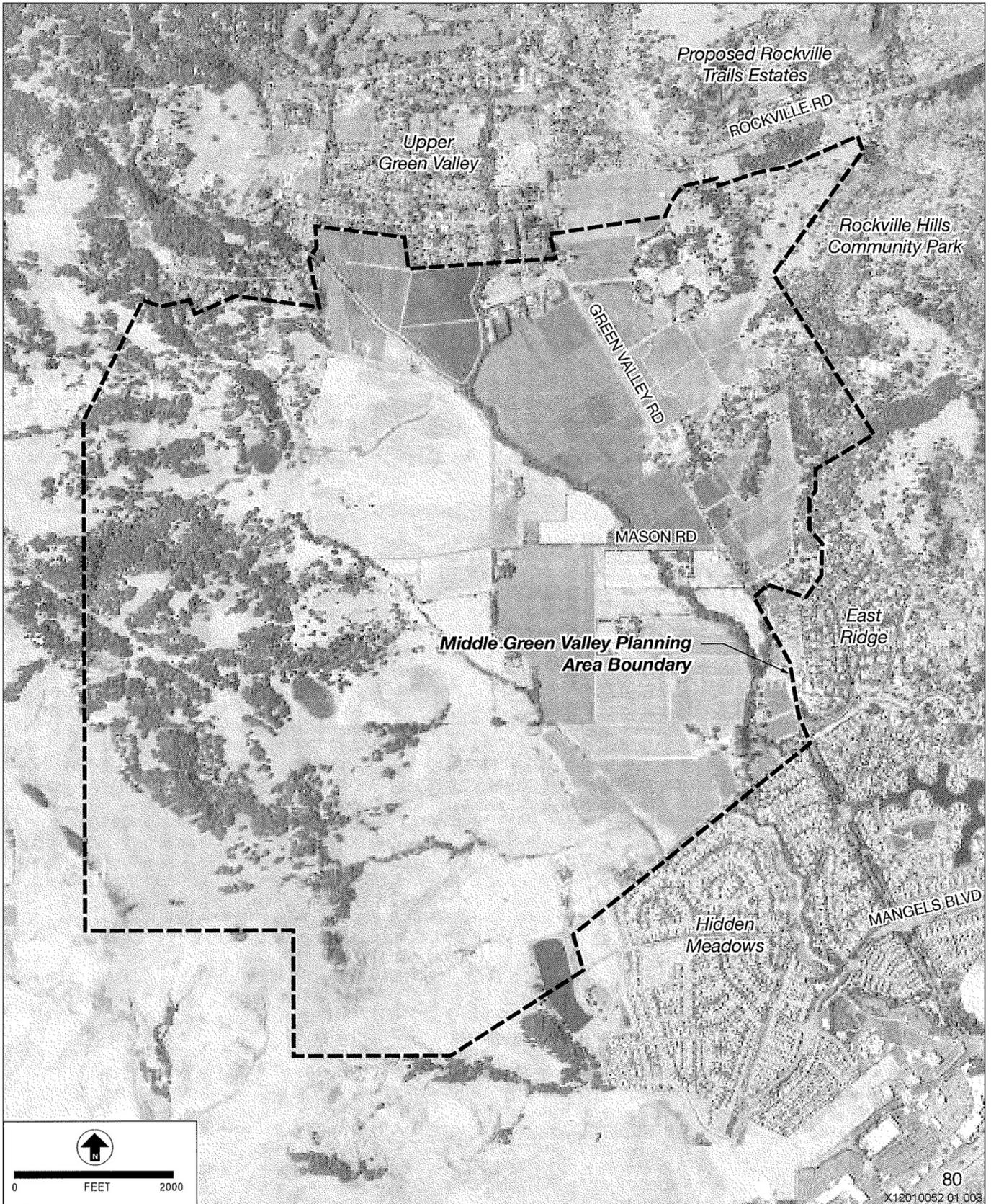
³ California Department of Water Resources. 2012 (July). 2012 Central Valley Flood Protection Plan, Consolidated Final Program Environmental Impact Report. State Clearinghouse No. 2010102044. Prepared by the Central Valley Flood Management Planning Program. Available: <http://www.water.ca.gov/cvfm/documents.cfm>.



Source: Provided by Luhdorff & Scalmanini, Consulting Engineers in 2013



**FIGURE 1.1
LOCATION MAP**



Source: Provided by Solano County in 2012



FIGURE 1.2
SPECIFIC PLAN AREA AERIAL PHOTOGRAPH

1.2.3 General Plan Background

The General Plan-stated goal for the area is to maintain the rural character of the valley while allowing some opportunity for compatible residential development. The General Plan calls for use of land use tools such as clustering and transfer of development rights (TDR) to limit the effects of residential development on the rural character of the valley, including the valley's viewsheds, wildlife habitat, wildlife movement corridors, and agricultural activities. The General Plan calls for adoption of a plan (either a specific plan or master plan) for Middle Green Valley that would implement these objectives.

1.2.4 Proposed Specific Plan

In response to these General Plan objectives, the Draft Specific Plan would establish a land use and circulation layout, and associated land use tools such as development clustering, a TDR program, and use of conservation easements, to limit the effects of residential development on the rural character of the valley, and on the valley's viewsheds, wildlife habitat, wildlife movement corridors, and agricultural activities.

(a) Plan Vision

The Draft Specific Plan includes a described "vision" and set of proposed principals, goals, concepts, neighborhood framework, and associated land use and character policies; land use designations; related use standards; financial and infrastructure implementation provisions; community design themes; neighborhood design code provisions; building type, form and character standards; landscape standards; open land requirements; street and circulation standards; sign standards; and design review guidelines for the Middle Green Valley Plan Area formulated to implement the General Plan objectives.

The Specific Plan proposes an interwoven combination of land conservation and development provisions designed to create a limited number of new residential units, capped at a maximum of 400 new primary residential units (consistent with General Plan stated objectives for the Plan Area) and up to 100 new secondary residential units in compact cluster development patterns, surrounded by an interconnected network of agricultural and natural open lands, and served by a circulation system of rural streets, bikeways, pedestrian pathways, and trails (Figure 1.3).

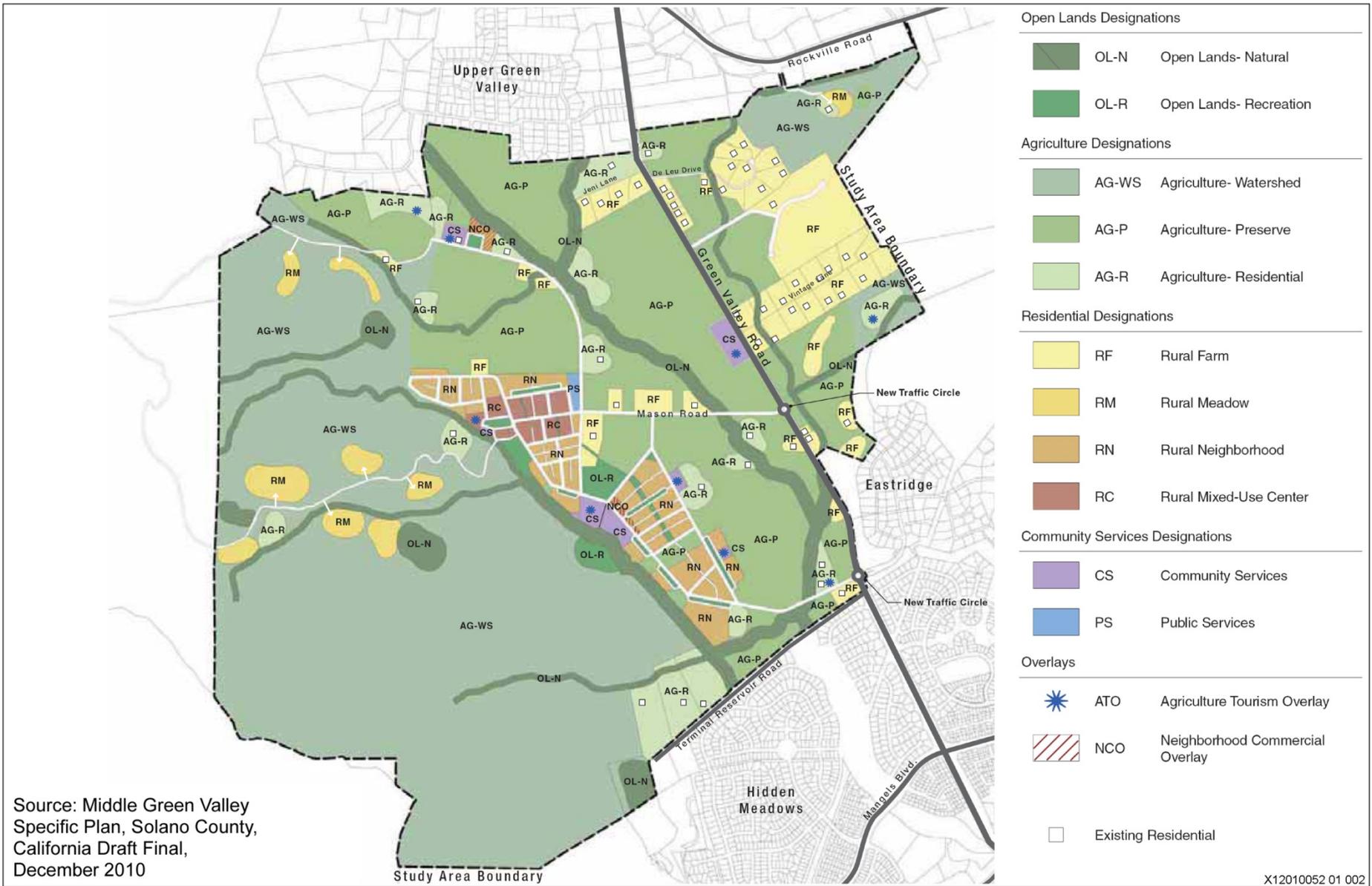
Approximately 1,490 acres (about 78%) of the Plan Area is designated as permanent open land, of which approximately 440 acres would be preserved as working agriculture. The remainder of the planning area (approximately 415 acres or about 22%) is designated for development in a "neighborhood framework," with each of four proposed neighborhood areas having a designated informal pattern of rural roads, residential building types, and community buildings.

(b) Water and Sewer

The plan proposes two basic options for providing water and wastewater services to the neighborhood development areas: (a) connecting the development areas to existing urban service systems in the vicinity (i.e., the City of Fairfield municipal water system and Fairfield-Suisun Sewer District) consistent with the General Plan, or (b) establishing water and wastewater systems in the Plan Area.

(c) County Services Area

Under both water/sewer options, the plan proposes formation of a County Services Area (CSA) to maintain and operate Plan Area water, sewer, storm drainage, recycled water, and parks and recreation services.



Source: Provided by Solano County in 2012

FIGURE 1.3
PROPOSED LAND USE DESIGNATIONS, MIDDLE GREEN VALLEY PLAN AREA

(d) Community Facilities District

The plan describes possible CSA establishment of a Community Facilities District (CFD) which, pursuant to California Assembly Bill 1600, would issue revenue bonds and establish an associated special assessment charged on a fair share basis to new Plan Area development benefiting from CFD-funded infrastructure.

(e) Conservation Easement Program

The plan also proposes establishment of a Green Valley Conservancy to oversee the protection and management of the agricultural and open lands.

(f) Transfer of Development Rights Program

In addition, the plan proposes a TDR and conservation easement program to offer Plan Area property owners the opportunity to place agricultural lands under conservation easement and transfer development rights.

1.2.5 Required Approvals

Implementation of the proposed Specific Plan would require County approval of the Specific Plan and associated Zoning Map amendments to incorporate the Specific Plan. Implementation of the Specific Plan would also require County establishment of the CSA to maintain and operate Plan Area water, sewer, storm drainage, recycled water, and parks and recreation infrastructure; and County approval of a Master Development Agreement with Plan Area property owners. Implementation of the Specific Plan may also require local and state agency approvals from the City of Fairfield, Fairfield-Suisun Sewer District, Solano County Local Agency Formation Commission (LAFCO), California Department of Public Health, California Department of Fish and Wildlife, and the Regional Water Quality Control Board.

This Recirculated DEIR has been prepared by the County to provide CEQA-required environmental documentation for all such local and state approvals.

1.3 CONTENT AND SUMMARY OF THE RECIRCULATED DEIR

Consistent with the requirements of Sections 15088.5(c) and 15088.5(g) of the State CEQA Guidelines, this Recirculated DEIR contains only that technical section of the EIR required to be recirculated, Public Services and Utilities – Water, and the changes address only those issues required by the ruling to be remedied. No other chapters or portions of the previous DEIR are implicated by the Recirculated DEIR, and no new information or new circumstances exist that would warrant revision of other chapters or portions.

This document consists of the following chapters and sections. All chapter and section numbering is consistent with the chapter and section numbering outline in the DEIR (released December 2009).

Chapter 1, “Introduction.” This chapter describes the purpose and organization of the Recirculated DEIR. A summary description of the proposed project is also provided. No changes to the project description have occurred since the project was approved on July 27, 2010.

Section 16.1, “Public Services and Utilities – Water (Revised).” This section describes the project’s potential impacts related to the provision of public services and utilities, specifically water supply. Revisions to the original DEIR section focus on incorporating information from the new Water Supply Assessment (WSA) for water supply Option B (Onsite Groundwater), which is based on recent groundwater investigations and data that is current and complete. As noted above, no project changes

have occurred. The new WSA provides more detailed information on the proposed groundwater supply option than was available during preparation of the original DEIR. This information complies with the Court ruling that identified the groundwater supply analysis as the only deficiency that required the County's reconsideration. The section replaces the original DEIR's water supply impact analysis in its entirety.

Chapter 17, "List of Preparers." This chapter identifies the Recirculated DEIR authors and consultants that provided analysis in support of the document's conclusions.

Appendices. Appendices contain additional materials used or relied heavily upon during preparation of the Recirculated DEIR. Because they are published together, materials that are appendices to the Recirculated DEIR are equally considered appendices to the WSA for water supply Option B (Onsite Groundwater).

1.4 ENVIRONMENTAL REVIEW PROCESS FOR THE RECIRCULATED DEIR

Consistent with the requirements of Section 15087 of the State CEQA Guidelines, this Recirculated DEIR is being made available on August 27, 2013, for public review for a period of 45 days. The public review period will end on October 10, 2013. During this period, the general public, agencies, and organizations may submit written comments on the content of the Recirculated DEIR to the County. Pursuant to procedures set forth in Section 15088.5(f)(2) of the State CEQA Guidelines, reviewers are directed to limit their comments to the information contained in the Recirculated DEIR that was revised and recirculated. Specifically, comments should be limited to the revised discussion of the project's potential impacts related to the provision of water (contained in Section 16.1).

Copies of the Recirculated DEIR are available for review at the Department of Resource Management, Planning Services Division (at the below address); the Fairfield Cordelia Library at 5050 Business Center Drive; the Fairfield Civic Center Library at 1150 Kentucky Street; and online at http://www.co.solano.ca.us/depts/rm/boardscommissions/middle_green_valley_cac/documents.asp.

All written comments on this Recirculated DEIR should be addressed to:

Solano County
Department of Resource Management
Planning Services Division
Attention: Matt Walsh, Principal Planner
675 Texas Street, Suite 5500
Fairfield, CA 94533-6341

Public notice of availability of the Recirculated DEIR has been published in the *Daily Republic*.

After close of the comment period, the County will consider all comments received on this Recirculated DEIR within the comment period, and prepare written responses as required. The FEIR will consist of the DEIR, Recirculated DEIR, written responses to comments on the DEIR, written responses to comments on the Recirculated DEIR, and any text changes. The FEIR will be considered anew by the County for certification if it is determined that the FEIR has been completed in compliance with CEQA. Following certification of the EIR, the County will consider the proposed project for approval.

16. PUBLIC SERVICES AND UTILITIES – WATER (REVISED)

This chapter provides the revised water supply analysis for the Middle Green Valley Specific Plan as required by the Superior Court of Solano County ruling in *Upper Green Valley Homeowners Association v. County of Solano* (Super. Ct. Solano County, 2011, No. FCS036446) and the Peremptory Writ of Mandate, as described in Chapter 1, “Introduction.” This chapter describes the anticipated potable and non-potable water demand of the project, the proposed water supply plan intended to meet that demand, and the environmental effects of providing the needed supply. Mitigation measures are recommended to avoid or minimize impacts to the extent feasible.

This chapter is primarily based on the two water supply assessments (WSAs) prepared for the proposed project, one for each of the two water supply options evaluated in this Recirculated DEIR: Option A (Municipal Connection) and Option B (Onsite Groundwater). A WSA for Option A was prepared by the City of Fairfield in September 2009 and was circulated with the DEIR; a second WSA for Option A was prepared and adopted by the City of Fairfield in December 2012. The WSA for Option B is a new analysis based on recent groundwater investigations and current data. The WSAs for surface water and groundwater supply options are included herein as Appendices A and B, respectively.

16.1 WATER

16.1.1 Environmental Setting

(a) Existing Water Service in the Plan Area.

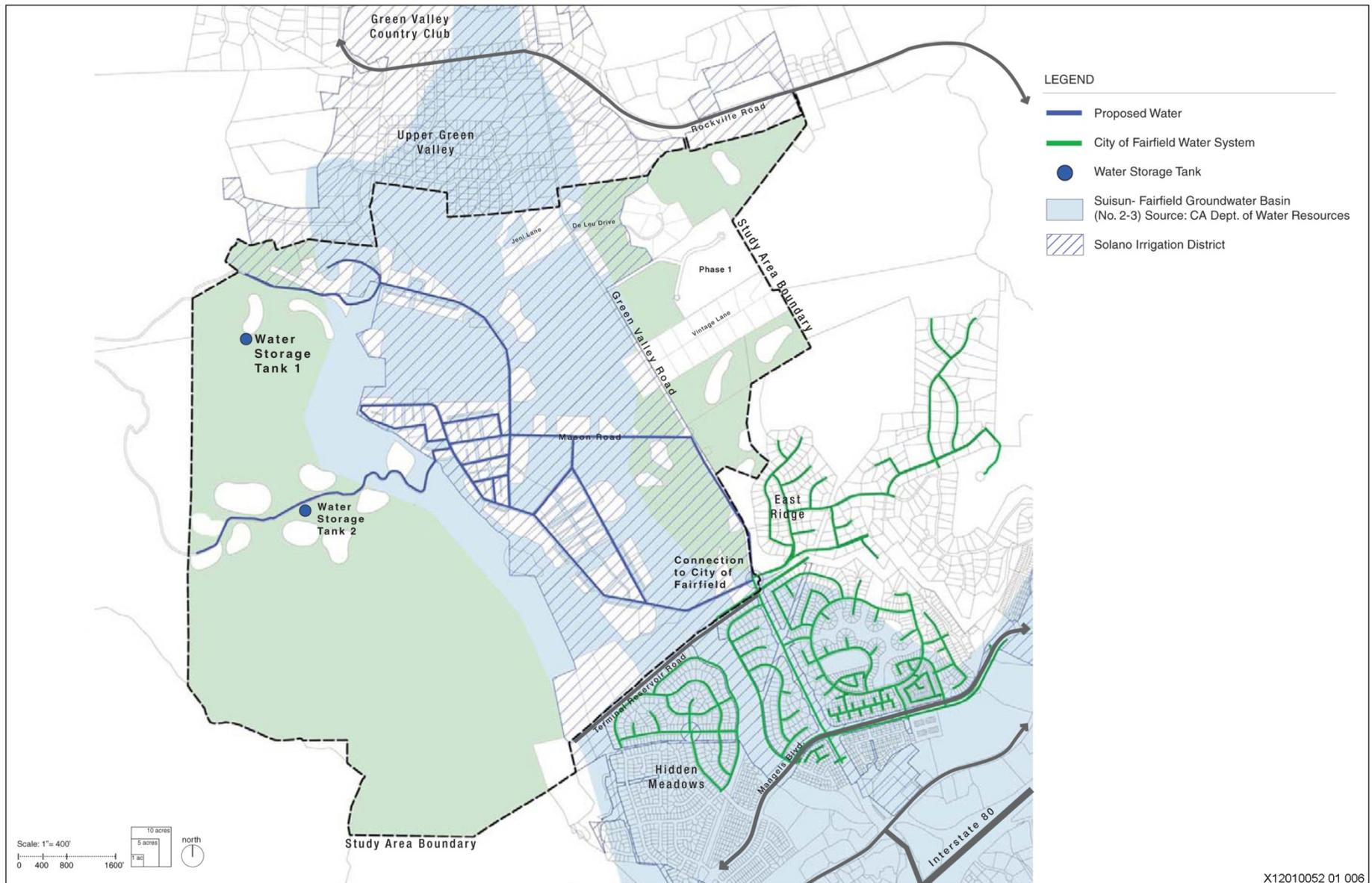
The Middle Green Valley Specific Plan Area (Plan Area) currently has two sources of water supply: (1) onsite groundwater, and (2) Solano Irrigation District (SID) agricultural irrigation water.

(1) Groundwater.

The approximately 55 existing residential housing units within the Plan Area receive water from private, onsite groundwater wells. As shown on Figure 16.1, the central part of the Plan Area lies in the Suisun-Fairfield Valley Groundwater Basin. Groundwater level data from the Plan Area indicate levels have been stable and groundwater supplies have been sufficient to meet demand. The Suisun-Fairfield Valley Groundwater Basin covers approximately 133,600 acres and contains wells with a maximum well yield of 500 gallons per minute (gpm) with an average well yield of 200 gpm (Appendix B). The California Department of Water Resources (DWR) has identified the Suisun-Fairfield Valley Groundwater Basin as Type C (i.e., a basin where there is “a low level of knowledge of any of the budget components for the area”) (DWR 2003)¹; however, the information provided in this section and in Appendix B is intended to overcome the shortcomings of the DWR data as appropriate and needed for purposes of analyzing this project.²

¹ California Department of Water Resources. 2003. California’s Groundwater, Bulletin 118, Update 2003. Available: http://www.water.ca.gov/pubs/groundwater/bulletin_118/california's_groundwater__bulletin_118_-_update_2003_/bulletin118_entire.pdf. Accessed June 10, 2013.

² Preparation of a water “budget” in the sense described by DWR when categorizing the basin as Type C is not required by SB 610 or CEQA, and DWR’s categorization of the basin as Type C does not indicate the extent of information suitable for those purposes.



Source: Provided by Solano County in 2012



FIGURE 16.1
PROPOSED SPECIFIC PLAN WATER SUPPLY FEATURES --
OPTION A (MUNICIPAL CONNECTION) AND OPTION B (ONSITE GROUNDWATER)

The hills of the Vaca Mountains that bound Green Valley are composed mainly of Eocene rocks of marine and fluvial origin and the Pliocene Sonoma Volcanics which include ash flow tuffs and andesitic and basaltic flows. The volcanics that form the hills on the east side of the valley continue under the relatively thin valley alluvium to form the base of the valley. The hills that make up the western side of the valley are composed of the sandstones of the Markley Formation that are covered by recent (Holocene, Pleistocene) landslide deposits. The valley alluvium consists of Holocene fan deposits of clay, silt, sand, and gravel originating from the surrounding hills. Recent deposits of silt, sand, and gravel have been deposited immediately adjacent to Green Valley Creek. The principal geologic units of the Green Valley area are summarized below.

- **Markley Formation:** The Markley Formation is composed of Eocene age arkosic sandstone of marine and fluvial depositional origin. Massive to well-bedded, the formation is typified as gray to yellow brown with abundant muscovite. The rocks of the Markley formation make up hills on the west side of the valley and continue below the western edge of Green Valley, dipping approximately 15°E. The Markley Formation is generally not targeted for water supply due to poor water quality and low yields.
- **Sonoma Volcanics:** The Pliocene Sonoma Volcanics include ash flow tuffs and andesitic and basaltic flows. Thomasson (1960)³ mapped the hills that surround the valley floor collectively as the Sonoma Volcanics. In 1998, the California Division of Mines and Geology published a geologic map of the Cordelia quadrangle that mapped the Sonoma Volcanics in greater detail, differentiating tuff, andesites, and basalt flows that form the eastern hills of the valley (Bezore et al. 1998).⁴ The Sonoma Volcanics collectively lie unconformably atop the older Markley Formation.
- **Quaternary Landslide Deposits:** The hills on the west side of the valley composed of Markley Formation rocks are covered by numerous recent and Pleistocene landslides; the toes of the landslides define the extent of the valley floor on the west side.
- **Alluvial Fan Deposits:** The floor of Green Valley is covered by a layer of alluvium composed of clay, silt, sand, and gravel from fans originating in the surrounding hills. Based on drilling logs, the depth of the alluvium is believed to be approximately 150 feet.
- **Stream Channel Deposits:** Recent stream channel and over bank deposits consist of silt, sand, and gravel deposited immediately adjacent to the banks of Green Valley Creek.

The aquifer characteristics discussed below (e.g., specific capacity, transmissivity, and storage coefficient) refer to the ability of aquifers to transmit and store groundwater. Calculations based on data from long-term, constant rate pumping tests are the preferred method of estimating aquifer characteristics. However, in the absence of such data, as is the case for Green Valley, aquifer characteristics can be estimated based on other available information. For the WSA prepared for this project, aquifer characteristics were estimated using information recorded on well completion reports, which sometimes report information that can be used to estimate aquifer characteristics, and data from previous groundwater studies; this is standard practice in the industry when long-term pumping tests are unavailable. Typically, this approach is later complemented by site-specific field tests to confirm the results, as will be done for the proposed project.

³ Thomasson, H.G., Jr., Olmstead, F.H., and LeRoux, E.F., 1960, Geology, Water Resources and Usable Groundwater Storage Capacity of Part of Solano County, California. U.S. Geological Survey Water Supply Paper 1464.

⁴ Bezore, S.P., D.L. Wagner, and J. M. Sowers. 1998. Geologic Map of the Cordelia 7.5' Quadrangle, Solano and Napa Counties, California.

The Sonoma Volcanics and the valley alluvium are the principal formations targeted for domestic and agricultural groundwater supply needs in the valley and the surrounding hills. Wells on the periphery of the valley and in the surrounding hills target the volcanic rocks almost exclusively. Wells constructed in the valley may target the deeper volcanics, the shallow alluvium, or a combination of both.

Based on a review of drillers' logs filed by drilling contractors with DWR, approximately eighty supply wells have been constructed in the Green Valley area, which includes the main valley floor and adjacent foothills. The wells range from 30 to 560 feet in depth and yield between 5 and 350 gpm. Nearly half of the wells were constructed on the valley floor. In the Plan Area, well yields (where known) range between about 90 to 300 gpm for wells completed to depths ranging from about 130 to 205 feet deep. The majority of the wells constructed in the valley floor are for irrigation, although some serve both domestic and irrigation needs. The wells constructed in the hills that surround the valley are typically utilized for domestic supply only.

In the Green Valley area, yields from wells completed⁵ exclusively within the Sonoma Volcanics are generally less than those completed only within the alluvium. However, due to thickness of the Sonoma Volcanics formation, substantial well yields of over several hundred gpm can be realized in deep wells constructed with long intake screens. Wells constructed in the Sonoma Volcanics on the valley floor range in depth from 30 feet to nearly 300 feet (in one or both formations) with yields ranging from 12 to 350 gpm, with an average of 160 gpm. Wells completed outside the valley floor are typically only screened within the Sonoma Volcanics and generally yield less than 100 gpm.

Specific capacity (gallons per minute per foot [gpm/ft]) is the ratio of well yield (gpm) to drawdown⁶ (ft) and provides a measure of productivity for both the aquifer and the well. Specific capacity is calculated as Q/s , where Q is the yield of the well in gpm and s is the drawdown in feet. The specific capacity value indicates how much water can be pumped for every foot of drawdown in the well. Ideally, measurements of static water level, pumping water level, and discharge rate are collected from pump tests after a well has been fully developed. This data is used to calculate specific capacity. Specific capacities can be calculated from estimates of discharge rates and drawdown during test pumping conducted following well construction. However, specific capacities calculated from airlifting⁷ operations are typically not as reliable because of estimation errors and because wells are not yet fully developed.

Drillers' logs for 17 Green Valley wells included information on discharge rate and drawdown from which specific capacities were calculated. Specific capacities in the 17 wells ranged from 0.08 gpm/ft to 6 gpm/ft, with an average of 0.1 gpm/ft. This information was sufficient to develop an understanding of the relatively low specific capacity for the formations from which groundwater has been typically produced in Green Valley. Although the average specific capacity of Green Valley wells is relatively low, deep wells with deep pump settings can meet domestic water needs for the project.

The ability of an aquifer to transmit water is measured by the transmissivity, which can be defined as the permeability of the formation times the saturated thickness. In the absence of aquifer test data, transmissivity can be estimated from specific capacity using an empirical equation for a confined⁸ aquifer: $T = Q/s * 2000$, where T is the transmissivity in gallons per day per foot (gpd/ft) and Q/s is the

⁵ Completed means screened in and/or constructed so as to extract groundwater from a certain part of the subsurface aquifer system.

⁶ Drawdown refers to the lowering of water levels in response to pumping.

⁷ Airlifting is a common method of estimating a newly drilled well's productivity. However, the procedure is performed by forcing compressed air into the well rather than by using a pump, often performed before well construction is complete. Due to many unknown variables, the discharge rate can only be estimated and may not provide an accurate reflection of aquifer characteristics.

⁸ The relatively low specific capacity values for the Sonoma Volcanics suggest the empirical equation for confined conditions is more appropriate than the equation for unconfined conditions at least for the lower part of the aquifer system.

specific capacity in gpm/ft. Using calculated specific capacities from the 17 drillers' logs that contained discharge and drawdown information, estimated transmissivities in Green Valley ranged from 160 gpd/ft to 12,000 gpd/ft. The average transmissivity for the 17 wells is 200 gpd/ft.

The storage coefficient is the volume of water an aquifer releases from groundwater storage per unit change in head per unit area (Driscoll 1995).⁹ In an unconfined aquifer system, as may be the case in Green Valley for the upper part of the aquifer system, the amount of water that can be released from or added to storage per unit surface area and per unit change in hydraulic head is called the specific yield. In a confined aquifer, the water derived from storage associated with a decline in head comes from the expansion of water molecules themselves and the compression of the aquifer matrix materials.

Thomasson (1960) reported the specific yield of the Sonoma Volcanics to be approximately 0.25% based on data from well 5N/2W-30B1. This value is consistent with average values reported in the literature for consolidated or fractured rock. Thomasson (1960) indicates relatively higher values may be present in the volcanics in the northern part of the valley, but the tight character (low permeability) of underlying older rocks in the southern part may limit their utility for water supply. Based on eight wells that are completed almost exclusively within the alluvium, Thomasson reported an average specific yield of about 10%. This value is consistent with average values for similar material. However, neither Thomasson (1960) nor subsequent investigators have reported storage coefficients for an explicitly confined alluvial system within the Plan Area. It is recommended that this information be developed as part of the testing program (Appendix B).

In summary, groundwater has been historically utilized for domestic and agricultural purposes in the Plan Area. Wells have typically been completed largely in the alluvium, but some wells extend into the Sonoma Volcanics. Well yields (where known) range between about 90 to 300 gpm for wells completed to depths ranging from about 130 to 205 feet deep. Wells completed outside the valley floor are typically only screened within the volcanics and generally yield less than 100 gallons per minute. The three (or more) deep wells proposed to be constructed to serve the Plan Area would likely be completed at least partially in the Sonoma Volcanics. Based on information reported by Thomasson (1960), yields for wells constructed in the Sonoma Volcanics in the northern part of the valley may be greater than well yields for those in the southern part of the valley.

(2) *Solano Irrigation District Agricultural Irrigation Water.*

SID has jurisdiction over the central part of the Plan Area (see Figure 16.1) and provides irrigation water to agricultural operations within its service area. SID receives water from the Solano Project, which delivers surface water from Lake Berryessa (storage capacity of 1,602,000 acre-feet [af]), the reservoir area behind Monticello Dam in Napa County, through various Solano Project system features such as the Putah Diversion Dam, the Putah South Canal (PSC) with a small terminal reservoir, and associated waterways, laterals, and drainage works. The PSC and Lake Berryessa are both operated by SID under a contract with the U.S. Bureau of Reclamation (USBR). SID also owns and operates the hydroelectric power plant at the base of Monticello Dam. SID currently delivers water from Lake Berryessa to four cities, the Maine Prairie Water District, and individual SID customers, including numerous customers in the Plan Area. The Solano Project also provides a domestic water supply to the Mankas Corner area of the Suisun Valley, through a distribution agreement with SID.

SID's Cereda Pumping Plant is located within the Plan Area on the west side of Green Valley Road across from De Leu Drive. The plant was built in or around 1964 and facilitates delivery of raw water through a pipeline in Green Valley Road to SID's Green Valley unlined in-ground reservoir located

⁹ Driscoll, F.G. 1995. Groundwater and Wells, Second Edition, Johnson Screens, St. Paul, Minnesota, pp. 67.

opposite Country Club Drive, approximately one-half mile north of the northern boundary of the Plan Area. This unlined reservoir has a capacity of approximately 3 acre feet (af) (almost one million gallons). Together, the pump station and reservoir provide service to Green Valley in what are referred to as “upper” and “lower” pressure zones.

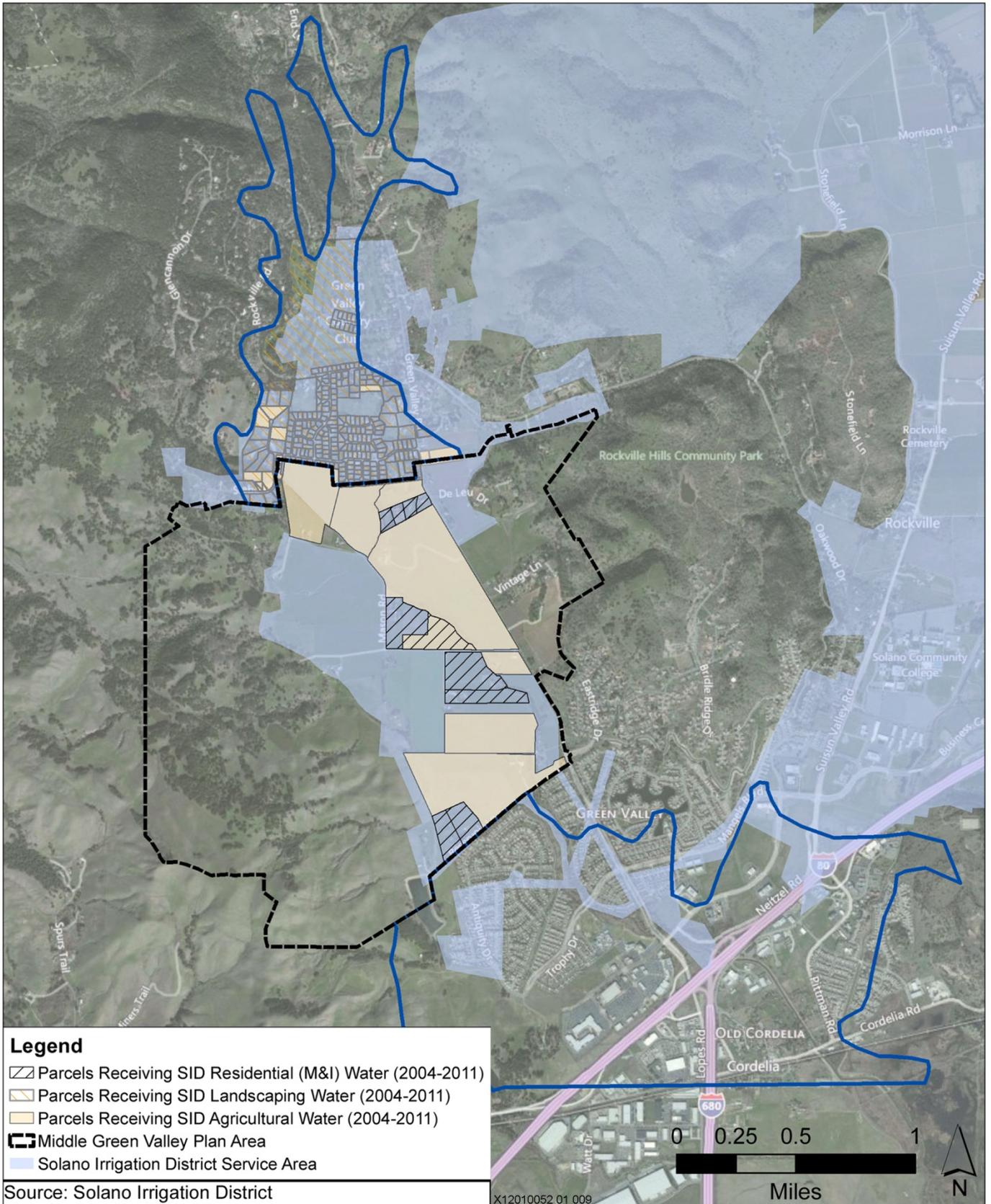
Deliveries of surface water by SID to the Middle Green Valley area began in the mid-1960s (Fuchslin, pers. comm., 2012).¹⁰ Currently, SID delivers non-potable water to 18 agricultural and 11 residential (classified by SID as Municipal and Industrial [M&I]) turnouts within the Plan Area through a piped distribution system (Figure 16.2). Within the Plan Area, SID water is available to those parcels within the service area boundary as shown in Figure 16.2. Parcels that received water from SID within the last nine years are depicted on the map. The annual volumes of water delivered by SID to these agricultural, M&I, and landscaping customers are summarized in Tables 16.1 and 16.2. SID also provided landscaping water delivery data for 1998 through 2003; although not shown in Table 16.1, those data were used to calculate the applicable water supply from SID. For the purposes of the WSA, water deliveries classified by SID as M&I or landscaping are considered to have been applied to meet existing residential, agricultural residential, or commercial land use demands.

Table 16.1
 RECENT SOLANO IRRIGATION DISTRICT DELIVERIES TO THE MIDDLE GREEN VALLEY PLAN AREA

Year	Agricultural (acre-feet)	M&I (acre-feet)
2004	574	18
2005	Not Available	11
2006	451	23
2007	398	31
2008	223	21
2009	162	21
2010	154	17
2011	140	19
2012	Not Available	Not Available

Notes: M&I = municipal and industrial (residential)
 Source: Appendix B

¹⁰ Telephone call on June 22, 2012 between Paul Fuchslin, Director of Engineering, of the Solano Irrigation District (SID), and Barb Dalgish, P.G., Project Hydrogeologist of Luhdorff & Scalmanini re: SID historic deliveries, available water supply, and ability to serve the Middle Green Valley Specific Plan Project.



Source: Provided by Luhdorff & Scalmanini, Consulting Engineers in 2012



FIGURE 16.2
SOLANO IRRIGATION DISTRICT SURFACE WATER DELIVERIES

Table 16.2
 RECENT WATER DELIVERIES TO THE THOMASSON STUDY AREA (NORTH/SOUTH)

Year	Solano Irrigation District		City of Fairfield	City of Vallejo
	Agricultural (acre-feet)	Landscaping (acre-feet)	Residential/Commercial (acre-feet)	Residential/Commercial (acre-feet)
2004	14	544	Not Available	
2005	16–37 ^b	373	Not Available	
2006	27	493	Not Available	
2007	26	523	Not Available	
2008	17	572	Not Available	213 ^a
2009	37	556	Not Available	
2010	24	437	Not Available	
2011	21–42 ^b	389–460 ^c	Not Available	
2012	25–46 ^b	477–548 ^c	Not Available	

Notes: M&I = municipal and industrial (residential)

^a Data for the City of Vallejo, Lakes Water System was provided as an average rate of 481 gpd/unit/year. That rate was distributed among the residential parcels within the Thomasson study area (north) to determine average annual water deliveries by the City of Vallejo.

^b Agricultural water deliveries provided by SID for 2005, 2011, and 2012 were missing values for one parcel. The ranges shown represent the sum of known deliveries for that year to other parcels and the range of annual water deliveries for the unreported parcel between 2006 and 2010 (5.5 acre-feet to 26.6 acre-feet).

^c SID landscaping water delivery records for 2011 and 2012 do not include delivery totals for the Green Valley Country Club (GVCC). The ranges shown for those years include the known landscaping deliveries to other parcels and the range of annual water deliveries to the GVCC from 2004 through 2010 (150 acre-feet to 221 acre-feet).

Source: Appendix B

Farmers in SID’s service area may order water by several methods, communicating with SID’s watertenders and its operations department. If agricultural demand increases to historically high levels, SID has the ability to require farmers to submit orders by use of specified forms. SID would deliver the requested amount of water barring any water shortages. In the case of shortages, SID would allocate and provide to customers the water that was available (SID 1980).¹¹ SID’s surface water deliveries provided through the Solano Project have been 99% reliable¹² between 1959 and 2007 (average of 100% reliability during normal years, 99% reliability during dry years, and 99% reliability during multiple-dry years) (Okita 2010).¹³

- Agricultural Deliveries.** Recent annual deliveries of agricultural water by SID within the Plan Area are summarized above in Table 16.1. Historically, annual deliveries were higher as more land was irrigated with crop types that had higher water demands (e.g., truck crops such as fruits and vegetables) than crops presently grown (e.g., vineyards). All customers within the SID boundary are entitled to apply for an allotment of water deliveries prior to March 1 each year (SID 1980). In 2008, the range of applied water rates in Solano County was between 1.24 acre-feet per year (afy) per acre and 4.50 afy per acre (Fuchslin, pers. comm., 2012). Recent trends toward lower demand for SID agricultural water have been the result of two primary factors: fewer acres in agricultural

¹¹ Solano Irrigation District, 1980, Rules and Regulations Governing the Distribution of Water in the Solano Irrigation District, Revised to March 17, 1980.

¹² Reliability refers to the percent of full, requested water allocation delivered in a given year.

¹³ Okita, D. 2010 (August 10). Memorandum: UWMP Reliability Data (Revised for SWP-prior memo is dated 6/10/2010 – Solano Project data unchanged). From: David B. Okita, General Manager Solano County Water Agency, to: City/District Urban Agencies.

production than in the past, and a gradual conversion to crops with lower water requirements (i.e., from truck crops to vineyards and grains).

Of the 280 acres of irrigated crops in the Plan Area in 2011, 190 acres were within the SID service area. The predominant irrigated crops in the SID service area in 2011 were vineyards and pasture with a few acres of orchard and truck crops. Total surface water deliveries for agriculture by SID within the Plan Area were 140 acre-feet (see Table 16.1), with vineyards (126 acres) receiving 50 acre-feet, and pasture and other irrigated crops (64 acres) receiving 90 acre-feet. Well completion reports provided by DWR for Green Valley do not show any irrigation wells located within the SID service area portion of the Plan Area, including all irrigated lands west of Green Valley Road in the Plan Area. Furthermore, shallow depths to groundwater observed in the Plan Area (see Appendix B, Section 4.2) suggest that deep rooted, perennial crops, including grapes, may have met some of their moisture requirement through access to groundwater. The estimated average applied water rates in the SID service area, therefore, were 0.4 afy for vineyards and 1.4 afy for pasture and other irrigated crops (see Appendix B, Table 4-6).

SID has also delivered agricultural water to nine parcels in the Thomasson study area (north), summarized in Table 16.2. These deliveries were made to parcels with small vineyards and orchards, covering fewer than 14 acres. Four of the vineyards, covering 3.4 acres, were planted between 2003 and 2011. Despite this small expansion, agricultural water deliveries to the Thomasson study area (north/south) have remained generally constant relative to the decline in deliveries seen in agricultural water deliveries to the Plan Area for the period of record. The available SID water supply for these parcels in the Thomasson study area (north) is taken to be the sum of known deliveries to eight of the parcels in 2011 and the 2006 to 2010 range of annual water deliveries for one unreported parcel.

- **Residential, Agricultural Residential, and Commercial Deliveries.** Monthly records of deliveries to 11 residential (M&I) customers in the Plan Area are available from 2004 to 2011, and those data are totaled to estimate the annual deliveries in Table 16.1. Over the eight-year period from 2004 through 2011, water deliveries ranged from a low of 11 af in 2005, to a high of 31 af in 2007, averaging 1.8 afy per residential customer. This year-to-year fluctuation is likely related to dry-year versus wet-year demand, where a dry year (such as 2007) leads to an increase in demand for residential landscaping needs, and a wet year leads to a corresponding decrease in demand.

Prior to 1999, residential customers of SID were able to meet all their water demand through a “point-of-entry” system that would treat the water to then-potable levels. However, under California Department of Public Health (CDPH) Title 22 water requirements, this method of treatment for a public water supply is no longer permitted. The 11 current M&I customers in the Plan Area that continue to receive untreated SID surface water into their homes (for non-potable uses) are also provided bottled water for potable uses (i.e., human consumption).

In 2011, SID delivered approximately 20 af to 11 residences in the Plan Area. The balance of current water requirements for existing residences in the Plan Area was attributed to groundwater pumping (see Appendix B, Section 4.1.2.5).

Outside of the Plan Area, SID delivers landscaping water to 254 parcels in the Thomasson study area (north), which received 239 af of water in 2011. The majority of these parcels are mapped as urban residential land uses. These landscaping deliveries have been comparable in magnitude to the deliveries of agricultural water within the Plan Area, except that the landscaping water deliveries have shown a more consistent demand from year to year (Table 16.2). The Green Valley Country

Club (GVCC), which irrigates an 18-hole golf course in the Thomasson study area (north), is the largest single recipient of SID landscaping water.

(b) Groundwater Quality in the Plan Area.

While historic information is available, recent groundwater quality data for wells in the Green Valley vicinity is limited. However, because there has been no evidence of contamination, saltwater intrusion, or any other introduction of foreign materials, and due to the natural occurrence of some metals, historic water quality data is still valid. Figure 16.3 shows the locations of wells for which some water quality data has been collected. The historic data includes the 1960 U.S. Geological Survey study that reported nine wells with water quality data from 1940 and 1949 in the Green Valley area, four of which are located in the Plan Area (Figure 16.3) (Thomasson 1960). Groundwater quality data was also made available from DWR for one well south of the Plan Area and south of the mouth of Green Valley (just south of Interstate 80) with records spanning from 1977 to 2006. Another well with publicly available data exists for Cresta Mesa Parque (DPH water system number 4800589). For security purposes, CDPH does not provide precise location data for public supply wells, so the reported well location is within one mile of its real location and estimated to be approximately one quarter mile northeast of the northern boundary of the Plan Area, near Rockville Road.

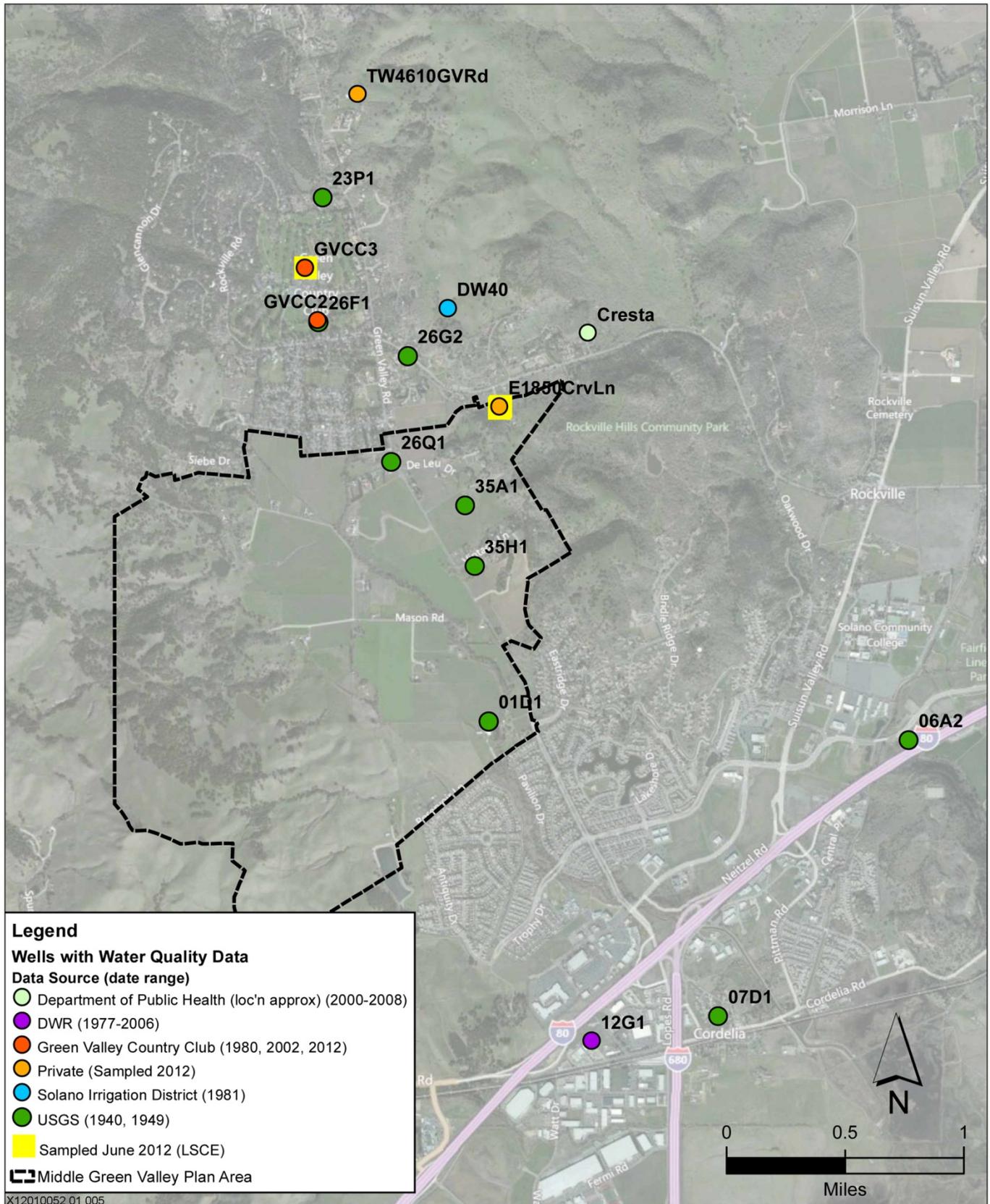
Water quality data for privately owned wells were received from SID, GVCC, and private landowners. SID provided groundwater quality data for one well located less than one-half mile north of the Plan Area, with data from 1981 when the well was installed. Two wells from GVCC have water quality data from 1980 and 2002. These two wells are located over one-half mile north of the Plan Area. Another privately owned well (used for domestic and irrigation purposes) with groundwater quality data is located in the northernmost portion of Green Valley, approximately 1.5 miles north of the Plan Area (labeled TW4610GVRd in Figure 16.2). This is a newly constructed well with water quality data from April 2012.

To supplement the groundwater quality data from the sources described above, Luhdorff & Scalmanini performed a round of sampling at two wells in the Green Valley area in June 2012. The detailed groundwater quality data is contained in Appendix B (specifically, Table 4-7); the following provides a summary.

Groundwater quality in and around the Green Valley area is generally good, with some occurrences of elevated iron and manganese (as seen in wells DW40, GVCC 2, GVCC3, and TW4610GVRd). While outside of Green Valley to the south, toward Suisun Bay, the water quality degrades (higher concentrations of salinity and chloride are seen in wells 12G1 and 07D1), but within the Green Valley area, and particularly within the Plan Area, salinity and chloride are not an issue. Specifically, Total Dissolved Solids (TDS) and chloride meet the recommended secondary maximum contaminant level (MCL) for these constituents of 500 milligrams per liter (mg/L) and 250 mg/L, respectively.

Near the Plan Area, recent TDS concentrations are relatively low and range from 140 to 240 mg/L, and nitrate (as nitrate¹⁴) concentrations range from "not detected" to 14 mg/L. Historically and more recently, iron and manganese concentrations above secondary drinking water standards have been reported at several locations near the Plan Area (as noted above). Groundwater developed to serve the Plan Area may require treatment for these constituents, particularly iron and/or manganese. If warranted, treatment options for iron and manganese are available and reliable for use at the scale of potable water production described in the Specific Plan.

¹⁴ Nitrate is a common problem in groundwater where agriculture is prevalent.



Source: Provided by Luhdorff & Scalmanini, Consulting Engineers in 2012



FIGURE 16.3
WELLS WITH WATER QUALITY DATA

(c) Existing Nearby Water Service Outside the Plan Area (City of Fairfield).

The City of Fairfield supplies water to the East Ridge and Hidden Meadows subdivisions located off Green Valley Road South, immediately east and southeast of the Plan Area (see Figure 1.2). The City operates its own water distribution system, which contains more than 270 miles of water mains, and provides water to more than 20,000 service connections within the City limits (LSA Associates 2008).¹⁵

City water distribution infrastructure in the vicinity includes a 24-inch main in Green Valley Road at East Ridge Road, at the southeast corner of the Plan Area (see Figure 16.1).

The City's municipal water supply is contracted through the Solano County Water Agency (SCWA) (EDAW 2008).¹⁶ The City obtains its water from: the North Bay Aqueduct, which is part of the State Water Project; the Solano Project, which is operated by SID under contract with the USBR; "settlement water" (i.e., water received through a legal settlement); and recycled water. Solano Project supplies come to the City through several different agreements. The City does not use groundwater as a source of water supply (Wood 2009).¹⁷

The City operates two water treatment plants, the Waterman Treatment Plant and the North Bay Regional Plant. The Waterman Treatment Plant currently has a treatment capacity of 30 million gallons per day (mgd), after a recent multi-million dollar expansion/upgrade project that expanded the plant's reliable treatment capacity from 16 mgd to 30 mgd. The upgrade also included modernization of all facilities, including a new sedimentation process. The North Bay Regional Plant has a 40-mgd capacity (65% of which is for Fairfield and the remainder is for Vacaville), which can be expanded to 90 mgd. Fairfield's total water production capacity is 56 mgd. The City's highest consumption day was 37.6 mgd, and its average is 21.5 mgd. The City's total system storage capacity is 76 million gallons, which includes the use of nine water storage reservoirs (Hicks, pers. comm., 2012).¹⁸

(d) U.S. Bureau of Reclamation Water Facilities Within or Near the Plan Area.

The USBR Solano Project Terminal Reservoir is located at the southern boundary of the Plan Area at the end of Reservoir Lane. The northern portion of the reservoir is located within the Plan Area (see Figure 1.2). In addition, USBR holds easements for the following facilities within the Plan Area: (1) the Putah South Canal Siphon and Spill Pipeline along Reservoir Lane on the southern boundary of the Plan Area, (2) the Solano Project Green Valley Conduit Pipeline located along the west side of Green Valley Road, and (3) the Green Valley Conduit West Pipeline located along Mason Road (Finnegan 2009; Wirth 2009).^{19,20}

¹⁵ LSA Associates, Inc., Fieldcrest Villages Project Draft EIR, April 2008, page 239.

¹⁶ SCWA provides water to incorporated areas in the county, as well as agricultural and some domestic water to unincorporated areas. SCWA relies on two primary water sources: the USBR Solano Project, which provides surface water through Monticello Dam, Putah Diversion Dam, and the Putah South Canal; and the DWR State Water Project, which supplies surface water to Solano County through the North Bay Aqueduct. The Solano Project has a firm yield (contracted amount) of approximately 207,350 afy. (EDAW, Solano County Draft General Plan Draft Environmental Impact Report, April 18, 2008, page 4.9-1.)

¹⁷ Memorandum from Richard L. Wood, Assistant Public Works Director, City of Fairfield, to Community Development Department, re. "Hypothetical SB 610 Water Supply Assessment and SB 221 Verification of Sufficient Water Supply – Middle Green Valley Development," September 18, 2009, page 2.

¹⁸ E-mail correspondence on September 7, 2012 between George Hicks, Public Works Director, City of Fairfield, and Matt Walsh, Principal Planner, Solano County Department of Resource Management, re: status of the City's Waterman Treatment Plant project and the City's overall water treatment and storage capacity.

¹⁹ Letter from Michael R. Finnegan, Area Manager, United States Department of the Interior, Bureau of Reclamation, to Matt Walsh, Principal Planner, Solano County Department of Resource Management, re. "Notice of Preparation of Draft Environmental Impact Report for Green Valley Specific Plan," August 20, 2009, page 1.

²⁰ Letter from Richard Wirth, Assistant Engineer, Solano Irrigation District, to Matt Walsh, Principal Planner, Solano County Department of Resource Management, re. "Notice of Preparation of Draft Environmental Impact Report for Middle Green Valley Specific Plan," August 7, 2009, page 2.

(e) City of Vallejo Water Facilities Within or Near the Plan Area.

The City of Vallejo's Vallejo Lakes water system serves portions of Green Valley, Old Cordelia, and other areas and obtains water from the Putah South Canal, among other sources. The system includes two facilities located within or near the Plan Area: (1) the Green Valley Water Treatment Plant located north of the Plan Area, and (2) a 24-inch water line that extends through the Plan Area, connecting the Green Valley Water Treatment Plant to other water facilities within the City of Vallejo.

16.1.2 Policy and Regulatory Framework

CEQA requires an EIR to identify the plan and policy setting within which the project is proposed and discuss any inconsistencies between the proposed project and these applicable plans and policies adopted to minimize environmental impacts [CEQA Guidelines Sections 15124(b) and 15125(d)]. Adopted federal, state and local policies, regulatory requirements and jurisdictional authority pertinent to consideration of the potential water service impacts of the proposed Specific Plan are described below.

(a) U.S. Safe Drinking Water Act.

The U.S. Safe Drinking Water Act (SDWA), established on December 16, 1974, is the main federal law that ensures the quality of Americans' drinking water by setting federal standards for drinking water quality, and providing guidance to the states, localities, and water suppliers that implement those standards. The SDWA drinking-water quality standards control two basic water quality factors: (1) organic and inorganic water contaminants that may have detrimental effects on health and safety, and (2) aesthetic qualities that may make water unpalatable or unpleasant to customers. The SDWA established the U.S. Environmental Protection Agency (EPA) as the primary government entity with responsibility for setting national drinking-water standards for public water systems. Since 1974, EPA has set national water quality standards for more than 80 contaminants in drinking water. The National Primary Drinking Water Standards establish the MCLs allowed in public distribution systems. The National Secondary Drinking Water Standards establish the MCLs that apply to potable water supplies at the point of delivery to the customer. Although EPA and state governments enforce water quality standards, local governments and private water suppliers are ultimately responsible for the quality of water supplies.

(b) Porter-Cologne Water Quality Control Act of 1969.

The 1969 Porter-Cologne Water Quality Control Act first established the State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs) as the primary state agencies with regulatory authority over water quality. Under the act, the SWRCB has the ultimate authority over state water rights and water quality policy, and the RWQCBs are responsible for overseeing water quality on a day-to-day basis at the local/regional level.

(c) California Water Code.

The California Water Code outlines the general state authority and responsibilities over water in California. It establishes DWR as the primary research, supply development, and management agency for water. The Water Code identifies the SWRCB as the decision making body for overall water quality policy development and for dealing with water rights issues. The nine RWQCBs are charged with regulation, enforcement, and protection of the beneficial uses of water.

(d) Surface Water Rights.

The SWRCB has jurisdiction over all water rights in California under the common-law public-trust doctrine. Section 1735 of the California Water Code provides the regulatory framework for long-term transfers, subject to the requirements of CEQA.

Appropriative water rights allow the diversion of surface water for beneficial use. Prior to 1914, appropriative water rights involved a simple posting to describe intent and scope of water use, diversion, or construction of diversion activities. Since 1914, the sole method for obtaining appropriative water rights has been to file an application with the SWRCB. Before it can issue a water rights permit, the SWRCB must demonstrate the availability of unappropriated water. Both pre- and post-1914 appropriative water rights may be lost if the water has gone unused for a period of 5 years.

Riparian water rights apply only to lands that are traversed by or border on a natural watercourse. Riparian owners have a right (correlative with the right of each other riparian owner) to share in the reasonable beneficial use of the natural flow of water that passes the owners land. No permit is required for such use. Riparian water must be used reasonably, beneficially, and solely on riparian (adjacent) land and cannot be stored for later use.

(e) Groundwater Rights.

The state requires that counties enact regulations covering well design to protect groundwater quality from surface contamination, and to ensure proper well construction and development for municipal use. However, these regulations are not related to the quantity of water extracted. Counties can also enact an ordinance to ensure that wells developed on one property do not interfere with the use of adjacent wells. In some areas of overuse, and where there is a high dependence on groundwater, groundwater rights are determined judicially in what are termed “adjudicated groundwater basins.”

Groundwater rights are defined as,

one of the real property interests in the real estate overlying the groundwater basin. They are correlative with other overlying landowners. If a groundwater basin produces yield in excess of the amount that can be beneficially used by the overlying landowners, then the excess is available for appropriation by other entities.

No license is required from the SWRCB before exercising a groundwater right, and this right is not lost through non-use (USFWS 2006).²¹

Solano County does not have a groundwater ordinance. The central portion of the Plan Area lies above the Suisun-Fairfield Valley Groundwater Basin, which is not an adjudicated groundwater basin. Under Specific Plan water supply Option B, groundwater is proposed to be the sole source of potable water to the Plan Area.

The proposed County Services Area (CSA, see Section 16.1.4[c][2]) would likely have appropriative (not overlying) rights (Appendix B9 provides a more detailed discussion of groundwater rights applicable to the proposed project).

(f) State Title 22 Waterworks Standards.

Drinking water in the state is governed by the provisions of Title 22, Waterworks Standards (Sections 64417-64710) of the California Code of Regulations (CCR Title 22), which specify the allowable MCLs for a wide range of primary and secondary water quality constituents. Systems of over 200 connections are directly regulated by the CDPH under CCR Title 22. These regulations have been recently modified (updated Title 22 Standards became effective on March 9, 2008), and are undergoing further proposed

²¹ U.S. Fish and Wildlife Service. 2006 (September). *Guidelines for the Appraisal of Water Rights in California*. Final Report. Prepared in partnership with The Herzog Group, Inc., Modesto, CA; and CH2MHill, Sacramento, CA. Available: <http://www.fws.gov/cno/fisheries/wateroperations.cfm>.

revisions (R-14-03). CDPH also recently adopted regulations, effective August 18, 2011, for public water systems using groundwater (Title 22, Section 64430).

(g) California Department of Public Health.

The CDPH Drinking Water Program (DWP) under CCR Title 22 is administered by the Department's Division of Drinking Water and Environmental Management. The DWP regulates public water systems; certifies drinking water treatment and distribution operators; supports and promotes water system security; provides support for small water systems and for improving technical, managerial, and financial (TMF) capacity; and provides funding opportunities to water system improvements. The DWP consists of three branches: (1) the Northern California Field Operations Branch, (2) the Southern California Field Operations Branch, and (3) the Technical Programs Branch. The Field Operations Branches (FOBs) are responsible for the enforcement of the federal SDWA and state Title 22 Waterworks Standards and the associated regulatory oversight of public water systems to assure the delivery of safe drinking water. In this capacity, FOB staff performs field inspections, issue operating permits, review plans and specifications for new facilities, take enforcement actions for non-compliance with laws and regulations, review water quality monitoring results, and support and promote water system security.

On the local level, FOB staff work with county health departments, planning departments, and boards of supervisors. FOB staff provides oversight, technical assistance, and training for the local agency personnel.

The CDPF, under the provisions of Section 116330 of the California Health and Safety Code (CHSC), delegates the permitting and regulation of certain water systems of under 200 connections to local agencies. Systems of over 200 connections, such as Specific Plan water system Options A and B, are directly regulated by the CDPH under CCR Title 22 and would be subject to standards administered by the CDPH. The CCR Title 22 regulations require that, prior to CDPH's issuance of an initial permit, the applicant must demonstrate to CDPH satisfaction that the water system's pumping, storage and distribution components meet a comprehensive set of basic requirements pertaining to maximum day demand (MDD), supply, storage, sources (two independent sources of water are required), and well pumping tests.

As proposed, both Specific Plan water supply system options would be owned and operated by the County through establishment of a CSA. The Option B onsite groundwater (well) water supply system would require a permit from the CDPH DWP, Division of Drinking Water and Environmental Management.

Assembly Bill 145 (Perea), introduced in January 2013, would transfer to the SWRCB Division of Drinking Water Quality the various duties and responsibilities imposed on CDPH by the California Safe Drinking Water Act, commencing with the 2014-15 fiscal year.

(h) State Water Supply Assessment Requirements.

In addition to CCR Title 22, the following State legislative requirements have been enacted to regulate the supply and use of water throughout the state:

- Assembly Bill (AB) 325 as amended by AB 1881 (Laird), the Water Conservation in Landscaping Act, directs local governments to require the use of low-flow plumbing fixtures and the installation of drought-tolerant landscaping in all new development.
- Senate Bill (SB) 610 (Section 21151.9 of the Public Resources Code and Section 10910 et seq. of the Water Code) requires that before any project subject to CEQA and consisting of more than 500 single-family dwelling units (or the equivalent water demand) is approved, the project must have an adopted WSA to determine whether adequate water supplies would be available to meet the

requirements of all existing plus new customers (i.e., existing customers plus the project plus other anticipated future growth) during normal conditions and during single-year and multiple-year dry conditions.

Under SB 610, the WSA must describe the proposed project's water demand over a 20-year period, identify the sources of water available to meet that demand, and include an assessment of whether those water supplies are or will be sufficient to meet the demand for water associated with the proposed project, in addition to the demand of existing customers and other planned future development. If the assessment concludes that water supplies are or will be insufficient, then the assessment must describe plans (if any) for acquiring additional water supplies, and the measures that are being undertaken to acquire and develop those supplies.

Two WSAs have been prepared for the Middle Green Valley Specific Plan Project: one by the City of Fairfield for water supply Option A (Municipal Connection) and a second by Solano County for water supply Option B (Onsite Groundwater). The conclusions of the WSAs are summarized in Section 16.1.5. Pursuant to SB 610, the WSAs for Options A and B are included in Appendices A and B, respectively, of this Recirculated DEIR.

If the project is approved at the specific plan stage, additional statutory requirements of SB 221 (Government Code Section 66473.7) would apply to the approval of tentative subdivision maps for more than 500 residential dwelling units. This statute requires cities and counties to include, as a condition of approval of such Tentative Maps, the preparation of a water supply verification. The verification is intended to demonstrate that there is a sufficient water supply for the newly created residential lots. The statute defines "sufficient water supply" as the total water supplies available during normal, single-dry, and multiple-dry years within a 20-year period that will meet the projected demand associated with the proposed development, in addition to existing and planned future uses, including, but not limited to, agricultural and industrial uses. A number of factors must be considered in determining the sufficiency of projected supplies, including:

- The availability of water supplies over a historical record of at least 20 years;
- The applicability of an urban water shortage contingency analysis that includes action to be undertaken by the public water system in response to water supply shortages;
- The reduction in water supply allocated to a specific water-use sector under a resolution or ordinance adopted, or a contract entered into, by the public water system, as long as that resolution, ordinance, or contract does not conflict with statutory provisions giving priority to water needed for domestic use, sanitation, and fire protection; and
- The amount of water that the water supplier can reasonably rely on receiving from other water supply projects, such as conjunctive use, reclaimed water, water conservation, and water transfer, including programs identified under federal, state, and local water initiatives, such as CALFED and Colorado River tentative agreements.

(i) Groundwater Management Act.

The Groundwater Management Act, AB 3030, signed into law in 1992 (California Water Code Sections 10750–10756), provides a systematic procedure for an existing local agency to develop a groundwater management plan. This section of the code provides such an agency with the powers of a water replenishment district to raise revenue to pay for facilities to manage the basin (extraction, recharge, conveyance, quality). In some basins, groundwater is managed under other statutory or juridical authority. The following groundwater management plans, which are discussed in more detail in Appendix B, apply to areas in the vicinity of the Plan Area, though only the SID Groundwater

Management Plan would have bearing on the Plan Area because none of the other water purveyors would serve the proposed project:

- Solano Irrigation District, Groundwater Management Plan, 2006;
- Reclamation District No. 2068, Groundwater Management Plan, 2005;
- City of Vacaville, Groundwater Management Plan, 2011; and
- Maine Prairie Water District, Groundwater Management Plan, 1997.

(j) Urban Water Management Planning Act.

The California Urban Water Management Planning Act of 1983 (California Water Code Section 10610–10656) requires that each urban water supplier that provides water for municipal purposes, either directly or indirectly, to more than 3,000 customers or that supplies more than 3,000 af of water annually, shall prepare, update, and adopt its urban water management plan (UWMP) at least once every five years on or before December 31, in years ending in five and zero. The following UWMPs, which are discussed in more detail in Appendix B, apply to areas in the vicinity of the Plan Area but would have no bearing on the Plan Area because none of the water purveyors would serve the proposed project:

- Solano County Water Agency, 2010 Urban Water Management Plan
- City of Fairfield, 2010 Urban Water Management Plan;
- City of Vallejo, 2005 Urban Water Management Plan; and
- Suisun Solano Water Authority, Urban Water Management Plan, 2011.

(k) State Water Resources Control Board Recycled Water Use Policy.

The SWRCB Strategic Plan Update: 2008-2012 for the Water Boards includes a priority to increase sustainable local water supplies available for meeting existing and future beneficial uses by 1,725,000 afy, in excess of 2002 levels, by 2015, and ensure adequate water flows for fish and wildlife habitat. In 2009, SWRCB adopted a policy of water quality control for recycled water. The Policy is intended to support the Board's established priority to promote sustainable local water supplies. The new policy is intended to increase acceptance and promote the use of recycled water as a means toward achieving sustainable local water supplies and reducing greenhouse gas emissions, a significant driver of climate change. The policy is also intended to encourage beneficial use of, rather than solely disposal of, recycled water.

(l) Solano County Code.

The Solano County Code (County Code) includes provisions covering well permitting and construction, water conservation and landscape water usages, stormwater quality management, and the design and construction of on-site wastewater disposal systems, such as septic tank and leach field systems.

(m) Solano County Division of Environmental Health.

The Solano County Environmental Health Services Division is responsible for permitting and implementing County water systems and well programs. The Environmental Health Services Division is responsible for granting groundwater well permits in unincorporated areas of the county. The County's Environmental Health Division conducts and oversees site evaluations, plan reviews, permit issuance, and construction inspection for onsite wells pursuant to the California Well Standards and Solano County Code Chapter 13.10 (Well Standards).

Permitting of well construction for the proposed project will be a County function. Permitting of well and public water system operation for the proposed project will be a State function. Construction of the proposed project wells will require a County well permit to construct a public water system well, from the County's Environmental Health Services Division under Section 13.10-12 of the County Code. Because the proposed project is anticipated to include more than 200 service connections, the County will not be the permit-issuing agency for the operation of the public water system and wells. Rather, for operation of the public water system, the operation of the proposed project wells and public water system will require a State operating permit to operate a public water system, from CDPH (or SWRCB, if AB 145 becomes law), under Section 116525 of the Health and Safety Code, and Section 64552 of the Title 22 regulations (Waterworks Standards).

The above County and State permitting requirements impose many detailed standards for construction and operation of a public water system using groundwater. For example, the County's standards for groundwater well permits in a given area govern the physical design and location of wells. The standards do not control the use or quantity of water extracted, however, nor do they currently address the sustainable capacity of the underlying aquifer to supply groundwater. The County Code also does not contain detailed procedures for determining potential well interference effects (i.e., the interference of a proposed well on the pumping rate, drawdown, or long-term supply of an adjacent well).

(n) Solano County Local Agency Formation Commission.

The Solano County Local Agency Formation Commission (LAFCO) is responsible for administering extension of existing service areas in the County. Formation of the Specific Plan-proposed CSA would be subject to LAFCO approval. To approve the CSA, LAFCO must find that the CSA will have the financial and physical capability to carry out its proposed water service, sewer service, and other purposes.

(o) Solano County General Plan.

Policies and implementation programs of the 2008 Solano County General Plan pertinent to consideration of the proposed Specific Plan and its potential water service impacts are listed below.

(1) General Plan Policies and Programs Pertinent to All Public Services and Utilities.

The Solano County General Plan contains the following policies and implementation programs relevant to all public service provisions, including water service:

- Assign priority for development countywide to vacant lands where public facilities and services are currently provided. (Policy LU.P-38)
- Phase future residential development, giving first priority to those undeveloped areas zoned and designated for rural residential use and where rural residential development has already been established; second priority to undeveloped areas designated but not zoned for rural residential use and where rural residential development has already been established; and third priority to those undeveloped areas designated for rural residential use. Also give priority to lands where public facilities and services are currently provided. (Implementation Program LU.I-8)
- Provide public facilities and services essential for health, safety, and welfare in locations to serve local needs. (Policy PF.P-1)
- Require new development and redevelopment to pay its fair share of infrastructure and public service costs. (Policy PF.P-2)
- Ensure that adequate land is set aside within the unincorporated county for public facilities to support future needs. (Policy PF.P-4)

- Design and locate new development to maximize the use of existing facilities and services and to coordinate with the cities the need for additional County services. (Policy PF.P-5)
- Guide development requiring urban services to locations within and adjacent to cities. (Policy PF.P-6)
- Notify the appropriate agencies (e.g., school districts, public safety, water) of new development applications within their service area early in the review process to allow sufficient time to assess impacts on facilities. (Policy PF.P-8)
- Evaluate the level of services and funding needs of the various agencies and districts that will provide public facilities and services during project review to ensure that adequate levels of service are provided and facilities are maintained. (Implementation Program PF.I-4)

(2) *General Plan Policies and Programs Specifically Pertinent to Water Service.*

The Solano County General Plan contains the following policies and implementation programs specifically pertinent to water service:

- Provide for detailed land planning through the Specific Project Area land use designation and subsequent planning process. Where specific plans and policy plan overlays are required before development in these areas, these plans shall determine:
 - how the proposed development will be provided with adequate levels of water...service. (Implementation Program LU.I-6)
- Adopt a plan (either a specific plan or master plan) to implement these policies for Middle Green Valley. That plan should specify:
 - the details of how the development would be served with water...service. Attempt to secure public water...service through a cooperative effort of property owners, residents, the County, and the City of Fairfield. (Implementation Program SS.I-1)
- Maintain water resource quality and quantity for the irrigation of productive farmland so as to prevent the loss of agriculture related to competition from urban water consumption internal or external to the county. (Policy AG.P-8)
- Promote efficient management and use of agricultural water resources. (Policy AG.P-9)
- Promote sustainable agricultural activities and practices that support and enhance the natural environment. These activities should minimize impacts on...water quantity and quality...(Implementation Program AG.I-22)
- Work with the Solano County Water Agency, irrigation districts, reclamation districts, adjacent counties and the resource conservation districts to ensure adequate future water supply and delivery...Review development proposals and require necessary studies, as appropriate, and water conservation and mitigation measures to ensure adequate water service. Examine the potential impact of water transfers from farmland to urban uses internal or external to the county and the implications for agriculture in the county... Explore options for expanding the county's irrigated areas. Working with the Solano County Water Agency, irrigation districts, reclamation districts, and the resource conservation districts, promote sustainable management and efficient use of agricultural water resources. (Implementation Program AG.I-23)

- Work with fire districts or other agencies and property owners to coordinate efforts to prevent wildfires and grassfires through fire protection measures such as... provision of water service. (Policy HS.P-23)
- ...Continue to seek fire district input on new development projects and ensure that such projects incorporate fire-safe planning and building measures. Such measures may include...providing adequate on-site water supplies. (Implementation Program HS.I-28)
- Increase efficiency of water... use through integrated and cost-effective design and technology standards for new development and redevelopment. (Policy PF.P-3)
- Maintain an adequate water supply by promoting water conservation and development of additional cost-effective water sources that do not result in environmental damage. (Policy PF.P-10)
- Promote and model practices to improve the efficiency of water use, including the use of water-efficient landscaping, beneficial reuse of treated wastewater, rainwater harvesting, and water-conserving appliances and plumbing fixtures. (Policy PF.P-11)
- In areas identified with marginal water supplies, require appropriate evidence of adequate water supply and recharge to support proposed development and water recharge. (Policy PF.P-14)
- Domestic water for rural development shall be provided through the use of on-site individual wells or through public water service. (Policy PF.P-15)
- Provide and manage public water service through public water agencies. (Policy PF.P-16)
- Limit public water infrastructure to developed areas or those designated for future development to prevent growth-inducing impacts on adjoining agricultural or open space lands. (Policy PF.P-17)
- The minimum lot size for properties to be served by individual on site wells and individual on-site sewage disposal systems shall be five acres. Where cluster development is proposed with on site wells and sewage disposal systems, parcels may vary in size provided the overall density of the project is not greater than five acres per parcel and that no individual parcel is less than one acre in size. (Policy PF.P-18)
- The minimum lot size for properties to be served by public water service with individual on-site sewage disposal systems shall be 2.5 acres. Where cluster development is proposed with public water service and on-site sewage disposal systems, parcels may vary in size provided the overall density of the project is not greater 2.5 acres per parcel and that no individual parcel is less than one acre in size. (Policy PF.P-19)
- Minimize the consumption of water in all new development. (Policy PF.P-20)
- Continue to require preparation of a water supply assessment pursuant to the California Water Code to analyze the ability of water supplies to meet the needs of regulated projects, in the context of existing and planned future water demands. Review the availability of water to serve new developments in the unincorporated area before permitting such developments and ensure that the approval of new developments will not have a substantial adverse impact on water supplies for existing water users. (Implementation Program PF.I-11)

- Continue to work with water suppliers to ensure adequate future water supply and delivery. Review development proposals and require necessary studies, as appropriate, and water conservation and mitigation measures to ensure adequate water service. (Implementation Program PF.I-12)
- Require new development proposing on-site water supplies in areas identified with marginal water supplies to perform a hydrologic assessment to determine whether project plans meet the County's hydrologic standards. (Implementation Program PF.I-13)
- Review plans for new development projects to ensure that they have provided for water on-site or through a public agency. (Implementation Program PF.I-14)
- Investigate the potential for innovative recycled water systems in Solano County, such as the use of greywater for domestic and agricultural purposes, and identify sources of funding for implementation of these systems. (Implementation Program PF.I-15)
- Domestic water for rural development shall be provided principally through on-site individual wells. When individual well systems in an area of the unincorporated County become marginal or inadequate for serving domestic uses, public water service may be permitted in conformance with the General Plan. In such cases, public water service shall be provided and managed through a public agency. If lands proposed for water service are not within the boundaries of an existing public water agency, the Board of Supervisors shall, as a condition of development, designate a public agency to provide and manage the water service. Water facilities shall be designed to provide water service only to the developed areas and those designated for potential development. Such facilities shall be designed to prevent any growth inducing impacts on adjoining designated agricultural and open space lands. (Housing Element Policy G.2)

For General Plan policies related to protection of water resources and water quality, including groundwater supply and quality, see Section 11.2, "Pertinent Plans and Policies," in Chapter 11, "Hydrology and Water Quality," of the DEIR.

(p) City of Fairfield General Plan, Sphere of Influence, Planning Areas, and Urban Limit Lines.

The City of Fairfield General Plan Planning Area covers portions of the Suisun Marsh, lands surrounding Green Valley and Suisun Valley, and lands surrounding Travis Air Force Base. Fairfield has established an Urban Limit Line under the General Plan to limit outward growth to protect the Suisun Marsh, the Vacaville-Fairfield Greenbelt buffer, and the agriculture and open spaces of the Suisun Valley and Green Valley. The General Plan directs urban growth to areas to which the City anticipates providing municipal services. The Urban Limit Line was reaffirmed and readopted by Measure L, approved by voters in 2002. This initiative is effective until December 2020. The Urban Limit Line can only be amended by the voters of the City of Fairfield or by the City Council under certain exceptions for open space land and provisions relating to Travis Air Force Base.

Fairfield's General Plan policies provide that the Urban Limit Line should define the SOI, as approved by the Solano County LAFCO. Fairfield's General Plan incorporates the County's policy that "what is urban shall be municipal, and what is rural shall be within the County." Proposed urban development areas within the Specific Plan Area are outside of Fairfield's Urban Limit Line.

Fairfield General Plan Policy LU3.1 stipulates that any urban development requiring basic municipal services shall occur only within the urban limit line established by the City's General Plan. By passing local Measure L, the voters of Fairfield reaffirmed and readopted this policy. The policy may pertain to Specific Plan water supply Option A, connection to the Fairfield municipal water supply, and the existence of the policy reduces the ability of the County to confidently determine that water supply Option A can occur (i.e., it creates uncertainty). Both the City's initiative measures and City's general

plan are matters for implementation by the City. City of Fairfield decision-makers will ultimately determine whether water supply Option A is possible for the City.

16.1.3 Significance Criteria

The significance thresholds for this analysis are based on Appendix G of the State CEQA Guidelines and County policy.

Water Supply

The proposed Specific Plan would result in a significant environmental impact related to water supply if it would:

- (a) require or result in the construction of new water facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;²² or
- (b) require new or expanded water entitlements that exceed water supplies available to the project;²³ or
- (c) result in a public service condition that is inconsistent with applicable local plans and policies, including the Solano County General Plan, adopted for the purpose of avoiding or mitigating an environmental effect.²⁴

Stream Habitats

The proposed Specific Plan would result in a significant environmental impact related to stream habitats if it would:

- (d) have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.²⁵

Fire Flow

The proposed Specific Plan would result in a significant environmental impact related to the provision of adequate fire flow if it would:

- (e) result in inadequate emergency access, result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for fire protection.²⁶

²² CEQA Guidelines, Appendix G, Item XVII(b).

²³ CEQA Guidelines, Appendix G, Item XVII(d).

²⁴ CEQA Guidelines, Appendix G, Item X(b).

²⁵ CEQA Guidelines, Appendix G, Items IV(b).

²⁶ CEQA Guidelines, Appendix G, Item XIV(a).

16.1.4 Relevant Project Characteristics

(a) Specific Plan-Proposed Water Conservation Features.

The Specific Plan states on page 5-68 that turf areas are to be limited in area to reduce irrigation needs. The Specific Plan also lists the following water conservation guidelines to be incorporated into new Plan Area development (Solano County 2010):²⁷

- Utilize water-conserving appliances and plumbing fixtures. The following average flow rates shall be met by installing high-efficiency fixtures and/or fittings:
 - Lavatory faucets must be [less than or equal to] 2.0 gpm
 - Showers must be [less than or equal to] 2.0 gpm
 - Toilets must be [less than or equal to] 1.3 gpm
- Utilize flow restrictions and/or reduced flow aerators on lavatory, sink and shower fixtures.
- Commercial buildings are encouraged to utilize automatic fixture sensors and low- consumption fixtures.
- Minimize irrigation requirements by using the Approved Plant List, which contains native plant materials and plants well suited to the local climate.
- Utilize efficient irrigation systems such as drip irrigation with rain/moisture sensors.
- Limit manicured lawn areas.
- Utilize indigenous or naturalized plant materials, grouped according to water consumption needs, to reduce water use and to extend the natural ecosystems and habitat of Middle Green Valley.
- All permanent irrigation systems are to be below ground and fully automatic. Use of water conserving systems, such as drip irrigation and moisture sensors, is required. An electric, solid state controller is required for all systems and shall be equipped with a master valve terminal and at least two fully independent programs.
- Rain/moisture sensors that shut off irrigation during or after rainfall are to be installed.
- Temporary irrigation systems are required at all revegetation areas. These systems may be abandoned when plantings have been clearly established after a minimum of one growing season.

(b) Specific Plan Domestic Water Demand Forecast.

The Specific Plan civil engineer estimates that the proposed Specific Plan would generate a domestic water demand of approximately 186 afy. Table 16.3 shows the engineer's water demand forecast breakdown by land use.

²⁷ Solano County, Middle Green Valley Specific Plan, July 27, 2010, pages 5-59 and 5-71.

Table 16.3
 SPECIFIC PLAN DEVELOPMENT WATER DEMAND AND WASTEWATER GENERATION FORECAST

Land Uses--Max. Permitted	Units	Unit Water Demand (afy)	Total Water Demand (afy)	Unit Wastewater Flow (afy)	Total Wastewater Flow (afy)
Residential (units)	400	0.34	136.0	0.25	100.0
Secondary Res. (units)	100	0.17	17.0	0.13	13.0
Chapel (seats)	200	0.09	17.2	0.05	1.0
Meeting Hall/Farm Stand (acres)	0.069	1.73	0.12	1.52	0.1
Community Rec Center (acres)	0.184	1.5	0.28	1.32	0.24
Conservancy/Post Office (acres)	0.057	1.5	0.09	1.32	0.08
School (students) ¹	300	0.02	4.95	0.01	4.36
Commodity Processing, Commercial Nurseries (acres)	1.148	1.0	1.15	0.88	1.01
Ag. Tourism Retail (acres)	0.23	1.73	0.4	1.52	0.35
Inn (rooms)	25	0.15	3.75	0.13	3.25
Winery Production (cases of wine)	100,000	0.00004	4.42	0.00002	2.21
Neighborhood Commercial (acres)	0.230	1.73	0.4	0.88	0.2
Total			185.7		134.8

Notes:

¹ An earlier draft of the Specific Plan described the school as accommodating up to 300 students. The Plan was then changed to reflect a maximum of 100 students (Middle Green Valley Draft Final Specific Plan (2010), Table 3-4, and pp. 3-12, 3-61.) The estimate of water demand has continued to use the 300-student figure (Middle Green Valley Draft Final Specific Plan (2010) Table 4-3), and is therefore considered conservative.

Source: Sherwood Design Engineers, Wagstaff and Associates, September 2009 (attachment to e-mail from Eric Zickler, P.E., LEED AP, Project Manager, Sherwood Design Engineers, to Brendan Kelly, Hart Howerton, re. "MGV Water and Wastewater Demands," September 28, 2009).

The Specific Plan proposes that SID would continue to supply the Plan Area's agricultural irrigation supply needs, and that most development area landscape irrigation needs would be supplied by recycled water.

Based on these Specific Plan-proposed water use efficiency measures, the unit demand rate applied in Table 16.3 (0.34 afy per new residential unit) represents approximately a 25 to 40% reduction in the typical countywide single-family subdivision home water use rate (approximately 0.45 to 0.50 afy per residential unit).²⁸

(c) Specific Plan-Domestic Proposed Water Supply Options.

The Specific Plan proposes two options for providing water service to the Plan Area: Option A: connecting the Specific Plan development areas to the City of Fairfield municipal water system, or

²⁸ Assuming a conservatively high water demand rate per person of 150 gallons per day, and a Solano County average household size of 3.0 (ABAG "Projections and Priorities 2009" indicates a smaller average household size of approximately 2.85 in 2005), results in an estimated "worst case" rate of approximately 0.504 afy per residential unit. Based on data documented by the City of Fairfield in 2005, the actual average daily residential unit water consumption in the use zone closest to the plan area (Cordelia) was 398 gallons per day (this gpd rate translates to a per unit afy rate of 0.45).

Option B: establishing an onsite water (groundwater well) system to serve the Specific Plan development areas.

(1) Water Supply Option A (Municipal Connection):

Water supply Option A would involve connection of the four Specific Plan-proposed development areas to the City of Fairfield municipal water system via the existing 24-inch water main in Green Valley Road (see Figure 16.1). Municipal water would be delivered to the Specific Plan development areas for domestic use via a proposed connection to an existing 24-inch water main "flange" at the corner of Green Valley Road and East Ridge Road near the southeast corner of the Plan Area. Under Option A, the proposed water supply infrastructure system would consist of approximately nine miles of onsite pipeline and 500,000 gallons of onsite storage (for fire hydrants and sprinklers) in two water storage tanks at elevation. Under Option A, agricultural irrigation water would continue to be supplied by SID, which has jurisdiction over the central part of the Plan Area, and SID water would also be used for domestic irrigation.

(2) Water Supply Option B (Onsite Groundwater):

Water supply Option B would use local groundwater for domestic supply in the Plan Area and would include treatment of the domestic supply to CCR Title 22 Waterworks standards. Project groundwater use would be solely for domestic purposes. Similar to Option A, SID water and recycled water would be used for agricultural and domestic irrigation purposes. Water treatment is anticipated to consist of mixed media filtration and disinfection unless measured chemical constituents indicate further treatment. Under Option B, the proposed onsite groundwater system would consist of at least three groundwater wells at a sustained flow of potentially 100 gallons per minute (gpm) each, approximately 4.5 miles of onsite pipelines, and 500,000 gallons of storage (for fire hydrants and sprinklers) in two water storage tanks preferably located at elevation (see Figure 16.1). The proposed wells and distribution system are proposed to provide the estimated total annual water requirement for the potable domestic supply of approximately 186 afy.

The three wells would draw groundwater from the Suisun-Fairfield Valley Groundwater Basin, which has an estimated saturated thickness of in excess of 400 feet. The water would be treated by a small treatment facility(ies) to CCR Title 22 Waterworks standards prior to being pumped to an onsite storage facility.

Regardless of which water supply option is chosen, the Specific Plan proposes establishment of a CSA to fund and oversee water, wastewater, storm drainage, and parks and recreation facility construction and provide the necessary ongoing financial and management structure for these Plan Area facilities. Through the proposed CSA, Solano County would be responsible for providing the level of treatment necessary to meet safe drinking water standards for residential (domestic) use. The CSA would be granted limited powers, and administered by the County. The CSA would be required by law to adhere to the federal, state, regional, and local (County) water supply standards described in Section 16.1.2 herein. It is assumed that the CSA would encompass only the proposed Specific Plan development areas.

The Specific Plan (page 4-26) also mentions a "distant third possibility" of obtaining water from the City of Vallejo, but because this possibility is considered to be highly speculative it is not evaluated in this Recirculated DEIR (as per CEQA Guidelines Section 15145, Speculation).

(d) Specific Plan-Provisions Protecting Streams.

The Specific Plan designates streams within the Plan Area for protection in various ways, including: (1) by designating certain lands as "Open Lands-Natural (OL-N)," which includes "water courses, drainages and open water bodies that are intended to be placed under conservation easements to

permanently protect, preserve and enhance these areas” (Specific Plan, Section 3.5.3A); (2) depicting the location of “Natural Open Lands” (Specific Plan, Figure 3-10); and (3) depicting the location of the “T1-Conservation” Transect Zone and describing the provisions applicable to that zone (Specific Plan, Section 5.2 [describing “The Regulating Plan (Section 5.3)”], Table 5-1 [describing “Zone T1 – Conservation”], and Figure 5-1 [depicting the location of “T1-Conservation” Transect Zones]).

For those designated stream areas, the Specific Plan includes several protections, including: (1) Policy OL-5 (“Repair wetland and riparian areas to improve habitat and water quality for animal populations while minimizing long term project impacts”); (2) Section 3.3.3(B) (“Restoring and enhancing these corridors [i.e., drainage corridors including surface streams] is a key element in improving downstream water quality, decreasing flood potential and protecting the functionality of wildlife corridor movement”); (3) Section 3.5.3A (The OL-N designation “includes water courses, drainages and open water bodies that are intended to be placed under conservation easements to permanently protect, preserve and enhance these areas. These lands are not suitable for development due to topography, sensitive resources and/or hydrology. The conservation easement holder would monitor and manage lands while the Owner would retain fee ownership.”); (4) Section 4.2.1 (the Conservancy will oversee management, stewardship, enhancement and restoration of Open Lands, including riparian areas); and (5) Section 5.2 and Table 5-1, describing “Zone T1-Conservation” (“This Zone consists primarily of drainages and associated vegetated buffers. These lands are to be protected, restored and/or enhanced and are not suitable for development due to topography, habitat, hydrology and/or vegetation.”).

16.1.5 Impacts and Mitigation Measures

Table 16.4 provides a summary of the impacts and mitigation measures that are described in more detail below.

Table 16.4
 SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact Number ¹	Impact Title	Conclusion	Mitigation	Conclusion after Mitigation
--	Water Supply Adequacy to Meet Project Domestic Demands--Option A (Municipal Connection)	LTS	No mitigation is required	LTS
16-1	Water Supply Adequacy to Meet Project Domestic Demands--Option B (Onsite Groundwater)	PS	Mitigation 16-1a and 16-1b	LTS
16-2	Project Domestic Water Facilities Impacts on Existing Wells and Stream Habitats--Option B (Onsite Groundwater)	PS	Mitigation 16-2a and 16-2b	LTS
--	SID System Adequacy to Meet Project Agricultural Irrigation Demands--Options A (Municipal Connection) and B (Onsite Groundwater)	LTS	No mitigation is required	LTS
16-3	Project Construction Impacts on Existing SID, USBR, and City of Vallejo Facilities in the Plan Area--Options A (Municipal Connection) and B (Onsite Groundwater)	PS	Mitigation 16-3	LTS
--	Other Project Water Facilities Construction Activity Impacts--Options A (Municipal Connection) and B (Onsite Groundwater)	LTS	No mitigation is required	LTS
--	General Plan Consistency--Options A (Municipal Connection) and B (Onsite Groundwater)	NI	No mitigation is required	NI

Table 16.4
 SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact Number ¹	Impact Title	Conclusion	Mitigation	Conclusion after Mitigation
--	Project Domestic Water System Fire Flow Adequacy--Options A (Municipal Connection) and B (Onsite Groundwater)	LTS	No mitigation is required	LTS
--	Cumulative Water Supply Impacts--Options A (Municipal Connection) and B (Onsite Groundwater)	LTS	No mitigation is required	LTS

Notes: LTS = less than significant; NI = no impact; PS = potentially significant
¹ Only those impacts requiring mitigation are numbered, as are the corresponding mitigation measures.
 Source: Provided by Ascent Environmental in 2013

Water Supply Adequacy to Meet Project Domestic Demands--Option A (Municipal Connection).
 The proposed Specific Plan would result in an increased demand for water supplies. The City of Fairfield (in its WSA memorandum [Appendix A]) has confirmed that no new or expanded water supply entitlements would be required to serve the project and the project would therefore result in a **less-than-significant environmental impact** pertaining to water supply adequacy (see criterion [b] in Section 16.1.3, "Significance Criteria," above).

Specific Plan water supply Option A would involve connection of the proposed Specific Plan development areas to the City of Fairfield municipal water system. In response to the County's request, the City of Fairfield Public Works Department submitted a WSA memorandum consistent with its current (2010) Urban Water Management Plan. The WSA memorandum states that, should the City be the selected water supplier for the Middle Green Valley development: (1) the City's water supply is sufficient to serve all currently projected growth through ultimate development, including the Specific Plan-proposed development; and (2) the memorandum complies with state WSA requirements for the Specific Plan (Senate Bill 610). The memorandum also provides substantial evidence that the state WSA requirements for subsequent tentative subdivision maps in the Plan Area (i.e., state Senate Bill 221) are or will be met for proposed development projects to be served by the City through ultimate development. The memorandum explains that SB 221 also requires imposition of a condition of approval on future tentative maps for this project that sufficient water supply shall be available, and such a condition should be incorporated into any approval of the Specific Plan. Accordingly, the Specific Plan includes policy and implementation provisions reiterating the state SB 221 compliance requirement as a condition of any future Plan Area subdivision map approval. These City WSA conclusions and related Specific Plan provisions provide sufficient verification that, under Specific Plan water supply Option A, no new or expanded water supply entitlements would be required to serve the project.

As noted in Section 16.1.2(d) herein (State Water Supply Assessment Requirements), State SB 610 requires that before any project subject to CEQA and consisting of more than 500 dwelling units (or the equivalent water demand) is approved, a WSA must be prepared and adopted by the proposed purveyor. SB 221 elaborates on SB 610 by requiring an updated WSA prior to approval of subdivision tentative maps for residential projects. Pursuant to SB 610 and SB 221, the City of Fairfield Public Works Department has prepared a WSA memorandum (Appendix A) reiterating the City's position and policies that growth should not proceed without adequate water supplies available under a reasonable "worst case" scenario, and documenting "the City's compliance with SB 610 and SB 221 in addressing the adequacy of the City's water supply to meet the proposed Middle Green Valley Specific Plan

development (project) demands." The SB 610 and SB 221 analysis conclusions described in the City's WSA memorandum are described in more detail below:

(a) WSA Memorandum Analysis Conclusions.

The City's WSA memorandum explains that the sources of City water are the Solano Project, the State Water Project, Settlement Water, and recycled water. Solano Project supplies come to the City through several different agreements. The City utilizes no groundwater supply. As required by SB 610, the City's WSA memorandum summarizes City water supply reliability over the past 22 years (i.e., from 1990 through 2011) from the Solano Project and State Water Project, and describes presently forecasted water supplies and demands for the City with the proposed project under normal, single dry, and multiple dry year hydrologic conditions. To ensure consideration of cumulative impacts, the City analysis includes demands from other forecasted developments and related revisions, or proposed revisions, to the City's General Plan that have gone through similar water supply assessment (e.g., Hawthorne Mill and the Train Station Specific Plan).

The WSA memorandum states that the analysis considers "ultimate development" (i.e., citywide buildout anticipated beyond the year 2035). The WSA memorandum concludes that, while this level of demand is not currently reflected in the City's General Plan or water supply planning (including the City's 2010 Urban Water Management Plan), the City has a sufficient water supply to serve the proposed development.

The WSA memorandum indicates that the City can expect an "ultimate" median-year supply of 53,450 af of water. With proposed development in the Plan Area, the WSA memorandum forecasts an ultimate median-year demand of 46,160 af, leaving 7,290 af in reserve.

The City's WSA memorandum concludes that the City's SB 610 analysis verifies that the City water supply can serve all projected growth, through ultimate development (not just 20 years), including the proposed project. Consequently, the memorandum concludes that "the City has a sufficient water supply for the proposed development, and the requirements of SB 610 are met."

Moreover, at the tentative map stage, SB 221 also requires provision of a "written verification of sufficient water supply." While not required, the City's WSA memorandum states that the City already undertook the analysis for the proposed Specific Plan and found "substantial evidence that this SB 221 requirement is or will be met for all projects to be served by the City through ultimate development, including the proposed development." Thus, the City's WSA goes well beyond what is required in providing assurance of adequacy of water supply.

Based on the statements and conclusions by the City of Fairfield, there is sufficient information that, under water supply Option A, the project would result in a **less-than-significant environmental impact** pertaining to water supply adequacy.

(b) Upper Green Valley Homeowners v. County of Solano.

As found by the court in Upper Green Valley Homeowners v. County of Solano, the presence of Measure L creates a legal uncertainty as to the ultimate availability of water from the City of Fairfield to serve the proposed Specific Plan. The uncertainty relates to whether Measure L legally restricts the City from selling or supplying water for service to the Plan Area.

However, notwithstanding the presence of Measure L, the City prepared a letter stating that they do not believe Measure L would preclude the City from supplying water supply to the Plan Area (Appendix C) and the City demonstrated in their WSA that adequate water supply exists to serve the proposed Specific Plan. The question of whether the City will ultimately decide to provide water to the project will be a City rather than Lead Agency (County) decision. The proposed Specific Plan cannot proceed

under water supply Option A until the City of Fairfield formally approves delivery of the verified available water supply to the project. The County has not yet formed a CSA, and hence, the City of Fairfield has not yet entered a contract to sell or supply water to the CSA. At that time, the City of Fairfield will ultimately decide whether to sell or supply water for service to the Plan Area.

Mitigation: No significant impact (no new or expanded water entitlement need) has been identified; no additional mitigation is necessary.

Impact 16-1: Water Supply Adequacy to Meet Project Domestic Demands--Option B (Onsite Groundwater). The proposed Specific Plan would result in an increased demand for water supplies. Studies indicate that sufficient groundwater supplies are available to meet existing and projected future demands in addition to the proposed project through 2035 under all water year types (e.g., normal, single-dry, and multiple-dry years), as detailed below. However, without implementation of established County and State water system regulations and review procedures, this would be a **potentially significant** impact related to adequacy of water supply (see criterion [b] in Section 16.1.3, "Significance Criteria," above).

Under water supply Option B, the proposed project would receive its primary potable water supply from three or more onsite deep wells. The wells would draw groundwater from the aquifer system in the Suisun-Fairfield Valley Groundwater Basin, which has an estimated saturated thickness in excess of 400 feet. The water would be treated by a small treatment facility(ies) to CCR Title 22 Waterworks standards prior to being pumped to an onsite storage facility. The Specific Plan proposes establishment of a CSA to provide the financial and management structure for Plan Area's water system. The proposed CSA would be responsible for providing the level of treatment necessary to meet safe drinking water standards for residential (domestic) use.

Projected water demands for the Plan Area include two main components: domestic and non-potable (agricultural) water demands; these are described in more detail below. A WSA specific to Option B (Onsite Groundwater) was prepared for the project as part of this Recirculated DEIR (see Appendix B).

(a) Domestic Water

As presented above, project development would result in a domestic water demand of approximately 186 afy (Table 16.2). This demand assumes implementation of the water conservation features listed in Section 16.1.4.

In addition, approximately 55 existing agricultural residences and/or rural farm units in the Plan Area situated on a total of about 215 acres have an estimated water demand of about 110 afy based on a conservative use of 2 afy per residence for indoor and outdoor uses. This estimate is conservatively developed from deliveries by SID to residences in SID's service area in the Plan Area between 2004 and 2011, which averaged 1.8 afy per residence (see Appendix B, Section 4.1.2). Domestic water is supplied by a combination of SID and local groundwater, as shown in Table 16.5. This is not proposed to change with project implementation.

Table 16.5
 TOTAL PROJECTED WATER DEMAND

Existing/Proposed Land Uses	Acres	Total Demand (afy)	Existing/Proposed Water Source
Existing Land Uses			
Residential/Ag Residential (domestic)	215	110	20 afy from SID; 90 afy from groundwater
Agriculture (non-potable)	280	190–240	140 afy from SID; 50–100 afy from groundwater
Total Existing Demand		300–350	
Proposed Middle Green Valley Specific Plan Land Uses			
Domestic	(see Table 16.3)	186	Groundwater
Landscaping (non-potable)	100	54	Recycled water from project
Agriculture (non-potable)	160	320	SID
Total Project Demand		560	
Total Existing + Project Demand		860–910	

Notes: afy = acre-feet per year
 Source: Provided by Luhdorff & Scalmanini, Consulting Engineers in 2012 (see Appendix B)

The total projected domestic water demand, including existing residential and agricultural/residential uses (110 afy) plus the estimated demand for the project (186 afy), is about 296 afy.

(b) Non-potable (Agricultural) Water

Proposed non-potable water demands associated with the proposed project include 100 acres of landscaping irrigation on portions of the Plan Area such as the rural residential units and other small acreages associated with Plan Area community services, and 160 acres of other agricultural land not in active use in the Plan Area (i.e., “Agriculture Preserve”). Plan Area landscaping irrigation water demands would be met via the use of 54 afy of recycled water from the project. The agricultural demand that may occur within the Plan Area on Agricultural Preserve lands is about 320 afy, which would be supplied by SID, as shown in Table 16.5, as is the current condition that will not be affected by the proposed project.

Existing agricultural land use in the Plan Area includes approximately 425 acres of non-irrigated, agricultural land, including 357 acres of grain/winter crops and 68 acres of fallow land. Additionally, about 280 acres of irrigated crops (e.g., vineyards, pasture, and other crops) are within the Plan Area; water demand for these crops ranges from 190 to 240 afy and is supplied by SID and local groundwater, as shown in Table 16.5, as is the current condition that will not be affected by the proposed project.

(c) Water Demand Summary

As described above, projected water demands for the Plan Area include both domestic and non-potable (agricultural) water demands that total between 860 and 910 afy (see Table 16.5). Each of these components encompasses some existing domestic and agricultural water utilization in addition to the planned water utilization for the project. The project demands are based on the *Middle Green Valley Specific Plan* (Solano County 2010). Existing demand totals 300 to 350 afy based on existing residential and agricultural water uses. Future demand at full build-out would be 560 afy, which includes

186 afy for domestic use, 54 afy for landscaping, and the remaining 320 afy based on the assumption that all remaining land in the category of Agricultural Preserve not currently in production (i.e., 160 acres) is put into production and requires 2 afy per acre.²⁹

(d) Groundwater Supply Sufficiency

As demonstrated in the USGS analysis of historical pumpage, approximately 525 afy of groundwater is available in the Plan Area. This is consistent with the fact that an agricultural demand of about 525 afy was historically met by groundwater with no adverse effects³⁰ (i.e., groundwater levels remained stable and showed spring to fall recovery). Historical groundwater conditions for 1950 were compared to recent groundwater levels where available in the vicinity of the Plan Area, and current groundwater conditions are found to be comparable to historical conditions. Little variation in water source availability is anticipated between normal, single-dry, and multiple-dry years (Table 16.6). Groundwater levels appear to have remained stable throughout dry periods where records are available. Also, available SID water delivery records indicate that SID’s water deliveries to the Green Valley area appear to have been unaffected by dry periods and are indicative of varying crop patterns. Moreover, sufficient surface water is available within SID’s service area for agricultural uses, with allotments available to agricultural customers within SID’s service area.

Table 16.6
 COMPARISON OF FUTURE GROUNDWATER SUPPLY SUFFICIENCY FOR THE PLAN AREA

Projected Groundwater Demand and Supply	Groundwater Demand and Supply (af)				
	Normal Year	Single-Dry Year	Multiple-Dry Year		
			1	2	3
Projected Groundwater Demand	326–376	326–376	326–376	326–376	326–376
Projected Groundwater Supply ¹	525+	525+	525+	525+	525+
Projected Surplus	149–199+	149–199+	149–199+	149–199+	149–199+

Notes: af = acre feet

¹ Groundwater supply based on estimated historical pumping amounts with no recorded adverse effects.

Source: Provided by Luhdorff & Scalmanini, Consulting Engineers in 2013 (see Appendix B)

For purposes of this analysis it is assumed that the project would achieve full build out conditions within the first five years, so there would be no change in water demand between the years 2015, 2020, 2025, 2030, and 2035. The nature of the project (residential and commercial) is such that the water demand varies little from year to year and is largely unaffected by climatic variability. This means that there is no difference in water demand for the project, between a normal water year, a single-dry year, or multiple-dry year types. The water supply would not change on a yearly basis, so there is no difference between the water supply in the years 2015, 2020, 2025, 2030, and 2035. Historical records indicate that the availability of groundwater is unaffected by water year type (climatic variability causes some changes in groundwater levels, but those changes are not so sizable that they would render water unavailable or

²⁹ This number is higher than the applied water crop demand seen in 2011 (ranged from 0.4 to 1.4 afy per acre from Appendix B, Table 4-6) due to the possibility that future agriculture may include higher demand type crops, as seen in 2003, (i.e., truck crops).

³⁰ Over the approximately 2,400 acres that the USGS study (Thomasson et al., 1960) area of Green Valley covered, the maximum annual amount of groundwater extraction during the period between 1941 and 1951 was 1,400 af (in 1949). This translates to an approximate maximum groundwater extraction rate of 0.58 afy per acre. The portion of the Plan Area that is covered by the USGS Green Valley study area consists of the valley floor, and is approximately 900 acres. Applying the 0.58 afy per acre maximum groundwater extraction rate on record, a maximum of approximately 525 afy of groundwater may have been pumped in this historical period in the Plan Area. For the purposes of this DEIR, it is assumed that 525 afy of groundwater would be available to the Plan Area without depleting the groundwater aquifer.

prevent the use of the 525 afy allotment estimated to be available to the Plan Area), and so would remain the same for normal water years, single-dry years, and multiple-dry years. Available SID delivery records specific to the Green Valley area indicate that deliveries appear to have been unaffected by dry periods and are indicative of varying crop patterns. Historical records of Solano Project surface water deliveries to purveyors including SID indicate an overall average reliability of 99%, since deliveries began in 1959, through 2007 (average of 100% reliability during normal years, 99% reliability during dry years, and 99% reliability during multiple dry years) (Okita 2010; SID 2006).³¹ Therefore, the SID deliveries portion of water supply to the Plan Area is not expected to change between normal, single-dry, and multiple-dry water year types.

Table 16.7 shows a summary of available water supplies, and projected water demands and overall surplus. The estimated surplus of water resources in the Plan Area is estimated to be 669 to 719 afy, and 875 to 965 afy in the Thomasson study area (north/south) adjacent to the Plan Area.

Table 16.7
 SUMMARY OF PROJECTED WATER SUPPLIES AND DEMAND, AND ANNUAL SURPLUS

Available Water Supplies	Middle Green Valley Specific Plan Area		Thomasson Study Area (North/South)		Total from all Sources (af)
	Surface Water (af)	Groundwater (af)	Surface Water (af)	Groundwater (af)	
Groundwater	NA	525+	NA	875+	1,400+
Solano Irrigation District	1,000+	0	680+	0	1,680+
City of Vallejo	0	0	210+	0	210+
City of Fairfield	0	0	860+	0	860+
Project Recycled Water	NA	NA	NA	NA	NA
Total Projected Supply	1,000+	525+	1,750+	875+	4,150+
Projected Water Demand					
Existing Residential/Ag Residential/Commercial	20	90	1,360–1,430	270	1,740–1,810
Plan Area Domestic (potable)	0	186	NA	NA	186
Plan Area Landscaping (non-potable)	NA	NA	NA	NA	NA
Agriculture (current)	140	50–100	20–40	10	220–290
Agriculture (expanded)	320	0	0	0	320
Total Estimated Demand	480	326–376	1,380–1,470	280	2,466–2,606
Projected Surplus	520+	149–199+	280–370+	595+	1,544–1,684+

Notes: af = acre feet; NA = not applicable
 Source: Provided by Luhdorff & Scalmanini, Consulting Engineers in 2013 (see Appendix B)

As shown in Table 16.7 (above), there is a projected surplus of groundwater in the Plan Area of between 149 and 199+ af, and as shown in Table 16.3, the per-residential-unit demand is about 0.34

³¹ Solano Irrigation District. 2006. Senate Bill 1938, Groundwater Management Plan Upgrade. January 2006.

afy. Assuming the lower end of the projected surplus, groundwater supplies would be adequate to serve an additional 438 primary residential units beyond those proposed for the project (149 af divided by 0.34 afy/unit). Therefore, the groundwater surplus provides a substantial margin for error, and to that extent would be sufficient to accommodate substantial variability in specific plan land use water demand estimates.

If, despite the 99% overall average supply reliability of Solano Project deliveries to SID over its first 49 years of operation, a prolonged drought were to force the curtailment of Solano Project surface water deliveries by SID to the Plan Area and Thomasson study area (north/south), groundwater resources in the Plan Area and Thomasson study area (north/south) would be sufficient to replace 76% of the SID deliveries from Lake Berryessa (744 afy divided by 980 afy).

Under this prolonged drought scenario, anticipated demand for SID deliveries is expected to be 980 afy while the anticipated available groundwater supply is at least 744 afy.

Anticipated demand for SID deliveries is expected to be 980 afy (660 afy + 320 afy) when accounting for full Middle Green Valley Specific Plan implementation, including Specific Plan Option B (i.e., the estimated project potable demand of 186 afy is entirely met by groundwater). This estimate accounts for continued current demands for SID deliveries in the Thomasson study area (north/south) and Plan Area (660 afy, see Appendix B, Table 4-6) as well as projected expansion of SID deliveries to meet the entire anticipated demand of expanded irrigated Agricultural Preserve acreage in the Plan Area (160 acres receiving 320 afy, see Table 16.5).

The anticipated groundwater supply available to meet unmet demands following a curtailment by SID during a prolonged drought would be at least 744 afy (1,400 af - 470 afy - 186 afy). This estimate is based on the maximum rate of pumpage within Green Valley, derived from Thomasson (1960) (see Appendix B, Table 4-1) and observed to occur without reducing groundwater levels beyond the ability of the aquifer system to recover in subsequent years (see Appendix B, Section 4.1.1). The estimate of future available groundwater supply also accounts for existing groundwater demands within the Plan Area and Thomasson study area (north/south) (470 afy, see Appendix B, Table 4-6) as well as future demands for potable water to be developed as described in the Specific Plan under water supply Option B (186 afy, see Table 16.7).

Water deliveries from the Solano Project are highly reliable (approximately 99% level) and have been for many decades (i.e., meeting its total water delivery obligations in nearly every year). As such, the likelihood of a drought of such duration and magnitude that SID would be required to reduce surface deliveries to less than 25% is considered highly speculative, and would be a very rare event. In addition, it would be at that point that an annually replenishing groundwater supply would begin to fall short of annual demand (i.e., the point at which annual draw on the groundwater resource might start to exceed annual replenishment, not the point at which the groundwater resource would have been wholly depleted).

Furthermore, more detailed aquifer evaluation and system design (which would be required prior to implementation) would allow the proposed potable supply wells and associated water storage facilities to operate with sufficient flexibility to provide continuous service to the project should drought or other unforeseen conditions force the curtailment of SID surface water deliveries to the Plan Area and Thomasson study area (north/south).

Based on the information provided in the WSA, sufficient water supplies are available to serve the project during normal, single-dry, and multiple-dry years based on existing available water supply

entitlements as shown in Table 16.7. Please refer to Appendix B for additional details regarding the WSA for water supply Option B.

However, without implementation of established County and State well and public water system regulations and review procedures to ensure an adequate water supply and proper construction and operation of the public water system, this impact would be **potentially significant**.

Mitigation 16-1a: Prior to subdivision map approval, a Water Master Plan for water supply Option B shall be prepared that describes engineering specifications and other related components necessary for completion of established County and State well and public water system permitting requirements and review procedures. The Water Master Plan shall be approved by Solano County.

The Water Master Plan shall contain as one of its components engineering specifications including, but not limited to:

- well locations and depths;
- water pumping, filtration, and disinfection specifications; and
- water storage and distribution facilities and sizing.

The Water Master Plan and its components shall be designed to provide water service only to the Specific Plan designated development areas, so as to preclude any growth-inducing impacts on adjoining designated agricultural and open space lands (pursuant to General Plan Housing Element Policy G.2).

As part of the Water Master Plan process, the applicant shall obtain input from the Cordelia Fire Protection District to ensure that the plan meets District fire flow rate and duration standards (pursuant to General Plan Policies and Implementation Programs PF.I-35, PF.P-38, PF.P-39, HS.P-23, and HS.I-28).

The Water Master Plan shall contain as one of its components the information required for application to CDPH for a public water system initial operating permit, which requires demonstration that the proposed water system (including well, pumping, storage, and distribution components) meets State (including Title 22) requirements. The proposed operator of the public water system shall complete the CDPH public water system initial operating permit issuance process. (It is anticipated that the CSA will need to have been formed prior to or as part of preparation of the Water Master Plan, including completion of the applicable LAFCO review process, for the Water Master Plan to be able to describe the technical, managerial, financial, and other information that the CDPH permit process requires.)

The Water Master Plan shall contain as one of its components the information required for application to the County Environmental Health Services Division for well permits to construct the public water system wells. The applicant or operator shall complete the County well construction permit issuance process.

Mitigation 16-1b: Prior to subdivision map approval, the County shall comply with the statutory requirements of SB 221 (Government Code Section 66473.7), which includes preparation of a water supply verification to demonstrate with firm assurances that there is a sufficient water supply for the project.

Implementation of these measures would ensure that, under water supply Option B, the project would result in a **less-than-significant** impact related to adequacy of water supply.

Impact 16-2: Project Domestic Water Facilities Impacts on Existing Wells and Stream Habitats-- Option B (Onsite Groundwater). Implementation of water supply Option B would involve the extraction of groundwater from the aquifer system in the Suisun-Fairfield Valley Groundwater Basin via the use of at least three new groundwater wells. Under water supply Option B, placement and use of at least three new groundwater wells could, if improperly placed, contribute to underperformance or failure of existing nearby domestic wells and could have substantial adverse effects on stream hydrology or riparian habitat. Until the proposed well locations are identified and tested, analyzed, and monitored, this impact would be *potentially significant* (see criterion [a] and [d] in Section 16.1.3, "Significance Criteria," above).

It is anticipated that at least three onsite wells proposed under water supply Option B under full buildout conditions would use a small and sustainable portion of the water annually recharged into the Suisun-Fairfield Valley Groundwater Basin. As part of the proposed project, steps would be implemented to design, place, and monitor the project wells. A well design planning process is standard industry practice and is expected to include the following components: test hole and test well drilling in several locations to obtain further site-specific aquifer data, which will be used to determine appropriate well design and placement; placement of public supply wells in appropriate locations; spacing wells to avoid well interference with each other (other Plan wells), nearby private wells (agricultural or domestic), and surface streams; and ongoing monitoring.

Given the relatively high water table (see Section 16.1.1[a]), high soil permeability, and large aquifer volume in the Plan Area, it is expected that groundwater levels would remain stable and there is no evidence to suggest that groundwater pumping from new deep wells would result in substantial water table fluctuations.³² Furthermore, at full buildout, project water demand would remain substantially below the available groundwater supply so that there would continue to be a surplus of groundwater available (see Table 16.7). As discussed above, the project would use approximately 186 afy of groundwater to meet domestic water demands. Historically, approximately 525 afy of agricultural water demand within the Plan Area has been met through groundwater supply with no adverse effects (i.e., groundwater levels remained stable and showed spring to fall recovery) (Appendix B). Because available records indicate that groundwater supplies have remained stable through past dry periods (back to 1950), project implementation is not expected, even in dry years, to affect hydrogeology such that nearby wells or stream habitat would be adversely affected.

Also, the water levels shown in the WSA for current conditions reflect water levels from the time of the Thomasson study (1960), which describes that the water levels in April 1950 throughout Green Valley were so close to the land surface that the contours are considered to represent essentially the native pattern of movement (i.e., pre-dating impacts caused by humans). Therefore, it can be concluded that there would be no cumulative impact on streams from project-related groundwater extraction because current water levels are reflective of the natural regimen.

Although there is presently no evidence that the proposed project wells would interfere with nearby wells or streams, until Option B well locations, depths, and equipment have been specifically identified and adequately tested, analyzed, and monitored, it may be conservatively assumed that one or more of the project wells could possibly contribute to underperformance or failure of one or more existing nearby wells, and could possibly have substantial adverse effects on stream hydrology or riparian

³² There could be groundwater fluctuations in the deep wells that are indicative of the aquifer response under semiconfined conditions. These fluctuations would likely not be indicative of the response that would occur at the water table in the unconfined part of the system.

habitat, due to water level fluctuations resulting from well interference. This possibility is deemed a **potentially significant** environmental impact.

Mitigation 16-2a: The wells under water supply Option B shall be designed to avoid any potential interference between new Plan wells and (1) other Plan wells, (2) existing nearby private wells, and (3) surface streams. A non-exclusive list of the tools and methods to be used to accomplish avoidance are: appropriate well siting, placement, and spacing; selection of well depths and of equipment for pumping and testing; and monitoring, including testing and monitoring wells.

Based on available water supply, aquifer characteristics, post-project demand, and the number and location of existing wells and surface streams, it is expected that a well design plan could be devised that avoids adverse impacts on neighboring wells and surface streams (Kretsinger, pers. comm., 2013).³³

The well design process will also generate additional information in the future. The well design process shall precede, and under industry practice would precede, determination of the engineering specifications for well locations and depths. The engineering specifications for well locations and depths are required to be identified as part of the Water Master Plan specified under Mitigation 16-1. The Water Master Plan is required to be prepared prior to subdivision map approval (a discretionary approval subject to CEQA). Additional information resulting from the well design process will therefore be available at a time when subsequent activities and approvals are later examined in light of this program EIR to determine whether an additional environmental document would then need to be prepared in conformance with the requirements of CEQA. At the latest, additional information resulting from the well design process would be available prior to subdivision map approval by the County, but for purposes of approval of CSA formation or issuance of an operating permit, LAFCO or CDPH, respectively, may require some or all of the information resulting from the well design process to be available earlier. If the well design process generates new relevant factual information relating to Impact 16-2, that information will be generated at a time when it would be examined in conformance with CEQA's requirements for subsequent review following a program EIR.

Implementation of this measure would provide for avoidance of any potential interference between new Plan wells and (1) other Plan wells, (2) existing nearby private wells, and (3) surface streams, such that any potentially significant effect would be reduced to a **less-than-significant** level.

Although Mitigation 16-2a would provide for avoidance sufficient to reduce Impact 16-2 to a less-than-significant level, in response to public concerns expressed to the County regarding potential interference with private water supply wells the County would additionally implement the below mitigation measure 16-2b in the unlikely event that groundwater pumping associated with the proposed project resulted in adverse effects to existing nearby wells.

Mitigation 16-2b: If, in the unlikely event that ongoing monitoring conducted as part of the well design plan or water supply Option B operation reveals potentially significant drawdown may be occurring in existing wells in the vicinity of the new project wells, some or all of the following measures to mitigate those impacts will be implemented by the CSA³⁴ until subsequent monitoring shows that drawdown is

³³ Email communication on August 7, 2013 from Vicki Kretsinger, Principal Hydrologist of Luhdorff & Scalmanini, to Sarah Henningsen, Environmental Planner of Ascent Environmental, re: field investigation and evaluation to avoid potential pumping impacts on surface water and existing water supply wells.

³⁴ Although implemented by the CSA, the financial responsibility for these measures may be undertaken by, or required to be assigned to, another entity (e.g., an applicant for subdivision map approval) as a condition of subsequent County, LAFCO, or State approvals.

not adversely affecting operations of existing wells to the satisfaction of the County Division of Environmental Health:

- lowering existing pumping equipment within the well structure in affected well(s),
- deepening or replacing the affected well(s),
- altering the amount or timing of pumping from the project well (i.e., shifting some pumpage to another project well and/or drilling a supplemental project well) to eliminate the adverse impact,
- providing replacement project well(s), and/or
- providing a water supply connection for the property/uses served by the affected well(s) to the Option B water supply system, sufficient to provide the property/uses with a substantially similar quality of water and the ability to use water in substantially the same manner that they were accustomed to doing if the project had not existed and caused a decline in water levels of their wells.³⁵

Implementation of this measure would further provide for continued, unimpaired functioning of nearby wells, or replacement of wells or water supply, such that any potentially significant effect would be reduced to a **less-than-significant** level.

SID System Adequacy to Meet Project Agricultural Irrigation Demands--Options A (Municipal Connection) and B (Onsite Groundwater). The project would increase the demand for agricultural irrigation water, which would be supplied by SID, consistent with its current practice of supplying water for agricultural irrigation needs within its boundaries. Because SID has confirmed it has sufficient water supply to meet this increased demand, this impact would be **less-than-significant** (see criterion [b] in Section 16.1 3, "Significance Criteria," above).

Under either water supply Option A or B, SID would continue to provide for agricultural irrigation supply needs within existing SID boundaries. As noted above (see Table 16.4), SID currently provides water for existing residential and agricultural needs within the Plan Area. Approximately 55 existing agricultural residences and/or rural farm units in the Plan Area have an estimated domestic water demand of about 110 afy, which is supplied by a combination of SID (20 afy) and local groundwater (90 afy). Additionally, there are about 280 acres of irrigated crops (e.g., vineyards, pasture, and other crops) that have a water demand ranging from 190 to 240 afy; this demand is supplied by SID (140 afy) and local groundwater (50 to 100 afy). In total, SID currently provides 160 afy to the Plan Area. This would continue under the proposed project, under either water supply Option A or B.

Proposed non-potable water demands associated with the proposed project include 100 acres of landscaping irrigation on portions of the Plan Area such as the rural residential units and other small acreages associated with Plan Area community services, and 160 acres of other agricultural land use in the Plan Area (i.e., "Agriculture Preserve"). Plan Area landscaping irrigation water demands (on the proposed 100 acres) would be met via the use of 54 afy of recycled water from the project.

³⁵ See Table 16.7. Existing groundwater demand in the Plan Area is 90 af. The low end of the range of projected surplus is 149 af, after accounting for 90 af of existing demand. To meet a demand of 90 af, the amount of groundwater estimated to remain available to the property/uses served by affected well(s) through a water supply connection to the Option B water supply system would therefore be approximately 239 af (149 af + 90 af) to 289 af (199 af + 90 af).

For a conservative estimate of future agricultural water demand, if all 160 acres of Agricultural Preserve went into production and used estimated crop water use of 2 afy per acre from SID, the projected agricultural water demand on those lands would be 320 afy, all provided by surface water deliveries from SID, as shown in Table 16.4. It should also be noted that SID water deliveries to the Green Valley area have been unaffected by dry periods. SID confirmed that it could meet this increased level of demand for agricultural purposes (160 afy under existing conditions + 320 afy with the proposed project = 480 afy total) (Fuchslin, pers. comm., 2012).

Because SID has confirmed it has sufficient water supply to meet this increased demand, this impact would be ***less than significant***.

Mitigation: No significant environmental impact has been identified; no additional mitigation is required.

Impact 16-3: Project Construction Impacts on Existing SID, USBR, and City of Vallejo Facilities in the Plan Area--Options A (Municipal Connection) and B (Onsite Groundwater). Construction activity associated with buildout under the proposed Specific Plan, including general development activity as well as Specific Plan-proposed water and wastewater facilities construction, may affect existing SID, USBR, and City of Vallejo water easements and facilities in the Plan Area, representing a ***potentially significant environmental impact*** (see criterion [a] in Section 16.1.3, "Significance Criteria," above).

Existing SID facilities within the Plan Area include a main pipeline in Green Valley Road and local distribution lines (see Section 16.1.1[a][2]). Existing USBR facilities in the Plan Area include a pipeline along Reservoir Lane and another pipeline along Mason Road (see Section 16.1.1[c]). The City of Vallejo's Vallejo Lakes water system which serves portions of Green Valley, Old Cordelia, and other areas in the Plan Area vicinity includes a 24-inch water line that extends through the Plan Area, connecting the Green Valley Water Treatment Plant to the City of Vallejo (see Section 16.1.1[e]).

SID has raised the specific concern that, if sewage disposal requires the construction of new onsite systems, the design and placement of lines and leach fields would need to be kept clear of SID and USBR easements (Wirth 2009).

USBR has indicated that, as per 43 CFR Part 429, USBR will consider the following criteria when reviewing applications for development in the vicinity of USBR facilities: (a) compatibility with authorized project purposes, project operations, safety, and security; (b) environmental compliance; (c) compatibility with public interests; (d) conflicts with federal policies and initiatives; (e) public health and safety; (f) availability of other reasonable alternatives; and (g) best interests of the United States (Finnegan 2009).

Because project construction, including construction of proposed water facilities, may affect existing SID, USBR, and City of Vallejo water easements and facilities in the Plan Area, this impact would be ***potentially significant***.

Mitigation 16-3: Plans for development that could potentially affect SID, USBR, and City of Vallejo easements and facilities, or roadway or utility crossings of these facilities, shall be submitted to and approved by these agencies prior to implementation. Any submittal to USBR shall be through SID. No permanent structures shall be located over or within these existing pipeline easements without an alternative route being offered at developer expense. Utility crossings shall provide a minimum of three feet of clearance between the utility and the pipelines. Proposals for roadway crossings of any of these

pipes shall include an engineered stress analysis on the pipe to ensure the pipeline would withstand proposed roadway loadings. Residential lots shall not be located within SID, USBR, City of Vallejo easements. Wastewater lines and other facilities on residential lots shall be kept clear of SID and USBR easements. Any sewer lines crossing USBR facilities shall be installed in a secondary casing across the USBR right-of-way.

The applicant/developer shall sign an "Agreement for Protection of Facilities" before the start of any construction on or contiguous to any SID or USBR facilities. The agreement shall be followed during construction contiguous to or crossing any SID or USBR pipelines and easements. At the applicant/developer's expense, SID would repair any construction damage to SID or USBR facilities, and the City of Vallejo would repair any construction damage to City facilities.

Implementation of this measure would preclude or compensate for potential adverse effects to SID, USBR, and City of Vallejo water easements and facilities in the Plan Area, and would reduce this impact to a ***less-than-significant level***.

Other Project Water Facilities Construction Activity Impacts--Options A (Municipal Connection) and B (Onsite Groundwater). Implementation of either water supply Option A or B would involve the construction of water supply infrastructure, including water conveyance pipelines and storage tanks. Additionally, water supply Option B would necessitate the construction of three or more deep groundwater wells and small onsite mixed media filtration and disinfection facilities. Construction of these facilities would occur at the same time as construction of the project and would be temporary. Any construction-related impacts would be addressed through Solano County standard conditions of approval of tentative maps, as well as the project-specific mitigation measures incorporated into the proposed project. For these reasons, this impact would be ***less than significant*** (see criterion [a] in Section 16.1.3, "Significance Criteria," above).

Implementation of Specific Plan proposed water supply Option A (Municipal Connection) would involve construction of approximately nine miles of new onsite pipeline, most within existing and proposed roadway rights-of-way, as well as construction of two approximately 250,000-gallon water storage tanks at elevation. Similarly, implementation of Specific Plan proposed water supply Option B (Onsite Groundwater) would involve construction of approximately 4.5 miles of new onsite pipeline, most within existing and proposed roadway rights-of-way, as well as construction of the same two water tanks at elevation. Additionally, under water supply Option B (Onsite Groundwater), up to three deep groundwater wells would be constructed. The water would likely be treated by a small treatment facility(ies) to CCR Title 22 standards prior to being pumped to an onsite storage facility. Water pipelines would be installed under streets within the Plan Area, and the water storage tanks would be constructed in the western portion of the Plan Area as shown on Figure 16.1.

These onsite construction activities would be temporary. Associated construction period traffic interruption, dust, odors, and noise typically associated with such construction would be mitigated through normal Solano County construction period requirements and conditions (see DEIR Chapters 4, "Air Quality," 13, "Noise," and 17, "Transportation and Circulation," for example). No unusual, significant environmental impact would be anticipated with this temporary construction activity, or with the operation of the new water infrastructure. The environmental impacts associated with construction of project-related new water distribution, storage, and treatment infrastructure would therefore be ***less than significant***.

Mitigation: No significant environmental impact associated with the construction of project-related new or expanded water facilities has been identified; no mitigation is required.

General Plan Consistency--Options A (Municipal Connection) and B (Onsite Groundwater).

Implementation Program SS-I-1 specifically calls for the County to “Adopt a plan (either a specific plan or master plan)...for Middle Green Valley” and states that “The plan should specify...the details of how the development would be served with... water services.” and that the County should “attempt to secure public... public water service through a cooperative effort of property owners, residents, the County, and the City of Fairfield.” Specific Plan water supply Options A and B are consistent with this policy. As a result, **no environmental impact** associated with Specific Plan inconsistency with the water service policies of the Solano General Plan is anticipated (see criterion [c] in Section 16.1.3, “Significance Criteria,” above).

Mitigation: No significant impact associated with General Plan consistency has been identified; no mitigation is required.

Project Domestic Water System Fire Flow Adequacy--Options A (Municipal Connection) and B (Onsite Groundwater).

Project implementation would increase the demand for a water supply for emergency fire suppression, which could be regarded as potentially significant were it not for existing requirements that mandate that sufficient water for fire flow be provided. Because the project includes onsite water storage for emergency purposes and the applicant would coordinate with the local fire district during project review to ensure that sufficient water supply systems for fire suppression are provided, **no significant environmental impact** related to fire flow adequacy would occur (see criterion [e] in Section 16.1.3, “Significance Criteria,” above).

General Plan Implementation Program PF.I-35 requires coordination with fire districts during project review “to ensure that all new development incorporates...sufficient water supply systems for fire suppression.” (See also, General Plan Policies PF.P-38 [ensuring fire service throughout the County], PF.P-39 [incorporation of fire protection measures in review and approval of new projects], HS.P-23 [work with fire districts to coordinate efforts to prevent wildfires and grassfires], and HS.I-28 [seek fire district input to ensure that projects include fire-safe measures such as providing adequate water supplies]; and Implementation Program PF.I-36 [collaborate with fire districts to evaluate funding options to improve fire protection]). Both project water supply Options A and B propose onsite storage of 500,000 gallons of water in two 250,000-gallon water tanks at elevation for emergency fire flow purposes (specifically, for fire hydrants and sprinklers). Prior to issuance of an initial water system operating permit, the CSA would be required by CDPH to demonstrate that the proposed project water system is sufficient to serve the anticipated water demands of the new system for at least 10 years, including required fire flows, and prior to construction or authorization of the system the CSA would be required to conform to General Plan provisions requiring coordination with the Cordelia Fire Protection District (CFPD) to ensure sufficient water supply systems for fire suppression, including General Plan Policies and Implementation Programs PF.I-35, PF.P-38, PF.P-39, HS.P-23, and HS.I-28. (See also, Mitigation 16-1a, requirements for Water Master Plan.) As a result, **no significant environmental impact** related to fire flow adequacy is anticipated.

Mitigation: No significant impact has been identified; no mitigation is required.

Cumulative Water Supply Impacts--Options A (Municipal Connection) and B (Onsite Groundwater). Implementation of the Specific Plan in conjunction with related projects could result in substantial water demand; however, all of the projects are, or proposed to be located within the City of Fairfield and would be served by the City's ample surface water supply. None of the related projects would rely on groundwater for domestic use and, thus, would not contribute to cumulative groundwater effects. This impact would be *less than significant*.

Regarding water supply Option A, any of the projects located within the City of Fairfield would be served by the City's water supply, which the City has determined to be adequate for "ultimate development" (see Appendix A of this Recirculated DEIR). Regarding water supply Option B, there is one project within unincorporated Solano County, the proposed Rockville Trails Estates Project, that might have cumulatively combined with the Specific Plan in the use of local groundwater for daily potable water needs; however, that project is no longer proposed and the project site has been purchased by the Solano Land Trust, whose mission is to permanently protect and preserve farmland, ranchland, and open space in Solano County. No other reasonably foreseeable projects are located in the project area that would rely on groundwater for domestic use. Therefore, cumulative water supply impacts would be *less than significant* and no additional mitigation measures are required.

Mitigation: No significant cumulative water supply impact has been identified; no mitigation is required.

17. LIST OF PREPARERS

Resumes for technical staff involved in the preparation of the Recirculated EIR and WSA are included as Appendix D.

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