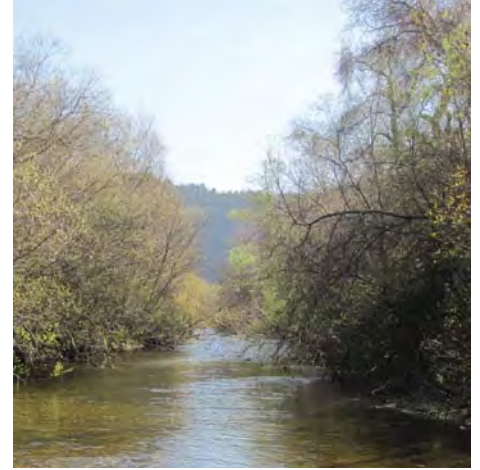


Eastwood/Odello Water Right Change Petition Draft Environmental Impact Report

Water Right Application No. 30497
SCH No. 2014031008
Monterey, California



Lead Agency
California State Water Resources Control Board
Division of Water Rights
Contact: Mitchell Moody
1001 I Street
Sacramento, CA 95814

October 2014

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List of Acronyms

ACOE	United States Army Corps of Engineers
AF	acre feet
AF/YR	acre feet per year
AMBAG	Association of Monterey Bay Area Governments
AS	Aquifer Subunits
ASCE	American Society of Civil Engineers
ASR	aquifer storage and recovery
BLP	Below Los Padres Reservoir
BMP	Best Management Practice
BSLT	Big Sur Land Trust
CAO	Cleanup and Abatement Order
CACO ₃	calcium carbonate
CAW	California American Water
CAWD	Carmel Area Wastewater District
CCA	California Coastal Act
CCC	California Coastal Conservancy
CCRWQCB	Central Coast Regional Water Quality Control Board
CDFG	California Department of Fish and Game (Old CDFW)
CDFW	California Department of Fish and Wildlife, AKA CDFG
CDO	Cease and Desist Order
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CNDDDB	California Natural Diversity Database
CNPPA	California Native Plant Protection Act
CNPS	California Native Plant Society
CO	carbon monoxide
CPUC	California Public Utilities Commission
CR	Carmel River
CRB	Carmel River Beach
CRL	Carmel River Lagoon
CRLF	California red-legged frog

CRSA	Carmel River Steelhead Association
CRWC	Carmel River Watershed Conservancy
CWA	Clean Water Act
DEIR	Draft Environmental Impact Report
DWR	California Department of Water Resources
EIR	Environmental Impact Report
EPA	United States Environmental Protection Agency
EPB	Ecosystem Protective Barrier
ESA	Endangered Species Act
ESHA	Environmentally Sensitive Habitat Areas
ET _{AW}	evapotranspiration from applied water
FEIR	Final Environmental Impact Report
FMMP	Farmland Mapping and Monitoring Program
GAC	granular activated carbon
GIS	Geographic Information System
GPM	gallons per minute
GWR	Groundwater Replenishment Project
HCP	Habitat Conservation Plan
HR	Hydrologic Region
HU	Hydrologic Unit
ITRC	Irrigation Training and Research Center
LWD	large woody debris
MBTA	Migratory Bird Treaty Act
MBUAPCD	Monterey Bay Unified Air Pollution Control District
MCWRA	Monterey County Water Resources Agency
MMRP	Mitigation Monitoring and Reporting Program
MPWMD	Monterey Peninsula Water Management District
MRWPCA	Monterey Regional Water Pollution Control Agency
NMFS	National Marine Fisheries Service
NO ₃	Nitrate
NOAA	National Oceanic and Atmospheric Administration
NOP	Notice of Preparation
NO _x	mono-nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service

NTU	turbidity
O ₃	Ozone
OHW	ordinary high water
PCLF	Planning and Conservation League Foundation
PM ₁₀	Particle Pollution
POD	points of diversion
POU	place of use
PVC	polyvinyl chloride
PWA	Philip Williams and Associates, Ltd.
RM	River Mile
RWD	Reports of Waste Discharge
RWQCB	Regional Water Quality Control Board
RY	Reporting Year
SCH	State Clearinghouse
SHSRF	Sleepy Hollow Steelhead Rearing Facility
SHW	Sleepy Hollow Weir
SO ₄	Sulfates
SO _x	Oxides of Sulfur
SR	State Route
SWRCB	State Water Resource Control Board
TAMC	Transportation Agency for Monterey County
TBD	to be determined
TDS	total dissolved solids
TMDL	total maximum daily loads
TNW	traditional navigable waters
USACOE	United States Army Corps of Engineers
USC	United States Code
USFWS	United States Fish and Wildlife Service
USGS	United States Geologic Survey
VOC	volatile organic compound
WDR	water discharge requirements
WDS	water distribution system
WRIMS	Water Resource Integrated Modeling System
WY	Water Year
YOY	young-of-year

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Chapter 1 INTRODUCTION

1.1 AUTHORIZATION AND PURPOSE

The State Water Resources Control Board (State Water Board) is the Lead Agency responsible for preparing an Environmental Impact Report (EIR) for the Eastwood/Odello Water Right Change Petition Project (proposed project) for Water Right License (License) 13868. This Draft Environmental Impact Report (DEIR) was prepared in conformance with the California Environmental Quality Act (CEQA) of 1970, as amended (Public Resources Code, Section 21000 et seq.). CEQA requires the preparation of an EIR when there is substantial evidence that a project could have a significant effect on the environment.

The purpose of this EIR is to inform the public and decision makers of the significant environmental effects of the project, identify possible ways to minimize those effects, and describe reasonable alternatives that would feasibly attain most of the basic objectives of the project. CEQA Guidelines, Sec. 15382 defines a "significant effect on the environment" as:

“... a substantial, or potentially substantial adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance.”

An EIR is an informational document for use by decision-makers and the general public that fully discloses the potential environmental effects of the proposed project (CEQA Guidelines Sec. 15121). The EIR process is specifically designed to evaluate the potentially significant direct, indirect, and cumulative effects of the proposed project, and to describe reasonable alternatives to the proposed project that could avoid or reduce those effects while feasibly attaining most of the project's basic objectives.

According to CEQA Guidelines Sec. 15021, public agencies are charged with the duty to avoid or minimize environmental damage where feasible. In determining whether changes in a project are feasible, the public agency may consider specific economic, environmental, legal, technological, and social factors. In addition, CEQA requires that an EIR identify any adverse impacts that would remain significant after mitigation (CEQA Guidelines Sec. 15126).

1.2 PROJECT OVERVIEW

The proposed project would result in changes to License 13868 to include changes to points of diversion (POD), place of use (POU), and purposes of use. The proposed project, if approved, would split existing License 13868 into two new licenses: License 13868A and 13868B.¹ License 13868A would include new authorized POD, POU, and purposes of use, so that water diverted under License 13868A could be used for municipal purposes within the parts of California-American Water Company's (Cal-Am) service area that are within the Carmel River watershed or the City of Carmel-by-the-Sea. License 13868B would be dedicated to

¹ The new licenses would supersede the existing license upon issuance by the State Water Board.

instream uses. The project would not increase the maximum authorized annual diversion rate or the maximum authorized instantaneous diversion rate beyond the existing authorized rates in License 13868.²

In addition to the changes to the existing license, the project would also involve the adoption of a new rule by the Monterey Peninsula Water Management District (MPWMD or District). The new rule, which would be similar to District Rule 23.5 and Rule 23.6, would allow MPWMD to issue water use permits to property owners within the parts of Cal-Am’s service area that are within the Carmel River watershed or the City of Carmel-by-the-Sea, and that have entered into subscription agreements with the licensee.³ For more information concerning the project, including specifics for each of the proposed new licenses, please refer to **Chapter 3, Project Description**.

1.3 SCOPE AND CONTENT

Consistent with CEQA Guidelines Sec. 15161, this EIR is a “Project EIR” that evaluates the environmental impacts of the proposed project. This EIR focuses on those effects of the project that may be potentially significant; effects not found to be significant (CEQA Guidelines Sec. 15128) are discussed in **Chapter 5, CEQA Considerations**. This EIR evaluates the project’s potential impacts to biological resources, surface water resources, and ground water resources, as more thoroughly described in **Section 4.1, Biological Resources** and **Section 4.2, Hydrology and Water Quality**. **Chapter 4, Environmental Setting**, includes a discussion of the environmental setting, potential impacts, and mitigation measures for each of these topical CEQA sections. **Chapter 5, CEQA Considerations** includes the following CEQA-required elements (CEQA Guidelines Sec. 15126.2):

- Growth-Inducing Effects
- Significant Irreversible Effects
- Significant and Unavoidable Effects

The project could result in potential secondary environmental effects associated with the growth-inducing aspects of the project. This EIR evaluates the proposed project’s potential secondary effects (or indirect effects) within the context of the project’s potential growth-inducing effects. **Chapter 5, CEQA Considerations** also includes an evaluation of the proposed project’s potential cumulative effects (CEQA Guidelines Sec. 15130). This EIR includes an evaluation of project alternatives in **Chapter 6, Alternatives** (CEQA Guidelines Sec. 15126.6).

² Upon issuance of the new licenses, the applicant would assign License 13868A to a limited liability company (LLC) for the purposes of holding and administering the license. This company would enter into subscription agreements with owners of parcels in the part of Cal-Am’s service area that is within the Carmel River watershed or the City of Carmel-by-the-Sea for water provided under License 13868A.

³ MPWMD has established rules that allow MPWMD to issue water permits for properties that are beneficiaries and/or recipients of water from certain specified recycled water and/or alternative water supply projects. MPWMD Rule 23.5 specifies the District’s procedures for processing applications for, and issuing, water use permits for allocations of water entitlements based on the Pebble Beach Company’s Recycled Water Project. MPWMD Rule 23.6 specifies the District’s procedures for processing applications for, and issuing, water use permits for allocations of water entitlements based on the Sand City Desalination Facility. The proposed project includes proposed new MPWMD Rule 23.7, which would specify new District procedures for processing applications for, and issuing, water use permits for allocations of water entitlements based on proposed water right License 13868A.

1.4 EIR PROCESS

CEQA Guidelines Sec. 15064(a)(1) requires the preparation of an EIR when a Lead Agency determines that there is evidence that a project may have a significant effect on the environment. The State Water Board made the determination to prepare an EIR based on a preliminary evaluation of the potential environmental effects of the project. The State Water Board, as the Lead Agency, prepared this EIR to inform the public of the potential significant environmental effects of the proposed project, identify possible ways to minimize the significant effects, and describe a reasonable range of project alternatives.

The State Water Board, as Lead Agency, notified all responsible and trustee agencies, interested groups, and individuals that the State Water Board would prepare an EIR for the proposed project. The State Water Board used the following methods to solicit input during the preparation of the EIR:

- A Notice of Preparation (NOP) was filed with the State Clearinghouse on March 4, 2014. The California State Clearinghouse assigned the proposed EIR Clearinghouse Number #2014031008.
- In addition to state agency distribution through the Clearinghouse and in accordance with the requirements of CEQA, the State Water Board circulated the NOP from March 4, 2014 to April 2, 2014 for the required 30-day review period to responsible and trustee agencies, as well as interested groups, organizations, and individuals. **Table 1-1** includes a summary of NOP comments. The State Water Board considered all comments relating to an environmental consideration during the preparation of this EIR. **Appendix A** includes a copy of the NOP and comments received by the State Water Board during the public review period.
- The State Water Board also conducted a public scoping meeting pursuant to CEQA Guidelines Sec. 15082 and 15083 on April 2, 2014 to conduct early consultation with responsible and trustee agencies and the public to solicit input on the scope of the EIR.

This EIR will be circulated for agency and public review during a 45-day public review period. The State Water Board will review all comments received on the EIR and will prepare written responses to comments as part of the Final EIR (FEIR) consistent with the requirements of CEQA Guidelines Sec. 15088. Written responses to comments will be sent to those public agencies that provided timely comments on the EIR at least 10 days prior to certification of the FEIR.

According to CEQA Guidelines Sec. 15151, adequacy of an EIR is judged by the following standards:

“An EIR should be prepared with a sufficient degree of analysis to provide decision makers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among experts. The courts have not looked for perfection but for adequacy, completeness, and a good faith effort at full disclosure.”

The State Water Board, as Lead Agency, will review and consider the FEIR. If the State Water Board concludes that the FEIR reflects the State Water Board's independent judgment and has been prepared in accordance with CEQA and the CEQA Guidelines, the State Water Board will certify the FEIR. (CEQA Guidelines Sec. 15090.) The State Water Board, as Lead Agency, is required to consider the information in the EIR, along with any other available information, in making its decision (CEQA Guidelines Sec. 15121). Although the EIR does not control the Lead Agency's ultimate decision on the project, the State Water Board must consider the information in the EIR and respond to each significant effect identified in the EIR.

A decision to approve the project would be accompanied by written findings prepared in accordance with CEQA Guidelines Sec. 15091, and if applicable, CEQA Guidelines Sec. 15093. If significant adverse environmental effects are identified in the EIR, approval of the project must be accompanied by written findings, as follows:

- A. Changes or alterations have been required in, or incorporated into, such project that mitigate or avoid the significant environmental effects thereof as identified in the completed EIR.
- B. Such changes or alterations are within the responsibility and jurisdictions of another public agency and such changes have been adopted by such other agency, or can and should be adopted by such other agency.
- C. Specific economic, social or other considerations make infeasible the mitigation measures or project alternatives identified in the EIR.

The findings of fact prepared by the Lead Agency must be based on substantial evidence in the administrative record and must include an explanation of any differences between evidence in the record and the conclusions required by CEQA (CEQA Guidelines Sec. 15091(b)). For each significant effect identified in the EIR, the findings will describe whether it can be reduced to a less-than-significant level through feasible mitigation measures and if not, why there are no feasible mitigation measures or alternatives to reduce the effect to a less-than-significant level. No aspect of the proposed project will be approved until after the FEIR is considered. If the State Water Board approves a project with significant effects on the environment that cannot be feasibly avoided or reduced to less-than-significant levels, the State Water Board must also adopt a Statement of Overriding Considerations (CEQA Guidelines 15092(b)(2)(B); see also CEQA Guidelines Sec. 15093). A Statement of Overriding Considerations explains why the Lead Agency determines that the benefits of the project outweigh the unavoidable environmental impact of the project (CEQA Guidelines Sec. 15093)

CEQA requires that a public agency adopt a monitoring program for mitigation measures that have been incorporated into the project to reduce or avoid significant effects on the environment (CEQA Guidelines Sec. 15097). The Mitigation Monitoring and Reporting Program (MMRP) describes how each of the mitigation measures will be implemented and provides a mechanism for monitoring and/or reporting on their implementation. The purpose of the MMRP is to ensure compliance with environmental mitigation measures during project implementation and operation. The plan describes monitoring and reporting procedures, monitoring responsibilities, and monitoring schedules for all mitigation measures identified in the Draft EIR. The FEIR will include a monitoring program for any mitigation measures identified in this EIR, if applicable. Any mitigation measures adopted by the State Water Board as conditions of approval for the proposed project will be included in a MMRP to verify compliance.

1.5 SUMMARY OF NOP COMMENTS

As required by State CEQA Guidelines Sec. 15082, the State Water Board issued a Notice of Preparation (NOP) on March 4, 2014, that described the proposed project, stated its intention to prepare an EIR, and requested comments from interested parties. The NOP was filed with the State Clearinghouse on March 4, 2014 (SCH #2014031008), starting a 30-day public scoping period. The review period for the NOP ended on April 2, 2014. The State Water Board received three (3) letters in response to the NOP. The comments received during this public scoping process are summarized in **Table 1-1** below. The table includes all comments pertinent to CEQA. Comments related to the merit of the proposed project are outside the purview of CEQA, and are therefore excluded from this table. The NOP prepared for the project and all comment letters received are presented in **Appendix A**.

Table 1-1
Eastwood/Odello Water Right Change Petition
Notice of Preparation Comments

Name	Date	Affiliation	Summary	Response
David J. Stoldt	March 25, 2014	Monterey Peninsula Water Management District	Commenter advises that the MPWMD Rules and Regulations (Rule 20, 21, and 22) require written MPWMD approval to amend an existing Water Distribution System and states that the MPWMD will serve as a Responsible Agency for the project.	This EIR includes a discussion of applicable MPWMD requirements in Chapter 3, Project Description .
			Commenter agrees that dedications of Cal-Am water for use on subscriber projects within the Carmel River watershed or the City of Carmel-by-the-Sea will entail a new rule promulgated by MPWMD, similar to the current Rule 23.5.	Noted.
Jeffrey R. Single	March 28, 2014	California Department of Fish and Wildlife	Commenter states that the annual appropriation of 85.6 af of water for municipal use outside the Carmel River watershed will result in adverse impacts to fish and wildlife resources by reducing instream flows needed to maintain fish and wildlife habitat within and adjacent to the river. Commenter also identifies species that have been impacted by water diversions from the Carmel River.	This EIR includes a discussion of potential environmental effects associated with the use of water outside of the watershed in Section 4.1, Biological Resources and 4.2, Hydrology and Water Quality .
			Commenter discusses the CDFW's position that the proposed project will violate the intent of State Water Board Order 95-10 and WR 2009-0060.	This EIR includes a discussion of State Water Board Order 95-10 and WR 2009-0060 in Chapter 3, Project Description .
			Commenter requests that State Water Board provide rationale in the DEIR as to why the project/change petition will not violate any order.	This EIR includes a discussion of State Water Board Order 95-10 and WR 2009-0060 in Chapter 3, Project Description .

Table 1-1
Eastwood/Odello Water Right Change Petition
Notice of Preparation Comments

Name	Date	Affiliation	Summary	Response
			<p>Commenter suggests disclosure of existing lots of record that may potentially enter into subscription agreements with the Licensee, and which lots are located outside of the Carmel River watershed. It is also suggested that the environmental impacts related to construction on or development of these lots should be analyzed in the DEIR due to potential impacts to biological resources, including special status species, outside of the Carmel River watershed.</p>	<p>This EIR includes an analysis of the potential secondary environmental effects associated with the development of existing legal lots of record. The precise locations of lots to be served are currently unknown, but the EIR includes a reasoned evaluation of potential impacts based on currently available information. This EIR evaluates the secondary effects of the proposed project in Chapter 5, CEQA Considerations.</p>
			<p>Commenter requests biological surveys be conducted at the appropriate time of year by qualified biologists to determine what sensitive species may occur on lots prior to construction.</p>	<p>The development of future legal lots of record will be subject to standard environmental and development review process, which, depending on site-specific circumstances may require the preparation of biological surveys. This EIR identifies that future site-specific analysis may be warranted for development of future lots of record, as described in Section 5, CEQA Considerations.</p>
			<p>Commenter requests clarification on how 99 acres in License 13868 relates to the 54.9 acres Place of Use identified in Permit 20905B.</p>	<p>This EIR includes a detailed discussion of the existing POU in Chapter 3, Project Description.</p>
			<p>Commenter seeks explanation of what/how a water right, identified as a donation, gets retired so that any water right that was reported as donated would not be later reauthorized for use by way of any subsequent application.</p>	<p>Noted. This comment does not raise an environmental issue warranting evaluation in this EIR.</p>
			<p>Commenter asserts the CDFW's role and authority as a Trustee Agency.</p>	<p>Noted.</p>
			<p>Commenter asserts the CDFW's role and authority as a Responsible Agency.</p>	<p>Noted.</p>

Table 1-1
Eastwood/Odello Water Right Change Petition
Notice of Preparation Comments

Name	Date	Affiliation	Summary	Response
			<p>Commenter states that they have jurisdiction over actions which may result in “take” and that a Lake or Streambed Alteration Agreement may be necessary. The commenter also notes that the project could result in “take” of birds and that the mitigation measures for raptors and other birds are included in the EIR if there is a loss of vegetation associated with the project.</p>	<p>This EIR evaluates the potential effects of the proposed project in Section 4.1, Biological Resources.</p>
			<p>Commenter recommends consulting with the United States Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) on potential impacts to federally listed species.</p>	<p>This EIR evaluates the potential impacts of the proposed project on federally listed species in Section 4.1, Biological Resources.</p>
Roy L. Thomas	April 2, 2014	Individual	<p>Commenter states that the existing conditions discussed in the background Balance Hydrologics report are inaccurate.</p>	<p>The information contained in the underlying technical analysis was obtained from a variety of sources, including MPWMD annual reports, United States Geological Survey (USGS) streamflow data, field visits, review of aerial photograph, and other published material. Chapter 7, References, includes a list of all relevant source material used during the preparation of this EIR.</p>
			<p>Commenter asserts that the environmental conditions on the Carmel cannot be evaluated with average flows. The project will negatively impact young fish, smolts, and adults entering when the lagoon spills at flow of 40 cfs or less.</p>	<p>The environmental analysis in this EIR considers flows during a variety of conditions, including extremely wet, wet, above normal, normal, below normal, dry, and critically dry. Section 4.1, Biological Resources, describes the proposed project’s potential impacts on steelhead.</p>
			<p>Commenter states that the data by Balance Hydrologics downplays the effects of the project diversions by assuming constant rates over all wells, even though wells are not operated at a constant rate.</p>	<p>This EIR evaluates the potential impacts of the proposed project in terms of groundwater pumping in Section 4.2, Hydrology and Water Quality.</p>
			<p>Commenter disagrees with the conclusion that “no impact to inflows to the lagoon would result”.</p>	<p>Impacts to the Carmel River Lagoon are described in Section 4.2, Hydrology and Water Quality.</p>

Table 1-1
Eastwood/Odello Water Right Change Petition
Notice of Preparation Comments

Name	Date	Affiliation	Summary	Response
			Commenter proposes that the 46.2 cfs be pumped into the river channel near the lagoon and added to the Carmel River Steelhead Association (CRSA) Well Water Enhancement Project rather than be “dedicated to in stream uses”.	Noted. This comment does not raise an environmental issue warranting evaluation in this EIR.
			Commenter states that drawdown of “less than 1 foot over a 7 day period or seasonal drawdown of four feet” is significant in dry years and could delay flows to the lagoon.	This EIR includes an evaluation of potential impacts to the riparian corridor according to the methodology developed by McNiesh (1986), which previously evaluated the effects of municipal pumping on vegetation stress in the lower reaches of the Carmel River. The result of this analysis is described in Section 4.1, Biological Resources .
			Commenter states that background studies and reports used in Balance Hydrologics’ report relied on dated information such as river substrate and habitat.	The information contained in the underlying technical analysis was obtained from a variety of sources, including MPWMD annual reports, USGS streamflow data, field visits, review of aerial photograph, and other published material. Chapter 7, References , includes a list of all relevant source material used during the preparation of this EIR.
			Commenter states that the river segment from Schulte Bridge to the Lagoon is prime steelhead habitat, contrary to the Balance Hydrologics’ report.	This EIR evaluates potential impacts to steelhead habitat in Section 4.1, Biological Resources . Additional supporting material was prepared in response to this comment; please refer to Appendix D-2 for more information.
			Commenter states that project could adversely impact CRSA and MPWMD steelhead rescue actions.	This EIR includes a discussion of applicable CRSA and MPWMD rescue operations. Please refer to Section 4.1, Biological Resources .
			Commenter suggests the project be reevaluated using a closer examination of critical stream flow in the lower river for the use of young of the year steelhead.	This EIR evaluates potential impacts to critical riffles in Section 4.1, Biological Resources . Additional supporting analysis is included in Appendix C-2 and Appendix D-2 .

Chapter 2 SUMMARY

2.1 INTRODUCTION

CEQA Guidelines Sec. 15123(a) states that “an EIR shall contain a brief summary of the proposed action and its consequences.” CEQA Guidelines Sec. 15123(b) further states that the summary shall identify: each significant effect with proposed mitigation measures and alternatives that would reduce or avoid that effect (CEQA Guidelines Sec. 15123(b)(1)); areas of controversy known to the Lead Agency (CEQA Guidelines Sec. 15123(b)(2)); and, issues to be resolved including the choice among alternatives and whether or how to mitigate the significant effects (CEQA Guidelines Sec. 15123(b)(3)). This summary provides a brief description of the proposed project, project alternatives, and the significant impacts identified during the environmental analysis. This section also provides an overview of areas of known controversy. This summary is intended as an overview. For a more comprehensive evaluation of the project and its corresponding environmental effects, please refer to the topical CEQA sections included in this EIR. The information contained in the following chapters of this EIR serves as the basis for this summary.

2.2 SUMMARY OF PROJECT DESCRIPTION

The proposed project would split existing License 13868 into two new licenses and result in changes to the authorized POD, POU, and purposes of use of the new licenses. License 13868 would be revoked and Licenses 13868A and 13868B would be issued. License 13868A would maintain the existing PODs, POU, and purpose of use and include new authorized PODs, POU, and purposes of use. With the changes, the right holder would receive additional authorization to divert water from three existing Cal-Am wells (Cañada #2, Cypress #2, and Pearse) to provide potable water for municipal purposes to existing lots of records within the parts of Cal-Am’s service area that are within the Carmel River watershed or the City of Carmel-by-the-Sea. License 13868B would be dedicated to instream uses within the Carmel River. The project would not increase the maximum authorized annual diversion rate or the maximum authorized instantaneous diversion rate beyond the existing authorized rates in License 13868.

In addition to the changes to the existing license, the project also would involve the adoption of a new rule by the MPWMD. The new rule, which would be similar to District Rule 23.5, would allow MPWMD to issue water use permits to owners of existing lots of record within the parts of Cal-Am’s service area that are within the Carmel River watershed or the City of Carmel-by-the-Sea, and that have entered into subscription agreements with the licensee. For more information concerning the project, including specifics for each of the proposed new licenses, please refer to **Chapter 3, Project Description**.

2.3 ALTERNATIVES EVALUATED IN THIS DEIR

CEQA Guidelines Sec. 15126.6 requires the consideration of a range of reasonable alternatives to the proposed project that could feasibly attain most of the basic project objectives and would avoid or substantially lessen the significant effects of the project. The discussion of alternatives should focus on alternatives capable of eliminating the significant adverse impacts of the project or reducing them to a less-than-significant level, even if the alternative would not fully attain most of the basic project objectives or would be more costly (CEQA Guidelines Sec. 15126.6(b)). An EIR must consider a reasonable range of

potentially feasible alternatives that will foster informed decision-making. The range of potential alternatives is governed by the “rule of reason,” which requires the evaluation of alternatives “necessary to permit a reasoned choice” (CEQA Guidelines Sec. 15126.6(f)). The alternatives evaluated in this EIR are summarized below. These alternatives are more fully described in **Chapter 6, Alternatives**.

- **No Project Alternative:** CEQA requires the discussion of the No Project Alternative “to allow decision makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project” (CEQA Guidelines Sec. 15126.6(e)). According to the CEQA Guidelines Sec. 15126.6(e)(2), the No Project Alternative shall discuss what would reasonably be expected to occur in the foreseeable future if the project were not approved (CEQA Guidelines Sec. 15126.6(e)(2) and 15126.6(e)(3)(c)). The No Project Alternative would result in the continued diversion of Carmel River subterranean flow under License 13868 for irrigation purposes. No changes in POD, POU, or purposes of use would occur under this alternative. Water would continue to be diverted and used under License 13868 to irrigate agricultural land. No municipal use would occur.
- **Individual Well Alternative:** Consistent with the Proposed Project, this alternative would split License 13868 into two new licenses and result in changes to the authorized PODs, POU and purposes of use. Unlike the Proposed Project, this alternative would involve the construction of an individual well (or rehabilitation of an existing well) as the new authorized POD for diversion of water for municipal use under License 13868A. This well would be located in the general vicinity of the existing Cal-Am Cañada #2 well. This alternative would also require the construction of other infrastructure improvements (i.e., pipeline) to connect with Cal-Am’s existing water distribution system. All other aspects of this alternative would be the same as the proposed project.
- **Existing POD Alternative:** Consistent with the Proposed Project, this alternative would split License 13868 into two new licenses and result in changes to the authorized POU and purposes of use. Unlike the Proposed Project, this alternative would not include a change in the authorized PODs. This alternative would use the existing Odello Well #2 as the authorized POD for diversion of water for municipal use under License 13868A. The existing well would be upgraded or retrofitted for municipal use and approximately 8,500 feet of new pipeline would be constructed to connect Odello Well #2 with Cal-Am’s existing distribution system. Because Odello Well #2 is located on the south side of the Carmel River, the new pipeline would cross the riparian corridor, including the Carmel River, to interconnect with the existing Cal-Am pipeline on the north side of the Carmel River. All other aspects of this alternative would be the same as the proposed project.
- **Alternative Place of Use:** Consistent with the Proposed Project, this alternative would split License 13868 into two new licenses and result in changes to the authorized PODs, POU and purposes of use consistent with the proposed project. Unlike the Proposed Project, this alternative would include a POU that omits the portions of the jurisdictional boundaries of the City of Carmel-by-the-Sea that are outside of the Carmel River watershed.

2.4 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA requires that an environmentally superior alternative to the proposed project be specified, if one is identified. In general, the environmentally superior alternative is supposed to minimize adverse effects of the proposed project while achieving the basic project objectives. The No Project Alternative would be environmentally superior to the alternatives evaluated in this EIR since this alternative would not involve the construction of either a new well, or other infrastructure that would result in potential direct effects on the environment. This alternative would not, however, achieve the basic project objectives. In addition, CEQA Guidelines Sec. 15126.6(e)(2) states: “If the environmentally superior alternative is the “no project” alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives.

This EIR evaluated a range of alternatives to the proposed project that would achieve most of the basic objectives of the proposed project and would avoid and/or lessen the extent of potential effects associated with the proposed project. All potential environmental effects associated with the proposed project would be less-than-significant, as described in **Section 4.1, Biological Resources** and **Section 4.2, Hydrology and Water Quality**. The alternatives selected for further evaluation in this EIR, while minimizing the potential effects of the proposed project, would result in a variety of additional environmental effects beyond those associated with the proposed project. The alternatives described above would require the construction of potential infrastructure improvements (e.g., wells, pipelines, etc.) which would physically impact the environment and could affect existing biological resources within the Carmel River corridor.

The various alternatives evaluated in this EIR would result in the construction of physical improvements and related infrastructure, which would result in additional direct environmental effects beyond those associated with the proposed project. As a result, the Alternative Place of Use alternative could be environmentally superior to the other alternatives analyzed in this EIR. This alternative would not result in the physical construction of infrastructure improvements and therefore would not result in any additional environmental impacts beyond those associated with the project. Whereas, the Individual Well Alternative and Existing POD alternative would both result in the construction of physical improvements and related infrastructure, which could result in greater direct effects than the proposed project. While the Alternative Place of Use alternative would be superior in the sense that it would result in less adverse effects than the other alternatives, it would not lessen or otherwise avoid the adverse, albeit less-than-significant, impacts associated with the project.

The Existing POD Alternative could also be considered environmentally superior to other alternatives evaluated in this EIR since it would avoid the direct, albeit less-than-significant, impacts to biological resources and hydrology and water quality associated with the proposed project due to the change in POD. However, this alternative would require the construction of physical improvements to upgrade the existing well for municipal purposes, in addition to the construction of approximately 8,500 feet of pipeline to connect with Cal-Am’s existing water distribution improvements located on the north side of the Carmel River near Rancho Cañada. Therefore, this alternative, while superior in the sense that it would avoid the project’s direct effects, would result in comparatively greater impacts than the other project alternatives (and the proposed project) due to the construction of infrastructure improvements, which would have to cross the Carmel River and could potentially adversely affect the riparian corridor.

While both the Alternative Place of Use alternative and Existing POD Alternative would be considered superior in some regards, the Individual Well Alternative is herein identified as the environmentally superior

alternative. This alternative is identified as the environmentally superior alternative on the basis that this alternative would involve limited (less-than-significant) construction related effects (i.e., construction of new well or rehabilitation of existing well) as compared to the other alternatives. The Individual Well alternative also includes the construction (or rehabilitation) of a well that is located farther downstream of the proposed PODs, and therefore would result in a smaller affected reach of the Carmel River than the affected reach under the proposed project, although as explained in **Chapter 6, Alternatives**, the relative impacts between this alternative and the proposed project in this regard are nominal and under each scenario would result in a less than significant impact.

2.5 SUMMARY OF PROJECT IMPACTS

The proposed project would not result in any significant and unavoidable impacts. All potential project-related impacts would be less-than-significant. **Table 2-1** summarizes the direct effects of the proposed project. Secondary effects associated with the proposed project are described in **Chapter 5, CEQA Considerations**. No significant secondary effects would occur due to the proposed project.

Table 2-1
Summary of Potential Direct Effects

Impact	Summary	Significance	Mitigation	Residual
Section 4.1, Biological Resources				
BIO – 1	The project could potentially have a substantial adverse effect, either directly or through habitat modifications, on species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the Department or Service.	Less-than-Significant	None	Less-than-Significant
BIO – 2	The project could potentially have a substantial adverse effect on riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the Department or Service.	Less-than-Significant	None	Less-than-Significant
BIO – 3	The project could potentially have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;	Less-than-Significant	None	Less-than-Significant
BIO – 4	The project could potentially interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.	Less-than-Significant	None	Less-than-Significant
BIO – 5	The project could potentially conflict with local policies or ordinances protecting biological resources, such as tree preservation policy or ordinance;	No Impact.	None.	No Impact.
BIO – 6	The project could potentially conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state	No Impact.	None.	No Impact.

**Table 2-1
Summary of Potential Direct Effects**

Impact	Summary	Significance	Mitigation	Residual
	habitat conservation plan.			
BIO – 7	The project could potentially impede the use of native wildlife nursery sites or directly harm nesting species protected under the provisions of the MBTA.	Less-than-Significant	None	Less-than-Significant
Section 4.2, Hydrology and Water Quality				
HYD – 1	The proposed project could impair the achievement of beneficial uses (both surface water and groundwater) by either causing or contributing to a violation of water quality standards or waste discharge requirements.	Less-than-Significant	None	Less-than-Significant
HYD – 2	The proposed project could substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level that would cause, the production rate of pre-existing nearby wells to drop to a level which would not support existing land uses or planned uses for which permits have been granted or would cause lowered levels would a significant adverse impact on the health of the riparian corridor.	Less-than-Significant	None	Less-than-Significant
HYD – 3	The project could potentially otherwise substantially degrade water quality.	Less-than-Significant	None	Less-than-Significant
HYD – 4	The project could substantially decrease the amount of streamflow such that there would be a potential for impacts to other public trust resources such as river functions, riparian vegetation, and lagoon functions.	Less-than-Significant	None	Less-than-Significant

2.6 AREAS OF KNOWN CONTROVERSY

CEQA Guidelines Sec. 15123 states that an EIR shall identify areas of controversy known to the Lead Agency. Based on comment letters received during the NOP public review period and comments provided during the scoping meeting, the following environmental issues are known to be of concern and may be controversial (each issue will be further discussed in the EIR):

- Impacts to fish and wildlife habitat along the Carmel River, including potential steelhead habitat;
- Impacts to steelhead due to localized increases in pumping that could reduce the duration and amount of surface flows in the mainstem of the Carmel River downstream of the proposed POD; and,
- Potential secondary effects of the proposed project.

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Chapter 3 PROJECT DESCRIPTION

3.1 INTRODUCTION

This chapter presents the description of the proposed Eastwood/Odello Water Right Change Petition Project (project or proposed project) pursuant to the requirements of CEQA Guidelines Sec. 15124. This chapter includes a description of the project location (CEQA Guidelines Sec. 15124(a)), including associated exhibits, a statement of objectives (CEQA Guidelines Sec. 15124(b)), a description of the project's relevant characteristics (CEQA Sec. 15124(c)), and a statement of the intended use of the EIR (CEQA Sec. 15124(d)). The State Water Board is the Lead Agency for the purposes of this project (CEQA Guidelines Secs. 15050-15051) and is responsible for preparing the EIR in accordance with the requirements of CEQA (CEQA Guidelines Sec. 15120 through Sec. 15132). MPWMD is a CEQA Responsible Agency because the proposed project would include the adoption of a new rule by the MPWMD (CEQA Guidelines Sec. 15381).

The proposed project includes potential State Water Board action on the petition of Clint Eastwood and the Margaret Eastwood Trust (collectively "Eastwood") to split existing License 13868 into two new licenses, 13868A and 13868B. Existing License 13868 authorizes the diversion of water from the Carmel River subterranean flow for the purpose of use of irrigation of a 99-acre area south of the Carmel River and east of State Route 1 (SR 1). License 13868 authorizes a maximum annual diversion rate of 131.8 af/yr and a maximum instantaneous diversion rate of 0.45 cfs from two PODs located on the Eastwood property during the year round season (January –December).

Proposed new License 13868A would maintain both of the existing PODs, POU and purpose of use currently authorized under License 13868 and would add new PODs, expand the POU, and add a new purpose of use to allow municipal use to serve existing lots of record in the parts of Cal-Am's service area that are within the Carmel River watershed or the City of Carmel-by-the-Sea. Proposed new License 13868B would dedicate a portion of water under License 13868 to instream uses. While the project would result in the creation of two new licenses, which would supersede the existing license, the proposed project would not increase the maximum authorized annual diversion rate or the maximum authorized instantaneous rate beyond the rates established in License 13868 (see below for further discussion). All diversions in connection with the project would occur through existing Cal-Am wells and all conveyances would be through existing Cal-Am facilities. Consequently, the project does not include the construction of any new water distribution system improvements or other physical elements.

The following sections have been prepared consistent with the requirements of CEQA Guidelines Sec. 15124. The following contains detailed descriptions of applicable regulatory requirements, the project location, historical background and context, relevant project characteristics, project goals and objectives, and intended use of this EIR. This chapter describes the proposed objectives, the purpose of use, the proposed place of use, and numerical diversion and rate limits. The project location and background, including the history of water development as it relates to the project are also described. In addition, this chapter describes the State Water Board's water right process and the MPWMD's water use permit process.

3.2 STATE WATER BOARD WATER RIGHT PROCESS

This section is for informational purposes and provides a general overview of State Water Board's water right process. This section is intended to help facilitate the review of the proposed project and the analysis contained in this EIR. For more information, please refer to the Water Code and State Water Board's website, which has a general overview of the water right process.¹

The State Water Board administers the State's statutory water right permit and license system, which applies to appropriations of water from surface streams and subterranean streams flowing through known and definite channels (Water Code, Sec. 1200). California has developed a dual system of water rights: appropriative and riparian rights. An appropriative water right authorizes the diversion of a specified quantity of water at specific points of diversion, for a reasonable, beneficial uses at specific places of use for specific purposes of use. To obtain a new appropriative water right, the appropriator must: (a) file a water right application with the State Water Board that details the proposed place of diversion and the intended use (Water Code, Sec. 1260), (b) obtain a permit pursuant to the application; and (c) divert and beneficially use water pursuant to the permit. After all of these steps occur, the State Water Board may issue a license, which then supersedes the permit and confirms the appropriative right (Water Code, Sec. 1610). In contrast to an appropriative right, a riparian right typically entitles a landowner to divert a share of the water flowing past his or her property for beneficial use on the property, provided the diversion and use is reasonable and beneficial. No permit from the State Water Board is necessary to exercise a valid claim of riparian right.

If a holder of an existing water-right permit or license wants to change the authorized POD, POU or purpose of use, then the holder must file a change petition with the State Water Board. The petition must describe the proposed new POD, POU, and purposes of use (Water Code, Sec. 1701.2.). If the State Water Board concludes that the requested changes will not initiate a new right or injure any other legal user of the water involved, then the State Water Board may approve the petition (Water Code, Secs. 1702, 1704; Cal. Code Regs., tit. 23, Sec. 791(a)).

In addition to its statutory responsibilities, the State Water Board has an independent obligation to consider the effect of projects on public trust resources and to protect those resources where feasible (National Audubon Society v. Superior Court (1983) 33 Cal.3d 419 [189 Cal.Rptr. 346]). When the State Water Board decides whether or not to issue a water-right permit or approve a change petition, the State Water Board may include terms and conditions to protect existing water rights, the public interest, and the public trust, and to ensure that water is put to reasonable and beneficial use.

This CEQA document is intended to support the State Water Board process for the Eastwood/Odello water right change petition.

¹California Environmental Protection Agency, State Water Resources Control Board (October 2013). *The Water Rights Process*, http://www.waterboards.ca.gov/waterrights/board_info/water_rights_process.shtml

3.3 MPWMD WATER USE PERMIT PROCESS

The MPWMD is responsible for issuing water connection permits for new and expanded uses within its boundaries, and managing and regulating the use, reuse, reclamation, and conservation of water within its boundaries. The MPWMD consists of approximately 95,786 acres, including all of the City of Carmel-by-the-Sea and approximately 23,980 acres of Cal-Am’s service area. All property owners that seek to modify or add water fixtures within the MPWMD boundaries must obtain written authorization from the District. MPWMD generally issues permits when there is an available MPWMD water allocation within the particular jurisdiction or existing water credits are available to serve the proposed use.² MPWMD Rule 20.B provides that, before any person may connect, or modify an existing connection, to a water distribution system, the person must obtain a written permit from the District pursuant to Rules 21, 23 and 24.

MPWMD has also established rules that allow MPWMD to issue water use permits for properties that are beneficiaries and/or recipients of water from certain specified recycled water and/or alternative water supply projects. For example, MPWMD Rule 23.5 specifies the District’s procedures for processing applications for, and issuing, water use permits for allocations of water entitlements based on the Pebble Beach Company’s Recycled Water Project. MPWMD Rule 23.6 specifies the District’s procedures for processing applications for, and issuing, water use permits for allocations of water entitlements based on the Sand City Desalination Facility. The proposed project includes proposed new MPWMD Rule 23.7, which would specify new District procedures for processing applications for, and issuing, water use permits for allocations of water entitlements based on proposed License 13868A.

This CEQA document is intended to support the MPWMD process for consideration of adoption of this proposed new rule.

3.4 EXISTING CAL-AM CONVEYANCE SYSTEM

The proposed project would rely on existing Cal-Am wells and associated conveyance system to distribute water under proposed new License 13868A. The following section provides an overview of Cal-Am’s existing water distribution system. This information is provided for informational purposes.

Cal-Am is an investor-owned utility that owns and operates wells, infrastructure, and water distribution systems that provide municipal water service to customers in the Monterey Peninsula area, including parts of the Carmel River watershed and the City of Carmel-by-the-Sea. Cal-Am’s existing system consists of storage reservoirs on the Carmel River, production wells, treatment facilities, and approximately 500 miles of existing water mains ranging in size from two (2) to 36 inches in diameter. Historically, the balance of water supplied to Cal-Am customers on the Monterey Peninsula came from: (1) San Clemente and Los Padres Reservoirs in the upper reaches of the Carmel River, 2) diversions from the upper and lower reaches of the Carmel River (through groundwater production wells), and (3) groundwater pumped from the Seaside Groundwater Basin. As described elsewhere in this EIR, the San Clemente Dam is currently in the process of being removed as part of the San Clemente Dam Removal and Carmel River Reroute Project (see **Chapter 5, CEQA Considerations**).

² Currently, there is no water is available in the County’s allocation, and limited water available in the City of –Carmel-by-the-Sea’s allocation.

The following is a brief overview of Cal-Am's existing water distribution system. A detailed description of Cal-Am existing water distribution system is available in the CPUC's 2009 Coastal Water Project Final EIR; please refer to that document for more information.

3.4.1 Surface Storage Reservoirs

Cal-Am currently owns and operates two (2) existing dams and associated storage reservoirs on the Carmel River. The San Clemente Dam, which was constructed in 1921, consists of a concrete arch dam. The Los Padres Dam, which was constructed in 1951, consists of an earth and rockfill embankment dam that is located approximately six (6) miles upstream from the San Clemente Dam. Historically, these dams have regulated winter and summer flows to the lower reaches of the Carmel River. Winter runoff is stored in these reservoirs to provide water supplies to help meet summer demand; excess winter flows are bypassed at the dams. Extensive sedimentation has significantly reduced the usable storage at both the San Clemente and Los Padres reservoirs. The San Clemente Dam is currently in the process of being removed (please refer to **Chapter 5, CEQA Considerations** for a detailed discussion of this project). At the time the State Water Board issued Order WR 95-10, production wells located along the lower Carmel River represented Cal-Am's primary source of water. These wells supply approximately 73 percent of Cal-Am's customer demand.

3.4.2 Production Wells and Treatment

The majority of Cal-Am's water supply for the Monterey Peninsula and surrounding areas comes from groundwater production wells located along the Carmel River. Cal-Am currently operates 20 production wells (10 of which are in the Carmel River watershed and 10 of which are in the Seaside Groundwater Basin) (CPUC, 2009; MPWMD, 2013). The majority of wells in the Carmel River Watershed, including wells proposed as authorized POD for License 13868A, are located in the lower reaches of the river. A few production wells are located in the upper reaches of the river. During the summer peak-demand period, Cal-Am also relies on production wells in the Seaside Groundwater Basin, an adjudicated basin. In addition to operating production wells, Cal-Am also operates eight (8) water treatment facilities. Treatment varies by site, but generally includes: pressure filtration for iron and manganese removal; granular activated carbon (GAC) and Ozone (O₃) injection for hydrogen sulfide removal; corrosion control; and pH adjustment. Sodium hypochlorite is used to provide disinfection at each well and treatment facility that provides water to the distribution system (CPUC, 2009).

3.4.3 Distribution Network

Cal-Am's existing distribution network consists of over 500 miles of water mains, ranging in size from two to 36 inches in diameter and extends from Carmel Valley to Sand City. The system includes the urban areas of the Monterey Peninsula, as well as several smaller satellite systems along the Highway 68 corridor. The existing system is divided into four pressure zones: the Upper Carmel Valley zone, the Lower Carmel Valley and Monterey Peninsula zone, the Seaside zone, and Upper Lift zone. Cal-Am also operates a series of booster stations, ground storage reservoirs, and pressure-reducing facilities as part of the existing network.

Water produced from wells along the upper and lower reaches of the Carmel River is conveyed in two (2) directions: westward and clockwise around the Monterey Peninsula to the City of Monterey; and northward to the City of Seaside. The two flows converge at a low elevation (a hydraulic trough) near the Naval Postgraduate School in Monterey. This hydraulic trough prevents water produced along the Carmel River

from being conveyed clockwise around the Monterey Peninsula to Seaside, and also prevents water produced in Seaside from being conveyed counterclockwise around the Monterey Peninsula (CPUC, 2006).

3.5 PROJECT LOCATION

3.5.1 Regional Project Location

The proposed project would involve a change petition to allow the use of the Carmel River subterranean stream for municipal purposes within the Carmel River watershed and the City of Carmel-by-the-Sea. The existing POD and POU for License 13868, the proposed POD and POU for License 13868A and the proposed POU for License 13868B are all located within the Carmel River watershed and/or the City of Carmel-by-the-Sea, which includes areas outside of the Carmel River watershed. The following is an overview of the Carmel River watershed.

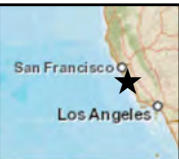
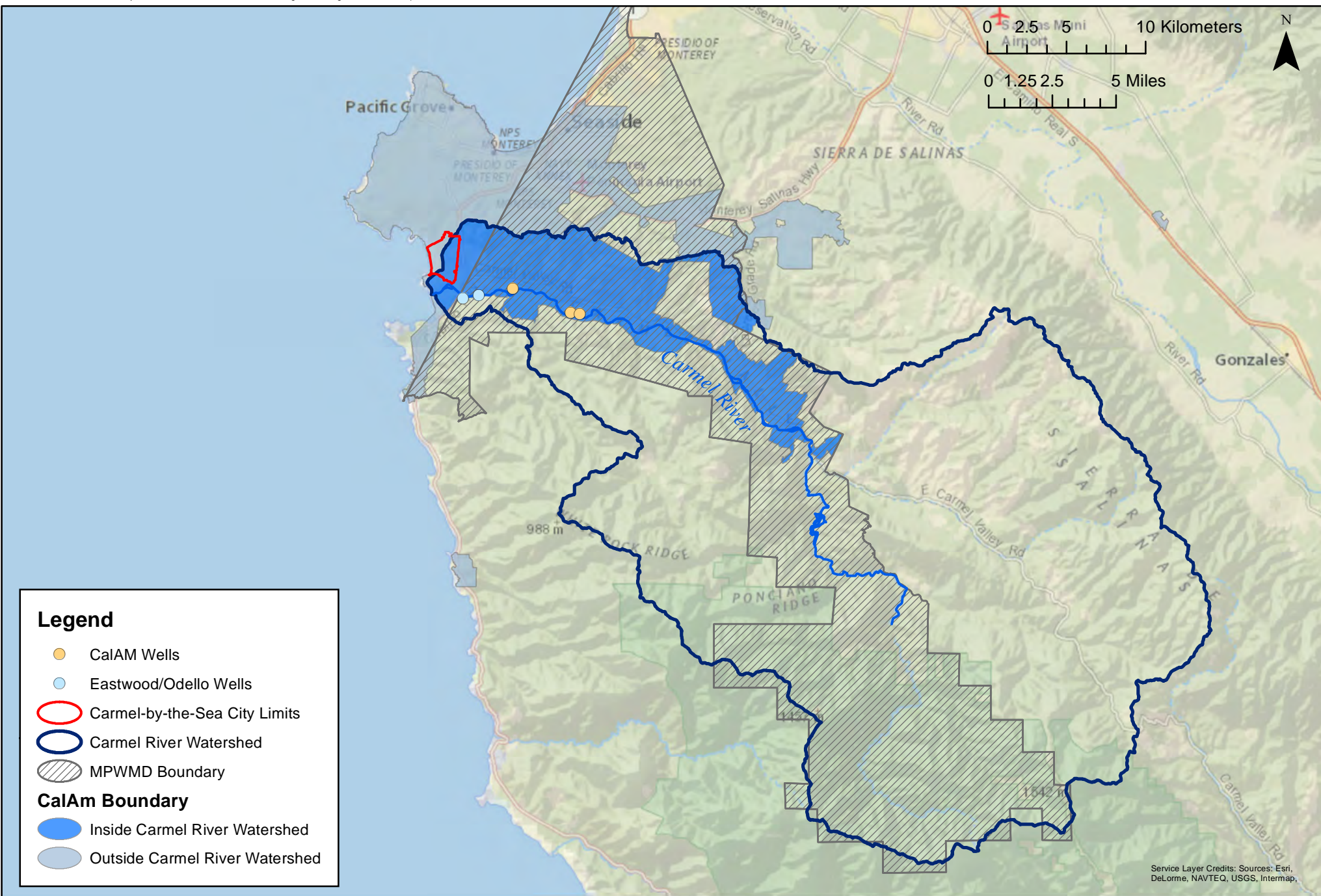
The Carmel River watershed is located south of the Monterey Peninsula on the Central California coast (**Figure 3-1**). The watershed, which consists of approximately 250 square miles, is bounded by the Sierra de Salinas ranges on the northeast and the Santa Lucia Range on the southeast (**Figure 3-2**). The Carmel River flows northwest from the Santa Lucia Mountains, through Carmel Valley, and into the Pacific Ocean. The Carmel River originates approximately 35 miles upstream from the Pacific Ocean at an elevation of 3,500 feet above sea level. The valley floor, which covers approximately six (6) square miles and contains the alluvial groundwater basin, consists primarily of areas of agricultural and urban development.

The watershed has a typical coastal California wet-dry seasonal pattern. Approximately 80 percent of the annual precipitation falls during January through April. Mean annual rainfall varies across the watershed from about 14 inches along the northeast perimeter of the watershed to over 40 inches in the upper watershed area, with an average of about 17 inches/year (USGS, 1984). More than 90 percent of the annual rainfall occurs over the watershed during the six month period between November and April. Annual rainfall totals can vary significantly from year to year (Davids Engineering, 2013).

3.5.2 Project Study Area/Project Affected Reach

The proposed project has two distinct geographical locations: 1) the existing and proposed PODs, and 2) the existing and proposed POU. These two locations collectively comprise the “project site.” The existing PODs include two locations south of the Carmel River and east of SR 1 (**Figure 3-3**); the proposed PODs include the existing PODs and three existing Cal-Am wells along the Carmel River (**Figure 3-4**). The proposed POU includes the existing POU, and 16,595 acres of Cal-Am’s existing service area in the Carmel River watershed and 526 acres of Cal-Am’s service area within the City of Carmel-by-the-Sea.

Potential direct effects associated with the proposed project would occur exclusively within the geographic area comprising of the existing and proposed POD. Potential indirect effects would occur within the area representing the proposed POU. Accordingly, the analysis contained in this EIR specifically evaluates potential direct and indirect effects according to the applicable geographic context.



Title: **Regional Location**

Date: 10/27/2014

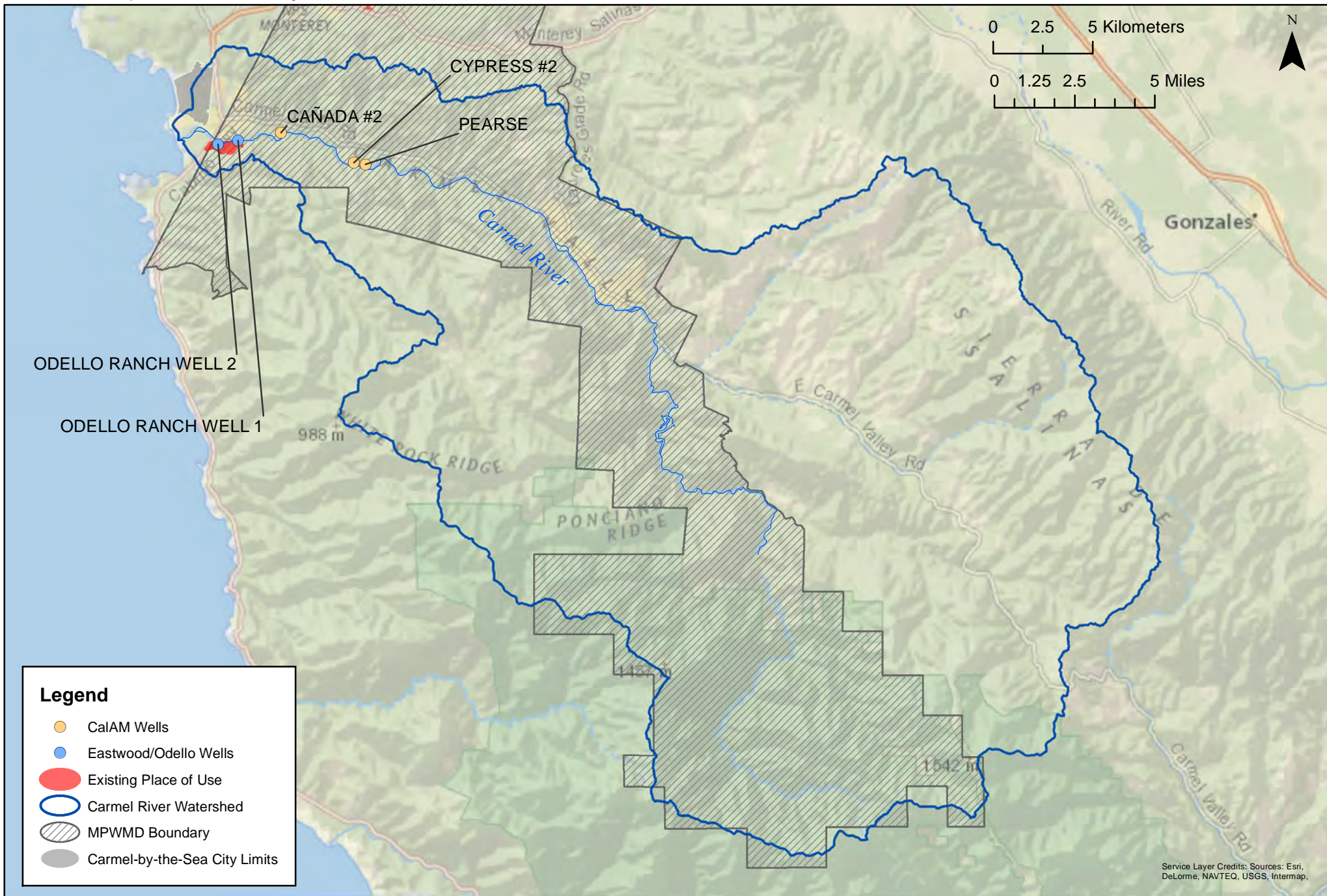
Scale: 1 inch = 5 miles

Project: 2013-24

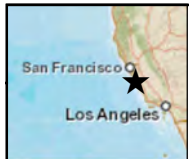


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Figure
3-1



Service Layer Credits: Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap.



Title: **Carmel River Watershed**

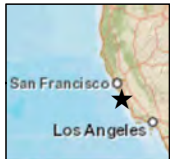
Date: 10/24/2014
 Scale: 1 inch = 4 miles
 Project: 2013-24



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Figure
3-2

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Title: **Existing Place of Use and Points of Diversion**

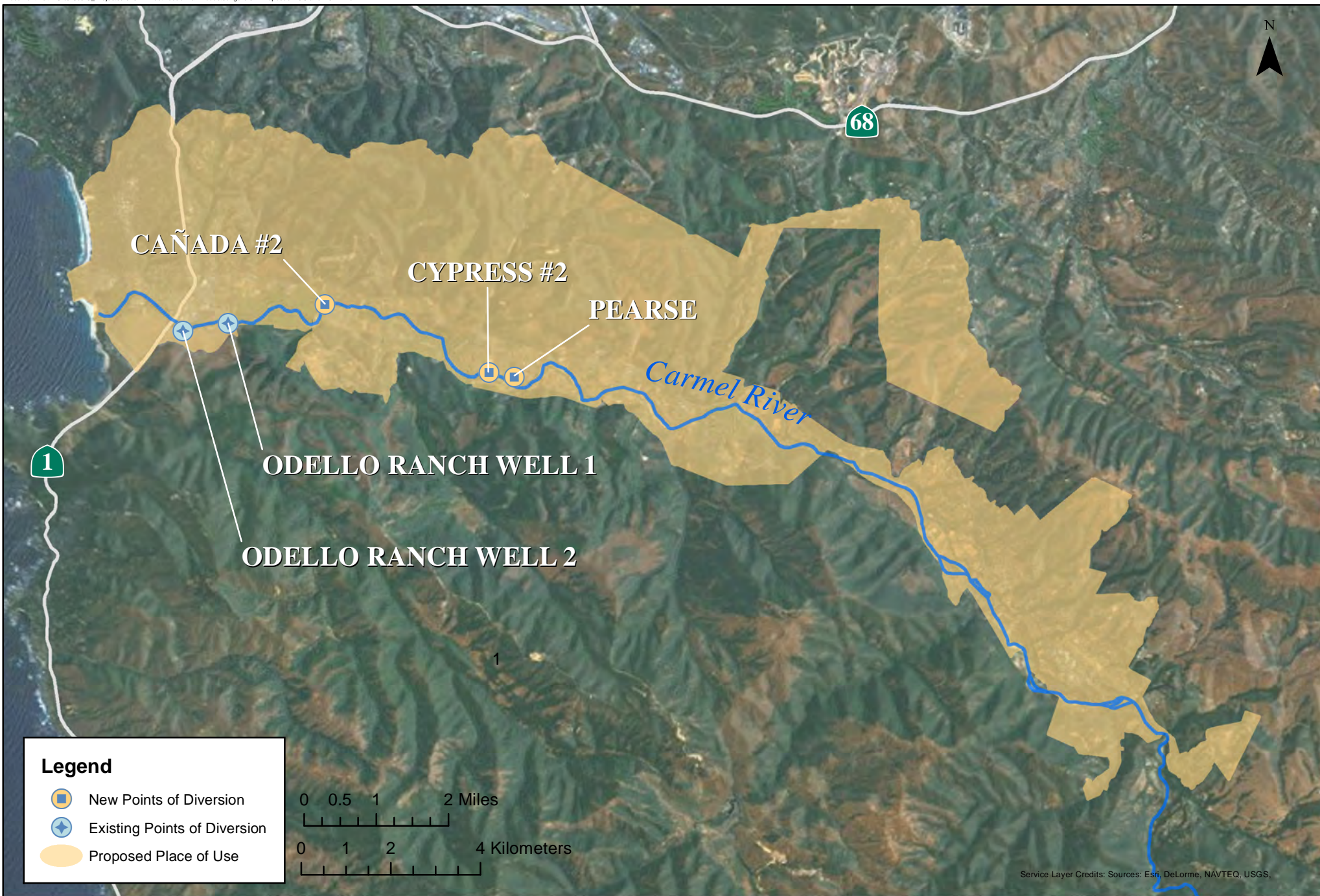
Date: 10/24/2014
 Scale: 1 inch = 0.2 miles
 Project: 2013-24



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Figure
3-3

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	<p>Title: Proposed Place of Use and Points of Diversion</p>	<p>Date: <u>10/24/2014</u></p> <p>Scale: <u>1 inch = 2 miles</u></p> <p>Project: <u>2013-24</u></p>	<p>Denise Duffy and Associates, Inc. Environmental Consultants Resource Planners 947 Cass Street, Suite 5 Monterey, CA 93940 (831) 373-4341</p>	<p>Figure 3-4</p>
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For the purposes of evaluating the direct effects, this EIR considers potential effects within a five-mile reach of the Carmel River. This five-mile reach, which is referred to as the “project study area” or “project affected reach” for the purposes of this EIR, consists of the portion of the Carmel River between the existing authorized POD and the proposed furthest upstream proposed POD (**Figure 3-5**). The project study area represents the area in which the proposed project could result in a potential localized direct physical impact to the environment. Potential indirect effects could occur within the unincorporated area of Monterey County that is located in the Carmel River watershed and/or the City of Carmel-by-the-Sea. This area represents the proposed POU. This EIR evaluates the potential indirect effects of the proposed project within the proposed POU.

3.5.3 Surrounding Land Uses

The proposed project (including existing and proposed POU and PODs, as well as the project affected reach) is generally surrounded by existing urban development (i.e. residential and commercial uses) and agricultural uses located along the Carmel River. The existing POU and PODs are surrounded by commercial use to the north and open space uses to the south, east and west. SR 1 is located west of the existing POU and PODs. The proposed POU is considerably larger and is generally surrounded by existing urban development within the City of Carmel-by-the-Sea and urban and agricultural uses. The proposed PODs are located along the lower Carmel River and are generally surrounded by existing residential development and agricultural uses. **Figure 3-6** depicts the surrounding uses.


3.6 BACKGROUND

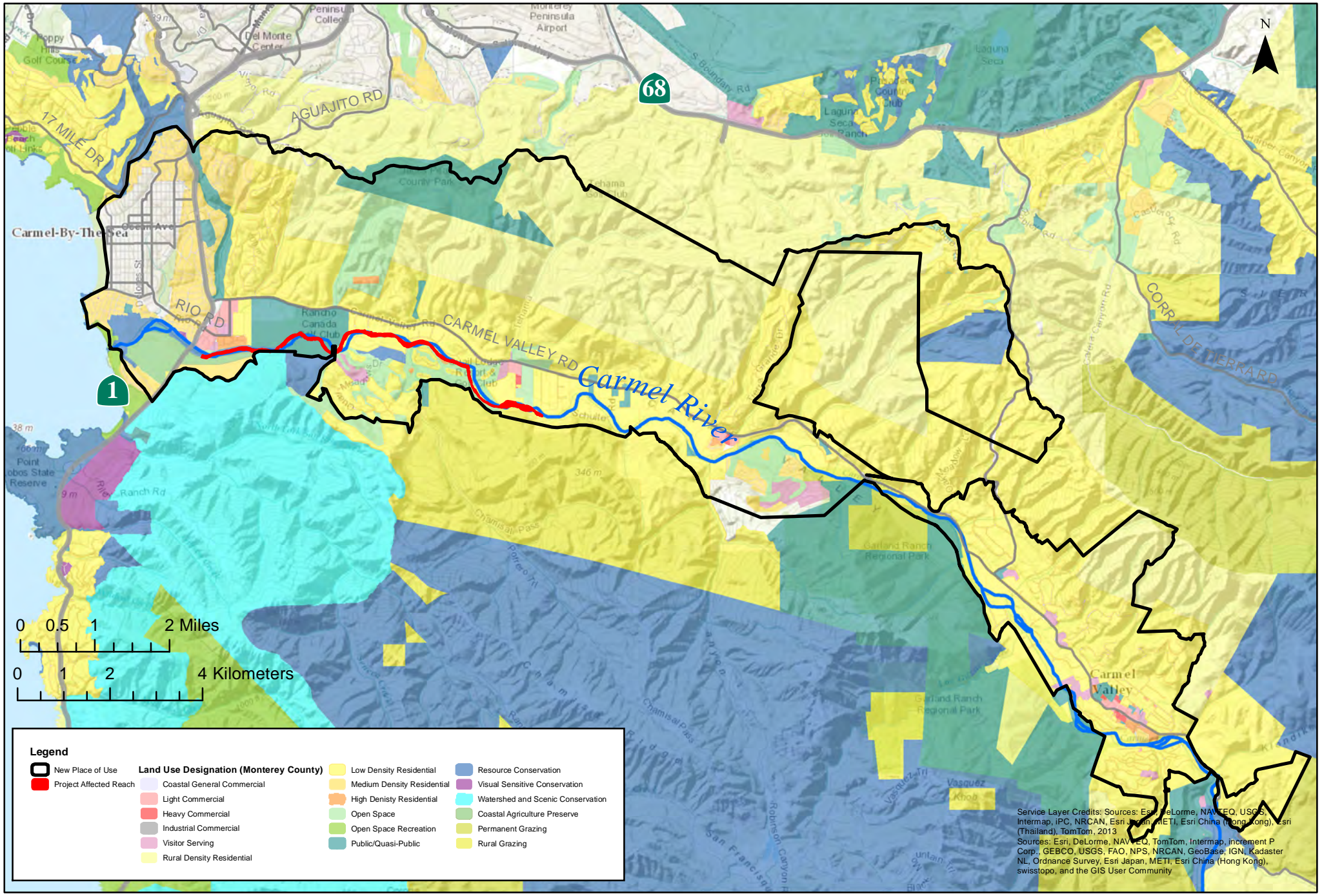
The Carmel River and associated aquifer are the primary sources of water supply for Monterey Peninsula; the Seaside Groundwater Basin also provides water to the Peninsula and surrounding area. Cal-Am is responsible for providing water to Monterey Peninsula customers, and the MPWMD is responsible for the integrated management of water resources within the MPWMD’s boundaries. Cal-Am operates a network of water facilities, including production wells, dams and associated reservoirs, and other conveyance infrastructure along the Carmel River, as described above. In addition to MPWMD’s broad responsibilities to conserve and augment groundwater and surface water supplies, MPWMD is also responsible for administering water use permits and water permits for new and existing residential and non-residential uses. Currently, the issuance of such permits is severely constrained by the lack of existing available water supplies.

This section provides an overview of existing State Water Board orders affecting diversions from the Carmel River and relevant project background information. This section is provided for informational purposes to provide a historical context of water issues affecting the region and context for the project.



Service Layer Credits: Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, IPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013
 Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

	<p>Title: Project Study Area Project Affected Reach</p>	<p>Date: <u>10/24/2014</u></p> <p>Scale: <u>1 inch = 0.2 miles</u></p> <p>Project: <u>2013-24</u></p>	 <p>Denise Duffy and Associates, Inc. Environmental Consultants Resource Planners 947 Cass Street, Suite 5 Monterey, CA 93940 (831) 373-4341</p>	<p>Figure 3-5</p>
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3.6.1 State Water Board Order WR 95-10

In 1995, the State Water Board adopted Order WR 95-10. This order concluded that Cal-Am was diverting approximately 10,730 af/yr from the Carmel River or its underflow “without a valid basis of right” (Order WR 95-10, pp. 25, 39). This order also concluded that Cal-Am had legal rights to divert 3,376 af/yr from the Carmel River. Order WR 95-10 directed Cal-Am to cease and desist from diverting more than 14,106 af/yr from the Carmel River until Cal-Am’s unauthorized diversions ended (Order WR 95-10, p. 40). This order directed Cal-Am to implement one or more of the following actions to terminate Cal-Am’s unauthorized diversions: (1) obtain appropriative rights for the Carmel River water that was being unlawfully diverted; (2) obtain water from other sources and make one-for-one reductions in the unlawful diversions; or (3) contract with other agencies having appropriative rights to divert and use water from the Carmel River (Order WR 95-10, p. 40.).

Order WR 95-10 directed Cal-Am to implement an urban conservation plan, to implement urban and irrigation conservation measures with the goal of achieving 15 percent conservation by 1996 and 20 percent conservation in each subsequent year (Order WR 95-10, pp. 40-41) until all unauthorized diversions ceased. This order also directed Cal-Am to maximize production from the Seaside Groundwater Basin to serve existing connections and thereby reduce Cal-Am’s diversions from the Carmel River.³

3.6.2 State Water Board Order WR 2009-0060 (“Cease and Desist Order”)

In 2009, the State Water Board adopted Order WR 2009-0060. This order notes that Cal-Am and the MPWMD obtained water-right Permit 20808A in 2007, which authorizes the diversion of 2,426 af/yr from the Carmel River to underground storage in the Seaside Groundwater Basin, and that, as a result of this permit, Cal-Am rights to divert water from the Carmel River totaled 5,742 af/yr (Order WR 2009-0060, pp. 5-6). This order concluded that, over the past 14 years, Cal-Am had diverted an average of 7,602 af/yr without a basis of right (Order WR 2009-0060, p. 55). The order also concluded that, while Cal-Am had achieved the 20 percent water conservation required by Order WR 95-10 (Condition No. 3), Cal-Am had not made any meaningful progress toward reducing the amount of its unauthorized diversions (Order WR 2009-0060, p. 55).

Order WR 2009-0060 directed Cal-Am to diligently implement actions to terminate its unauthorized diversions from the Carmel River and to terminate all such unauthorized diversions by December 31, 2016 (Order WR 2009-0060, p. 57). The order also directs Cal-Am to not divert more than a base amount of 10,978 af/yr from the river, requires that this base amount be reduced by specified amounts each year

³ At the same time that State Water Board adopted Order WR 95-10, it also adopted Decision 1632, which approved Application 27614 of MPWMD and the issuance of a permit (Permit 20808) to appropriate water from the Carmel River through a New Los Padres Dam Project. This project would have allowed up to 42 cfs of water to be taken by direct diversion, and up to 24,000 af/yr to be diverted to storage. However, in 1995 the voters of MPWMD rejected the bond issue proposed to finance this project. Permit 20808 was amended in 1999 and amended and split in 2007. Permit 20808A rights refer to water rights that are held jointly by MPWMD and Cal-Am for the Phase 1 ASR project. Permit 20808A was issued by the State Water Board in November 2007 for a maximum annual diversion of 2,426 AF. The MPWMD currently holds Permit 20808B, which is an unused approved water right associated with the New Los Padres Reservoir, 18,674 AF. The MPWMD is currently exploring alternative ways to perfect this entitlement, which would involve amendments to Permit 20808B depending on which long-term water supply alternative is chosen by the MPWMD. To date, such alternative project has not yet been identified. (See Los Padres Dam and Reservoir Long-Term Strategic and Short-Term Tactical Plan, June 2014) Permit 20808C was issued in November 2011 for a maximum annual diversion of 2,900 AF as part of the MPWMD and Cal-Am Phase 2 ASR.

thereafter, and provides that water made available by various listed projects will be subtracted from this base amount (Order WR 2009-0060, pp. 57-58). The order prohibits Cal-Am from diverting any water from the Carmel River for new service connections or for any increased use of water at existing service addresses resulting from a change in zoning or use (Order WR 2009-0060, p. 57).

3.7 PROJECT BACKGROUND & EXISTING LICENSE 13868

Eastwood currently holds existing License 13868, which authorizes Eastwood to pump water to irrigate agricultural lands that are located south of the Carmel River and east of SR 1. This land is commonly referred to as the “Odello East” property and includes part of the 99-acre area of designated POU identified in the existing license. This property was originally part of the larger 131-acre “Odello East” property, which the County of Monterey approved for residential development in the 1980s. In 1997, Eastwood canceled the existing permits that would have allowed the construction of 82 new home-sites on the property. In 2001, the State Water Board approved a petition by Eastwood to split Permit 20905 between Eastwood (Permit 20905B) and the Big Sur Land Trust (Permit 20905A). In 2012 and 2013, respectively, the State Water Board issued License 13868 on Permit 20905B and License 13888 on Permit 20905A. License 13888 of the Big Sur Land Trust allows for the diversion of up to 0.45 cfs of water (with an annual limitation of 28.1 af/yr) from one POD (Odello Well #2) for the irrigation of a POU of 43.7 acres.

License 13868 of Eastwood allows for the diversion of up to 0.45 cfs (with an annual limitation of 131.8 af/yr). The authorized POU under License 13868 consists of 99 acres of irrigated farmland located south of the Carmel River, near SR 1 and Carmel Valley Road (**Figure 3-3**). The authorized PODs under License 13868 include two well-site locations (commonly referred to as Odello Wells #1 and #2) on the Eastwood/Odello property (**Figure 3-3**). The PODs are located approximately 300 and 1,100 yards east of SR 1. Odello Well #1 was destroyed in a flood in 1997 and has not been replaced. Currently, only Odello Well #2 exists.

3.8 PROJECT OBJECTIVES

The primary objectives of the proposed project are to obtain the necessary agency approvals so that Eastwood:

- (1) may divert 85.6 af/yr of the 131.8 af/yr authorized by License 13868 to provide water services through Cal-Am for new connections on existing lots of record, or for additional water uses on existing lots of record, with all such lots being located within the parts of Cal-Am’s existing service area that are within the Carmel River watershed or the City of Carmel-by-the-Sea, and with all such connections and uses being consistent with all applicable general plan and zoning provisions;⁴ and
- (2) may dedicate the remaining 46.2 af/yr authorized by License 13868 to instream beneficial uses in the Carmel River and associated aquifer.

The secondary objective of the proposed project is to allow Eastwood to give Cal-Am, on an interim basis until such time that the entire 85.6 af/yr is used through the new connections and additional water uses described above, the ability to use some or all of the unused portion of this right to supply water to Cal-Am’s

⁴ The 85.6 af/yr amount equals the current average annual consumptive use under License 13868.

existing customers in the Carmel River watershed or the City of Carmel-by-the-Sea to assist Cal-Am in its compliance with State Water Board Order WR 95-10.

3.9 PROPOSED PROJECT

As described above, the development of existing legal lots of record (both residential and non-residential) in Cal-Am's service area is currently constrained by a lack of available MPWMD allocations and water credits, and State Water Board Order WR 2009-0060, which prohibits Cal-Am from diverting water from the Carmel River for new service connections or increased uses of water at existing service addresses resulting from changes in zoning or use.

Under the proposed project, the State Water Board would split License 13868 into two new licenses: Licenses 13868A and 13868B. License 13868A would authorize the municipal use of 85.6 acre feet per year for existing lots of record within the parts of Cal-Am's service area that are within the Carmel River watershed or the City of Carmel-by-the-Sea. License 13868B would dedicate the remaining portion of the existing water right to instream uses.

The State Water Board's issuance of these new licenses would not increase the total authorized annual diversion rate or the total authorized instantaneous diversion rate identified in License 13868. **Table 3-1** summarizes the proposed maximum authorized annual and instantaneous diversion rates for License 13868 and each of the proposed new licenses.⁵ Because the project would utilize existing Cal-Am wells and conveyance facilities, as more thoroughly described below, the project would not result in the construction of any new or expanded structures. In addition, the project would not result in any ground-disturbing activities or changes in land uses.

Table 3-1.
Existing vs. Proposed Maximum Authorized Diversion Rates

Diversion Allowed	Water Right License		
	Existing License 13868	Proposed New License 13868A	Proposed New License 13868B
Maximum Annual Rate of Diversion (af/yr)	131.8	85.6	46.2
Maximum Instantaneous Rate (cfs)	0.45	0.37	0.08

The following describes the proposed POU and proposed POD for each of the proposed licenses.

3.9.1 New License 13868A

License 13868A would authorize the diversion of up to 85.6 af/yr.⁶ This license would have a maximum instantaneous diversion rate of 0.37 cfs. The proposed new authorized purpose of use would include

⁵ Eastwood will form a limited liability company (LLC) for the purposes of holding and administering water License 13868A. This company will enter into subscription agreements with owners of existing lots of record in the parts of Cal-Am's service area that are within the Carmel River watershed or the City of Carmel-by-the-Sea. These subscription agreements will provide for the subscribers to receive specified amounts of water under License 13868A.

⁶ This requested annual amount equals the total estimated average annual evapotranspiration from applied water (ETAW) that is occurring with the current diversions and irrigation use of water under License 13868. (See April 15,

irrigation and municipal consumption. The proposed authorized diversion season would be January 1 through December 31, which is the same as the authorized diversion season in License 13868. This license would include new authorized POD and a new POU. Cal-Am would divert and convey water under this license.

Water diverted by Cal-Am under License 13868A would be delivered to owners of existing lots of record in the parts of Cal-Am service area within the Carmel River watershed or the City of Carmel-by-the-Sea. This water would not be used to support any new subdivisions. Residential uses of water under License 13868A would be limited to existing lots of record. Water used under License 13868A could be used for new homes, guest houses, non-habitable accessory structures, or remodels or additions to existing structures and related incidental uses, provided that all such new residential uses are consistent with applicable local plans and ordinances.

Commercial uses of water under License 13868A would be only on existing lots of record, and would be primarily for existing commercial development for remodels, minor expansions, or renovations consistent with local plans and ordinances. Water under License 13868A could be used for previously approved commercial projects. Water under License 13868A would not be used to support any new large-scale commercial project. For the purposes of License 13868A and the analysis contained in this EIR, a “large-scale commercial project” would consist of any new project of 25,000 gross square feet or more.⁷ The subscription agreements will require subscribers to comply with these limitations.

Proposed Place of Use (POU)

The proposed authorized POU for License 13868A would consist of the portions of Cal-Am’s service area that are located in the Carmel River watershed or the City of Carmel-by-the-Sea (**Figure 3-4**). The proposed POU would include the original 99-acre POU identified in the existing license, 16,595 acres within the Carmel River watershed, and 526 acres within the City of Carmel-by-the-Sea.

Proposed Points of Diversion (POD)

The proposed PODs for License 13868A would include three new upstream locations, in addition to the existing two authorized PODs contained in the existing license. The proposed new PODs would consist of three existing Cal-Am production wells located along the lower Carmel River. These wells include (from downstream to upstream order): Cañada #2, Cypress #2, and Pearse. Cal-Am currently utilizes these wells as part of Cal-Am’s existing distribution system. Since the proposed PODs are all existing facilities, the proposed project would not involve the construction of any new infrastructure (i.e., wells or associated distribution facilities).

2013 Davids Engineering Technical Memorandum, “Odello Ranch Crop ET and ET of Applied Water Estimates,” p. 27, Table 11).

⁷ Title 21 of the Monterey County Code requires that certain types of projects must implement measures to minimize potential traffic related impacts (Monterey County Code Sec. 21.64.250 and Sec. 20.64.250). Applicable projects include the development of new or expanded commercial, industrial or tourist oriented developments of 25,000 gross square feet or more (Monterey County Code Sec. 21.64.250(C)(2)(c) and Sec. 20.64.250(C)(2)(c)). For the purposes of this EIR, any project above 25,000 gross square feet would constitute a “large-scale” commercial development, because it would be subject to special regulations contained in Monterey County Code Sec. 21.64.250 and Sec. 20.64.250 to minimize the impacts of certain sized projects. While water diverted under License 13868A could be used for commercial purposes, any future commercial development would need to be consistent with the site’s existing zoning and General Plan designations in order to receive water under License 13868A. No water would be diverted under License 13868A for any new use associated with a change in existing zoning or existing General Plan designation.

3.9.2 New License 13868B

License 13868B would dedicate approximately 46.2 af/yr to instream use. The instantaneous flow rate under License 13868B would be 0.08 cfs. The proposed authorized purpose of use would consist of preserving and enhancing fish and wildlife resources and riparian vegetation. This dedication would support instream uses in the Carmel River between the existing authorized PODs in License 13868 and the mouth of the Carmel River Lagoon.

Proposed Place of Use (POU)

The proposed authorized POU would consist of the Carmel River (Subterranean Stream).

Proposed Points of Diversion (POD)

This license would not have any authorized points of diversion.

3.9.3 MPWMD New Rule

In addition to the changes to the existing license, the proposed project includes proposed new MPWMD Rule 23.7 which would specify new District procedure similar to District Rule 23.5 for processing applications for, and issuing, water use permits for allocations of water entitlements based on proposed License 13868A. The proposed Rule 23.7 would allow MPWMD to issue water use permits to owners of existing lots of record within the parts of Cal-Am's service area that are within the Carmel River watershed or the City of Carmel-by-the-Sea, and that have entered into subscription agreements with the licensee.

3.10 REQUIRED PERMITS AND APPROVALS

This EIR is an informational document for both agency decision-makers and the public. The State Water Board is the Lead Agency responsible for certification of the EIR and approval of Eastwood's petition to split and change License 13868.

With the exception of the proposed MPWMD new rule described in Section 3.9.3, no additional permits or approvals would be required for the proposed project. All diversions in connection with the proposed project for municipal use would occur through existing Cal-Am wells and all conveyances would be through existing Cal-Am facilities that receive water from the same sources of supply in the Carmel River subterranean flow. Consequently, the proposed project would not include the construction of any new water distribution system improvements or other physical elements that otherwise would require additional permits or approvals. Also, the POU under License 13868A would be located within the existing Cal-Am service area, and therefore no expansion of the Cal-Am service area would be required. License 13868A also would not require any changes to the annual production and connection limits in Cal-Am's existing water distribution system permit.

A summary of the anticipated actions required to implement the project are as follows:

- EIR Certification
- Project Adoption

The EIR is also available for the use of potential responsible, trustee, and other agencies that have may jurisdiction or approval authority for the project. These agencies may include:

- U.S. Department of Interior, Fish and Wildlife Service
- National Oceanic and Atmospheric Administration, Fisheries
- California Natural Resources Agency, Department of Fish and Wildlife
- Monterey Peninsula Water Management District

3.11 INTENDED USE OF THIS EIR

This EIR evaluates the environmental impacts of the project. This EIR is an informational document for use by decision-makers and the general public to disclose the potential environmental effects of the project. The CEQA process is designed to evaluate the potentially significant direct, indirect, and cumulative impacts of the project, and to describe reasonable alternatives to the proposed project that could avoid or reduce those impacts. This document is intended to 1) support the decision-making process of the State Water Board and MPWMD, and 2) disclose the project's potential environmental effects in accordance with the requirements of CEQA.

Chapter 4 ENVIRONMENTAL SETTING, IMPACTS AND MITIGATION MEASURES

INTRODUCTION

This section of the EIR provides an overview of the approach used to evaluate the proposed project, describes the contents of the technical sections presented in this chapter, and describes the “environmental baseline” that is used for the purposes of evaluating the proposed project’s potential environmental effects. Each section in this chapter includes a description of the existing environmental setting relevant to that topical CEQA section, a description of existing regulatory requirements, and an evaluation of the proposed project’s effects. If necessary, mitigation measures that would reduce potential effects to a less-than-significant level are described.

APPROACH

Each section of this EIR describes each of the environmental categories that may be affected by the proposed project. Each topical CEQA section consists of three parts: Introduction, Environmental Setting, and Impacts and Mitigation Measures. Environmental impacts are described as: less-than-significant, potentially significant, significant adverse, and significant unavoidable. Under CEQA, a significant effect is defined as a substantial, or potentially substantial, adverse change in the environment (Public Resources Code Sec. 21068). CEQA Guidelines Sec. 15382 further defines a significant effect as a “substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project...” The determination of significance must be based on scientific and factual data (CEQA Guidelines Sec. 15064(b)). The specific criteria used for evaluating the potential effects associated with the proposed project are identified in each section prior to the evaluation of effects. These criteria are consistent with the significance criteria contained in **Appendix G** of the CEQA Guidelines and local, regional, and state standards.

This EIR analyzes the potential direct and indirect effects associated with the implementation of the proposed project. CEQA Guidelines Sec. 15358(a)(1) defines the direct or primary effects of a project as those effects that are “caused by the project and occur at the same time and place” as the project. A direct effect is a physical change that is “caused by and immediately related to the project” (CEQA Guidelines Sec. 15064(d)(1)). Indirect or secondary effects are “caused by the project and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water and other natural systems, including ecosystems” (CEQA Guidelines Sec. 15358(a)(2)). An indirect physical change in the environment is “not immediately related to the project, but which is caused indirectly by the project” (ibid.). An EIR only needs to evaluate indirect effects that are reasonably foreseeable (CEQA Guidelines Sec. 15358(a)(2)).

The primary direct physical effects associated with the proposed project would occur in connection with the proposed change in authorized PODs under proposed new License 13868A.¹ The proposed change in PODs

¹ The proposed project also includes the dedication of approximately 46.2 af/yr of the existing license to instream beneficial uses. This dedication would have a net beneficial impact to the Carmel lagoon and the portions of the Carmel River located downstream from the existing authorized POD. Due to the beneficial nature of this dedication, the

under License 13868A would allow pumping of Carmel River subterranean flow from an additional three upstream Cal-Am wells in addition to the existing authorized PODs currently authorized under License 13868. This could result in localized impacts, and could physically impact the environment, related to biological resources and hydrology and water quality; no other direct effects would occur as a result of the proposed project. As a result, this EIR evaluates the direct effects of the proposed project within the context of the biological resources and hydrology and water quality sections of this EIR (see **Section 4.1, Biological Resources** and **Section 4.2, Hydrology and Water Quality** for further analysis).

The proposed project could also result in secondary effects due to the proposed change in purpose of use under License 13868A, which would include municipal use. The proposed project would provide a supplemental source of water supply that would facilitate additional development on existing lots of record in the Carmel River watershed or the City of Carmel-by-the-Sea, as described in **Chapter 3, Project Description**. The potential secondary impacts caused by the proposed project would occur in connection with the potential growth-inducing aspects of the project. The secondary effects of growth could result in a variety of potential environmental effects (e.g., aesthetics, air quality, noise, traffic, etc.). This EIR evaluates the potential secondary effects of the proposed project within the context of growth-inducement (please refer to **Chapter 5, CEQA Considerations**).

In addition to evaluating the proposed project's potential direct and indirect effects, this EIR also includes a brief evaluation of the project's potential effects that were found not to be significant. CEQA Guidelines Sec. 15128 states that "an EIR shall contain a statement briefly indicating the reasons that various possible significant effects of a project were determined not to be significant and were therefore not discussed in detailed in the EIR." **Chapter 5, CEQA Considerations**, includes an evaluation of each of the individual topical CEQA sections where the proposed project would result in no impact or impacts would be less-than-significant. This EIR determined that the proposed project would not have any potentially significant direct effects in the following areas: Aesthetics, Agricultural Resources, Air Quality, Cultural Resources, Geology and Soils, Hazards and Hazardous Materials, Land Use and Planning, Mineral Resources, Noise, Population and Housing, Public Services, Recreation, Transportation and Traffic, and Utilities/Service Systems.

TECHNICAL RESOURCES EVALUATED IN DETAIL IN THIS EIR

The proposed project would result in potential State Water Board action in connection with a change petition to split existing License 13868 into two new licenses: License 13868A and 13868B. License 13868A would include a change in PODs, POU, and purpose of use and could result in direct physical effects to the environment. License 13868B would be dedicated to instream uses and would not result in any potential adverse physical impacts to the environment. License 13868A would utilize existing Cal-Am facilities and would not involve the construction of new water distribution facilities. The total authorized annual and instantaneous diversion rates in the proposed new licenses would not exceed the existing maximum annual diversion rate or maximum instantaneous rate in the existing license. As a result, the direct physical impacts of the proposed project would be limited to potential impacts due to the proposed change in PODs under License 13868A. The proposed change in POD could affect biological resources and hydrology and water quality. No other direct physical changes to the environment would occur in connection with the proposed project. As a result, this EIR includes the following technical resource sections:

majority of the analysis contained in this EIR is primarily focused on the effects of License 13868A, which could cause a physical change in the environment.

- **Section 4.1, Biological Resources**
- **Section 4.2, Hydrology and Water Quality**

This EIR includes an evaluation of potential growth-inducing impacts, cumulative impacts, and effects found not to be significant in **Chapter 5, CEQA Considerations**. Alternatives to the proposed project are discussed in **Chapter 6, Alternatives**.

BASELINE ENVIRONMENTAL CONDITIONS

According to CEQA Guidelines Sec. 15125, an EIR should include a description of the existing physical environmental conditions in the vicinity of the project to provide the “baseline physical conditions” against which project-related changes can be compared. Normally, the baseline condition is the physical condition that exists at the start of the environmental review process or when the NOP for the EIR is published. The baseline for facilities related to the diversion and use of water is June 21, 2013, the date of the petition for change for License 13868 and when the environmental review process for the petition began. The baseline for the amount of water used, under License 13868 and other water diversions in the Carmel River, includes a combination of historical and estimated values.

Historically, License 13868’s POU has been irrigated for agricultural purposes since the late 19th century. Since Eastwood’s acquisition of License 13868 in 1995, License 13868’s POU has been continuously farmed by various tenant farmers with the exception of a few years in the late 1990s and early 2000s. In 1997, extensive flooding of the Carmel River damaged existing on-site wells and destroyed the tenant’s crops. License 13868’s POU was subsequently developed and certified for organic farming, and organically farmed by a new tenant. In 2002, the organic farming production temporarily ceased to assist in the implementation of the Lagoon Restoration Project led by the California Coastal Conservancy and California Department of Parks and Recreation (State Parks). Portions of License 13868’s POU were used as a haul route and fill site during this period. The farming operations were later reestablished, and the current tenant farmer actively farms approximately forty acres of License 13868’s POU for irrigated pasture.

The proposed project would utilize existing facilities, therefore there no construction of new water diversion facilities or development of new areas for water use will occur. The proposed project would not increase the amount of water currently authorized for diversion under License 13868, which is a maximum annual limit of 131.8 af/yr and a maximum instantaneous rate of 0.45 cfs. Water right holders are required to report annually the amount of water diverted each year. In both 2012 and 2013, Eastwood reported that the maximum annual amount of 131.8 af/yr was diverted. Prior to 2010, the State Water Board accepted annual reports of water diversion that did not include the actual amount of water diverted by month, and local water diversion records are not available, therefore it is necessary to estimate water diversion and use. As described more thoroughly in **Section 4.2, Hydrology and Water Quality**, Davids Engineering estimated monthly water use averages using climate data over a 25-year period (1987 to 2012) to illustrate average water use on the subject property when accounting for varying climatological conditions, because water use varies according to a variety of factors (e.g., crop type, annual precipitation, soil conditions, etc.). These monthly water use averages are set forth in **Table 4-1**, below.

Table 4-1
Existing License 13868
Estimated Long-Term Mean Monthly Applied Water, Evapotranspiration and Flow Rate

Month	Applied Water ^(a) , AF	Monthly Evapotranspiration Percentage ^(b)	Estimated Monthly Evapotranspiration ^(c) , AF	Equivalent Flow Rate ^(d)	
				cfs	gpm
January	4.1	3.3%	2.8	0.046	20
February	4.2	3.4%	2.9	0.052	23
March	5.8	4.7%	4.0	0.065	29
April	9.3	7.5%	6.4	0.108	48
May	13.6	11.0%	9.4	0.153	69
June	16.0	12.9%	11.0	0.185	83
July	16.0	12.9%	11.1	0.181	81
August	15.6	12.6%	10.8	0.176	79
September	13.8	11.1%	9.5	0.16	72
October	12.2	9.8%	8.4	0.137	61
November	8.0	6.5%	5.5	0.092	41
December	5.5	4.4%	3.8	0.062	28
ANNUAL	124.0	100.0%	85.6	0.118	53

^(a) Estimated monthly average applied irrigation water, distributed by month.

^(b) Percent of estimated annual evapotranspiration by month.

^(c) Estimated monthly average evapotranspiration, distributed by month.

^(d) cfs = cubic feet per second; gpm = gallons per minute. Totals at the bottom of these columns are the annual average flow rates.

Source: West Yost Associates, 2013; Davids Engineering, Inc., 2013

^(e) Annual water use on petitioner's property for 2013 totaled 131.79 acre feet, which was slightly above the estimated average annual use of 124.0 AF. Actual monthly water use in 2013 for April (24.82 AF), May (23.97 AF), June (26.09 AF) and November (13.65 AF) were also slightly above the estimated monthly averages, whereas water use in January (0), February (0), March (1.06 AF), July (15.43AF), August (4.60 AF), Sept (6.14 AF), October (10.55 AF), and December (5.48) was below the estimated monthly averages.

As shown in **Table 4-1**, the estimated average annual rate of water use, based on the 25-year modeled period is 124.0 AF. As described above, actual water use varies according to a variety of factors, including precipitation and type of crop. During periods of lower precipitation, monthly average water use may fluctuate and higher annual water use may occur, whereas lower annual water use may occur during periods of higher precipitation. While the estimated annual average rate is a useful indicator of the average monthly irrigation use on the property, actual use may vary depending on the factors described above. For example, the total annual water use for 2013 on the petitioner's property exceeded the estimated average annual rate of 124.0, and actual monthly pumping during spring and summer months also exceeded the estimated monthly average rates for those months due to the dry conditions.

As described above, climatological conditions play an important role in determining the nature of water use for irrigated farmland. At the time of issuance of the NOP, the State of California had been experiencing

record levels of low precipitation and associated reduced streamflows in the Carmel River watershed. On January 17, 2014, Governor Edmund G. Brown, Jr. declared a state of emergency due to on-going drought conditions, which have resulted in low streamflows and diminished reservoir storage throughout California. In January 2014, Carmel River streamflow at the MPWMD Highway 1 gage was zero cfs and the river was dry to River Mile (RM) 8.1. During January, 0.02 inches of rainfall were recorded and total rainfall for water year (WY) 2014, which started on October 1, 2013, was 1.08 inches, approximately 9.7% of the annual average of 11.17 inches (MPWMD, 2014). According to recent, although incomplete, MPWMD streamflow data, recorded flows between July and October 2013 averaged zero cfs. The highest recorded flow in 2014 occurred on February 28, 2014 and was recorded as 3.1 cfs. Flows between May and September 2014 were zero cfs. As a result, actual monthly pumping in connection with irrigation water use may exceed the average annual rates identified in **Table 4-1** due to extended drought conditions. Nonetheless, the average annual figures shown in **Table 4-1** are appropriate for assessing potential effects that would result from the change in purpose of use from irrigation use to municipal use, and corresponding changes in the monthly pattern of use.

Given the stochastic nature of the variables influencing hydrologic and ecologic functions of the Carmel River, the environmental baseline for the purposes of this EIR, which includes current pumping rates under License 13868, is based on the most recent published information obtained from MPWMD and USGS, as well as the information in the supporting technical analyses, at the time the environmental review process commenced. The information presented in this EIR accounts for varying different climatological conditions, including available streamflow data, over a 25-year period. In addition, the environmental baseline also considers other existing non-Cal-Am and Cal-Am pumping in the Carmel River. Approximately 9,388.8 af of water was diverted from the Carmel River in 2012. Cal-Am is responsible for approximately 77% of the total water diversions from the Carmel River system and its associated aquifer (MPWMD, 2013). The remaining 23% of diversions were made by non-Cal-Am entities (ibid.).

In summary, the environmental baseline for the purposes of this analysis includes facilities existing on June 21, 2013 and historical water diversion (estimated where necessary) under License 13868 and other water diversions in the Carmel River.

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4.1 BIOLOGICAL RESOURCES

4.1.1 INTRODUCTION

This section describes the existing biological setting of the proposed project and presents an analysis of the potential project-related effects on the biological resources within the project study area. For the purposes of this analysis, the project study area consists of the five-mile reach of the Carmel River between the existing authorized POD and the furthest upstream POD proposed under License 13868A, as described in **Chapter 3, Project Description**.

The proposed project consists of a change petition to split existing License 13868 along the Carmel River into two new licenses (License 13868A and 13868B), resulting in changes in authorized PODs, POU, and purpose of use. License 13868A would allow the pumping of approximately 85.6 af/yr from an additional three (3) existing Cal-Am wells located approximately five miles upstream from the existing POD. License 13868B would permanently dedicate approximately 46.2 af/yr to instream uses. The primary element of the proposed project that could directly result in a physical change in the environment, and thereby affect existing biological resources, is the proposed change in authorized PODs under License 13868A. The proposed PODs for License 13868A would include three new upstream locations, in addition to the existing two authorized POD allowed under the existing license. The proposed project would be served by existing infrastructure (e.g., wells, pipelines, access roads, etc.) and no modifications or additional infrastructure would be necessary. Because the proposed project would not require the construction or modification of existing infrastructure and no ground-disturbing activities are proposed, the analysis of the proposed project's potential effects to biological resources is limited to the following:

Potential effects to biological resources from changes in groundwater and streamflow along an approximately five mile reach of the Carmel River resulting from the proposed addition of three new PODs upstream of the existing authorized POD.

This section includes the following: 1) description of methods and applicable laws and regulations; 2) description of existing biological resources within the project study area (i.e., the affected five-mile reach of the Carmel River); 3) identification of the special-status botanical and wildlife species and sensitive habitats present or with the potential to occur within the project study area; and, 4) assessment of potential impacts to biological resources. This section also includes pertinent information prepared in response to comments received during the Notice of Preparation (NOP) public review period. The State Water Board circulated the NOP to responsible and trust agencies, and other interested parties on March 4, 2014 to solicit comments on the scope and breadth of the environmental analysis contained in the EIR. The public scoping period ended on April 2, 2014. The State Water Board conducted a public scoping meeting and a field investigation on April 2, 2014.¹ The State Water Board received public comments related to biological resources during the scoping meeting and field investigation expressing the following concerns:

- The proposed project could result in “take.” The EIR should evaluate potential impacts to raptors and other avian species and, where necessary, include mitigation measures to reduce those impacts.

¹The State Water Board held a field investigation to consider comments regarding protests filed against the proposed project pursuant to the statutory process set forth under Water Code Section 1704.1.

- Average flows are not representative of actual environmental conditions along the Carmel River. The project will negatively affect young fish, smolts, and adults entering the lagoon when the lagoon spills at flow of 40 cfs or less. There are critical riffles that have to be passed that cannot be considered passable at less than 125 cfs.
- Groundwater drawdown of “less than 1 foot over a 7 day period or seasonal drawdown of four feet” is significant in dry years and could delay flows to the lagoon.
- The river segment from Schulte Bridge to the Lagoon is prime steelhead habitat.
- Implementation of the proposed project could adversely affect CRSA and MPWMD steelhead rescue actions.
- The EIR should evaluate critical stream flow in the lower river for the use of the young of the year.

The State Water Board also received comments related to hydrology and water quality. Please refer to **Section 4.2, Hydrology and Water Quality**, for a discussion of those comments.

4.1.2 METHODOLOGY

The Carmel River and its associated riparian corridor have been studied extensively over the last two decades. Since 1991, the MPWMD has carried out a comprehensive Mitigation Program to address the environmental impacts associated with the MPWMD Water Allocation Program, which includes comprehensive data collection, as described below. As a result, additional data collection or field mapping was not conducted for this analysis. Much of the setting and data presented in the following sections are from the following MPWMD documents:

- MPWMD Mitigation Program Annual Report(s) (MPWMD, 2001-2014)
- Carmel River Riparian Corridor Monitoring Report(s) (MPWMD, 2004a, 2008, and 2009)
- MPWMD, Technical Memoranda, River Flow Monitoring for Phase 1 ASR Project: Results of Mitigation Measure Ar-1 (MPWMD, 2010-2013)
- Environmental and Biological Assessment of Portions of the Carmel River Watershed (MPWMD, 2004b)
- Final Environmental Impact Report/Environmental Assessment for the Monterey Peninsula Water Management District Phase 1 Aquifer Storage and Recovery Project (Jones & Stokes, 2006)²

In addition to reviewing applicable MPWMD background material related to the Carmel River, the EIR Consultant also reviewed other literature sources and reference materials, including the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDDB) occurrence reports (CDFW, 2013), U.S. Fish and Wildlife Service (USFWS) list of Federally Listed Threatened and

² MPWMD conducted a detailed analysis of potential impacts of the Phase 1 ASR project on fisheries. As part of the environmental review process, MPWMD developed a set of criteria to analyze changes in hydrology and resulting impacts to fisheries within the Carmel River. The technical analysis conducted in support of the proposed project (Balance, 2014b) utilized the critical flow periods described in the ASR Final EIR/EA, as well as on-going MPWMD ASR monitoring, for the purposes of evaluating the project’s potential impacts on fisheries. MPWMD monitoring of critical riffles is described in further detail below.

Endangered Species that May Occur in Monterey County (USFWS, 2013a), the National Wetlands Inventory (USFWS, 2013b), aerial photographs of the project study area, and technical reports prepared for the proposed project.

4.1.2.1 Background

The MPWMD is responsible for issuing water connection permits for new and expanded uses within MPWMD's boundaries, and managing and regulating the use, reuse, reclamation, and conservation of water within its boundaries on the Monterey Peninsula. Since 1991, the MPWMD has carried out a comprehensive Mitigation Program to address the environmental impacts associated with the MPWMD Water Allocation Program.³ The program focuses on baseline hydrologic and water quality information, the Carmel River steelhead fish population, the Carmel River riparian habitat, and the Carmel River Lagoon. The Mitigation Program is a required component of the MPWMD Water Allocation Program EIR; the MPWMD Board certified the EIR in November 1990. The MPWMD is responsible for implementing the on-going mitigation requirements as required under the MPWMD Water Allocation Program to minimize impacts associated with groundwater pumping in the lower reaches of the Carmel River.⁴

In addition, regulation of water extraction from the Carmel River is currently in effect under orders from the State Water Board. In its July 1995 Order WR 95-10, the State Water Board directed Cal-Am to carry out any aspect of the Mitigation Program that the MPWMD did not continue after June 1996. To date, the MPWMD Board has voted to continue the program. Each year, MPWMD prepares a detailed Annual Report that describes the MPWMD's specific mitigation activities, data collected, and results. **Chapter 3, Project Description**, includes a detailed description of Order WR 95-10 and subsequent State Water Board orders.

4.1.2.2 Terminology

Special-Status Species

Special-status species are those plants and animals that have been formally listed or proposed for listing as endangered or threatened species, or are candidates for such listings under the federal Endangered Species Act (ESA) or the California Endangered Species Act (CESA). ESA and CESA afford legal protection to listed species. Species that meet the definition of rare or endangered species under the CEQA Guideline Sec. 15380 are also considered special-status species. Species with no formal special-status designation but thought by experts to be rare or in serious decline are also considered special-status animal species (CDFW, 2013).

³ The MPWMD established its Water Allocation Program to manage the limited water supplies available to Monterey Peninsula water users. As required by CEQA, the MPWMD prepared an EIR to consider the environmental effects of the Water Allocation Program. The EIR concluded that the Water Allocation Program could have significant or potentially significant environmental effects unless mitigated. In implementing the Water Allocation Program, the MPWMD was required under CEQA to mitigate, to the extent feasible, the resulting significant impacts. On November 5, 1990, the MPWMD Board certified the Final EIR for the Water Allocation Program and adopted findings that included a Five-Year Mitigation Program for the selected production limits.

⁴ In Order WR 95-10, the State Water Board concluded that the Mitigation Program was alleviating the effects of Cal-Am's diversions on the Carmel River. To ensure that the mitigation measures continued to be implemented pending a long-term water supply solution, the State Water Board ordered Cal-Am to implement the mitigation programs if the MPWMD ceased to implement Mitigation Program after June 30, 1996, making the Mitigation Program a contingent obligation of Cal-Am. However, the MPWMD continues to implement the Mitigation Program and, since 2011, Cal-Am and the MPWMD have worked cooperatively to ensure the Mitigation Program continues as required.

Wildlife

Animals on the CDFW's list of "species of special concern" (most of which are species whose breeding populations in California may face extirpation if current population trends continue) meet the definition of rare or endangered under the CEQA Guidelines Sec. 15380. These species are typically provided management consideration through the CEQA process, although they are not legally protected under the ESA or CESA. Additionally, the CDFW also includes some animal species that are not assigned any of the other status designations in the CNDDDB "Special Animals" list. The CDFW considers the taxa on this list to be those of greatest conservation need, regardless of their legal or protection status. In addition, fully protected species under the Fish and Game Code Section 3511 (birds), Section 4700 (mammals), Section 5515 (fish), and Section 5050 (reptiles and amphibians) are also considered special-status animal species.

Plants

Plants listed as rare under the California Native Plant Protection Act (CNPPA) or on California Native Plant Society (CNPS) lists are also treated as special-status species in accordance with CEQA Guidelines Sec. 15380. In general, The CDFW considers plant species on List 1 (List 1A [Plants presumed extinct in California] and List 1B [Plants rare, threatened, or endangered in California and elsewhere]), or List 2 (Plants rare, threatened, or endangered in California, but more common elsewhere) of the CNPS Inventory of Rare and Endangered Vascular Plants of California (CNPS, 2010) as qualifying for legal protection under CEQA.⁵ In addition, species of vascular plants, bryophytes, and lichens listed as having special-status by the CDFW are considered special-status plant species (CDFW, 2013).

Raptors

Raptors (e.g., eagles, hawks, and owls) and their nests are protected under both federal and state laws and regulations. The federal Migratory Bird Treaty Act (MBTA) of 1918, and California Fish and Game Code Section 3513 prohibit killing, possessing, or trading migratory birds except in accordance with regulation prescribed by the Secretary of the Interior. California Fish and Game Code Section 3503.5 protects birds of prey. Section 3503.5 states that it is "unlawful to take, possess, or destroy the nest or eggs of any such bird except otherwise provided by this code or any regulation adopted pursuant thereto."

Federal Species of Concern

After careful consideration, the CDFW has removed the USFWS' federal "species of concern" designation from the CNDDDB. The federal species of concern list was an internal USFWS list maintained by some of the field offices comprised of taxa that were formerly designated as Candidate categories C1 and C2 plus some other miscellaneous taxa. This list is no longer updated within the USFWS' Ventura Office, which includes Monterey County as part of its area of responsibility. As a result, the federal species of concern designation is not considered an indicator of special-status species status in this analysis.

⁵ Species on CNPS List 3 (Plants about which we need more information - a review list) and List 4 (Plants of limited distribution - a watch list) may, but generally do not, qualify for protection under this provision.

Sensitive Habitats

Sensitive habitats include riparian corridors, wetlands and other waters, habitats for legally protected species, areas of high biological diversity, areas supporting rare or special-status wildlife habitat, and unusual or regionally restricted habitat types. Habitat types considered sensitive include those listed on the CNDDDB's working list of high priority and rare natural communities (i.e., those habitats that are rare or endangered within the borders of California) (CDFW, 2010), those that are occupied by species listed under ESA or are critical habitat in accordance with ESA, and those that are defined as Environmentally Sensitive Habitat Areas (ESHA) under the California Coastal Act (CCA). City or county general plans or ordinances may also identify additional specific habitats as sensitive. Sensitive habitats are regulated under federal regulations (such as the Clean Water Act [CWA] and Executive Order 11990 – Protection of Wetlands), state regulations (such as CEQA and the CDFW's Streambed Alteration Program), or local ordinances or policies (such as city or county tree ordinances and general plan policies).

Wetlands

The ACOE and the EPA define wetlands as:

“Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas” (ACOE, 1982 and EPA, 1980).

The Field Guide for Wetland Delineation: 1987 Corps of Engineers Manual (Wetland Manual) (Wetland Training Institute, 2002) describes the three environmental parameters used in delineating jurisdictional wetlands. The three parameters are:

1. *Vegetation.* The prevalent vegetation consists of macrophytes that are typically adapted to areas having hydrologic and soil conditions described in the definition of a wetland above. Hydrophytic species, due to morphological, physiological, and/or reproductive adaptation(s), have the ability to grow effectively, compete, reproduce, and/or persist in anaerobic soil conditions;
2. *Soil.* Soils are present and have been classified as hydric or they possess characteristics that are associated with reducing soil conditions; and
3. *Hydrology.* The area is inundated either permanently or periodically at mean water depths of ≤ 6.6 feet, or the soil is saturated to the surface at some time during the growing season of the prevalent vegetation.

The Wetland Manual states that “evidence of a minimum of one positive wetland indicator from each parameter must be found in order to make a positive wetland determination.” However, climatic and hydrologic conditions in the Arid West often make it difficult to identify wetland indicators. Therefore, on December 18, 2006, the San Francisco District of the ACOE distributed a public notice requiring that, as of January 1, 2007, any new delineation work within their jurisdiction follow the guidance contained in the Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Supplement) (ACOE, 2006). The Supplement provides both indicators for each parameter that are specific to the Arid West region and guidance on difficult wetland situations where indicators may be lacking.

Other Waters

The ACOE and the EPA define Other Waters as:

1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
2. All interstate waters including interstate wetlands;
3. All “other waters” such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:
 - i. Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
 - ii. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
 - iii. Which are used or could be used for industrial purpose by industries in interstate commerce;
4. All impoundments of waters otherwise defined as waters of the United States under the definition;
5. Tributaries of waters identified in paragraphs [1-4] of this section;
6. The territorial seas;
7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs [1-6] of this section (ACOE, 1982).

As noted above, “other waters,” including lakes, ponds, and streams, are subject to ACOE jurisdiction. “Other waters” are characterized by an ordinary high water (OHW) mark, which is defined as:

“that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the characteristics of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas” (ACOE, 1982).

In the field, “other waters” are identified by the presence of a defined river or stream bed, a bank, and evidence of the flow of water.

On June 5, 2007, the ACOE and the EPA developed a Memorandum Regarding *Clean Water Act Jurisdiction Following Rapanos v. United States* which states that the agencies will assert jurisdiction over the following categories of water bodies:

- TNWs [traditional navigable waters] and wetlands adjacent to TNWs and
- Non-navigable tributaries of TNWs that are relatively permanent (i.e., the tributaries typically flow year-round or have continuous flow at least seasonally) and wetlands that directly abut such tributaries

In addition, the following waters will also be found jurisdictional based on a fact-specific analysis that they have a significant nexus with a TNW:

- Non-navigable tributaries that do not typically flow year-round or have continuous flow at least seasonally;
- Wetlands adjacent to such tributaries; and
- Wetlands adjacent to but that do not directly abut a relatively permanent non-navigable tributary

A significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or an insubstantial effect on the chemical, physical, and/or biological integrity of a TNW. Principal considerations when evaluating significant nexus include the volume, duration, and frequency of the flow of water in the tributary and the proximity of the tributary to a TNW, plus the hydrologic, ecologic, and other functions performed by the tributary and all of its adjacent wetlands” (ACOE & EPA, 2007).

The term “navigable waters of the U.S.” is defined to include:

“all those waters that are subject to the ebb and flow of the tide, and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce” (ACOE, 1982).

4.1.2.3 Data Sources

In addition to the annual reporting, the MPWMD prepared a comprehensive biological watershed assessment in 2004: *Environmental and Biological Assessment of Portions of The Carmel River Watershed*. In this report, quantitative methods were used to assess several indicators of the health and resiliency of the Carmel River mainstem. MPWMD presented data and supporting analyses on stream functionality, riparian vegetation, California red-legged frogs (CRLF), steelhead, large wood features, water quality, and insects in the channel bottom (known collectively as benthic macroinvertebrates).

The primary literature reviewed in order to determine the presence and distribution of biological resources at the project study area are:

- MPWMD Mitigation Program Annual Report(s) (MPWMD, 2001-2013)
- MPWMD, Technical Memoranda, River Flow Monitoring for Phase 1 ASR Project: Results of Mitigation Measure Ar-1 (MPWMD, 2010-2013)
- Carmel River Riparian Corridor Monitoring Report(s) (MPWMD, 2004a, 2008, and 2009)
- Environmental and Biological Assessment of Portions of the Carmel River Watershed (MPWMD, 2004b)

Additional data reviewed include: current agency status information from the USFWS and CDFW for species listed, proposed for listing, or candidates for listing as threatened or endangered under ESA or CESA, and those considered CDFW’s “species of special concern” (2013); the National Wetlands Inventory (USFWS, 2013b), the CNPS Inventory of Rare and Endangered Vascular Plants of California (CNPS, 2010); and CNDDDB occurrence reports (CDFW, 2013). The Monterey and Seaside quadrangles and the six surrounding quadrangles (Marina, Mt. Carmel, Soberanes Point, Salinas, Carmel Valley, and Spreckels) from the CNDDDB were also reviewed for documented special-status species occurrences in the vicinity of the project study area.

From these resources, a list of special-status plant and wildlife species known or with the potential to occur in the vicinity of the project study area was created (**Appendix B**). The list presents these species along with their legal status, habitat requirements, and a brief statement of the likelihood to occur.

Botany

Dominant plant species are those that are more numerous than its competitors in an ecological community or makes up more of the biomass; generally, the species that are most abundant. Most ecological communities are defined by their dominant species. Information regarding the distribution and habitats of local and state vascular plants was reviewed (Howitt and Howell, 1964 and 1973; Munz and Keck, 1973; Sawyer et.al., 2009; Hickman, 1993; Baldwin, et. al, 2012; Matthews, 2006; Jepson Flora Project, 2010). Scientific nomenclature for plants in this EIR follows Baldwin, et al., (2012) and common names follow Matthews (2006).

Wildlife

The following literature and data sources were reviewed: CDFW reports on special-status wildlife (Remsen, 1978; Williams, 1986; Jennings and Hayes, 1994; Thelander, 1994); California Wildlife Habitat Relationships Program species-habitat models (CDFW, 2008; Zeiner et al., 1988 and 1990); and general wildlife references (Stebbins, 1985).

Sensitive Habitats

The geographical extent of wetlands and riparian habitat were determined from the National Wetlands Inventory (CDFW, 2013b) and aerial maps. GIS data was obtained from the National Wetlands Inventory for all wetlands and other waters present within the project study area (or project affected reach), including areas of riparian wetland. Aerial maps were then used to identify the extent of the non-wetland riparian habitat within the evaluation area.

4.1.3 REGULATORY SETTING

4.1.3.1 Federal Regulations

Federal Endangered Species Act

Provisions of the ESA of 1973 (16 USC 1532 et seq., as amended) protect federally listed threatened or endangered species and their habitats from unlawful take. Listed species include those for which proposed and final rules have been published in the Federal Register. The ESA is administered by the USFWS or National Oceanic and Atmospheric Administration National Marine Fisheries Service (NMFS). In general, NMFS is responsible for the protection of ESA-listed marine species and anadromous fish, whereas other listed species are under USFWS jurisdiction.

Section 9 of ESA prohibits the take of any fish or wildlife species listed under ESA as endangered or threatened. Take, as defined by ESA, is “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.” Harm is defined as “any act that kills or injures the fish or wildlife...including significant habitat modification or degradation that significantly impairs essential behavioral patterns of fish or wildlife.” In addition, Section 9 prohibits removing, digging up, and maliciously damaging or destroying federally listed plants on sites under federal jurisdiction. Section 9 does not prohibit

take of federally listed plants on sites not under federal jurisdiction. If there is the potential for incidental take of a federally listed fish or wildlife species, take of listed species can be authorized through either the Section 7 consultation process for federal actions or a Section 10 incidental take permit process for non-federal actions. Federal agency actions include activities that are on federal land, conducted by a federal agency, funded by a federal agency, or authorized by a federal agency (including issuance of federal permits).

Migratory Bird Treaty Act

The MBTA of 1918 prohibits killing, possessing, or trading migratory birds except in accordance with regulation prescribed by the Secretary of the Interior. Most actions that result in taking or in permanent or temporary possession of a protected species constitute violations of the MBTA. The USFWS is responsible for overseeing compliance with the MBTA and implements Conventions (treaties) between the United States and four countries for the protection of migratory birds – Canada, Mexico, Japan, and Russia. The USFWS maintains a list of migratory bird species that are protected under the MBTA, which was updated in 2013 to: 1) correct previous mistakes, such as misspellings or removing species no longer known to occur within the United States; 2) add species, as a result of expanding the geographic scope to include Hawaii and U.S. territories and new evidence of occurrence in the United States or U.S. territories; and 3) update name changes based on new taxonomy (USFWS, 2013).

The Clean Water Act

The U.S. Army Corps of Engineers (ACOE) and Environmental Protection Agency (EPA) regulate discharge of dredged and fill material into “Waters of the United States” (waters of the U.S.) under Section 404 of the CWA. Waters of the U.S. are defined broadly as waters susceptible to use in commerce (including waters subject to tides, interstate waters, and interstate wetlands) and other waters (such as interstate lakes, rivers, streams, mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds) (33 CFR 328.3). Potential wetland areas are identified as “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soils conditions.”

Under Section 401 of the CWA, any applicant receiving a Section 404 permit from the ACOE must also obtain a Section 401 Water Quality Certification from the RWQCB. A Section 401 Water Quality Certification is issued when a project is demonstrated to comply with state water quality standards and other aquatic resource protection requirements.

Executive Order 11990 - Protection of Wetlands

Executive Order 11990 - Protection of Wetlands calls for no net loss of wetlands. For the regulatory process, the ACOE and EPA jointly define wetlands as follows: "Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Federal agencies are required to implement the following procedures for any federal action that involves wetlands: 1) provide an opportunity for early public involvement; 2) consider alternatives that would avoid wetlands, and if avoidance is not possible, measures to minimize harm to wetlands must be included in the action; 3) prepare a “Wetlands Only Practicable Alternative Finding” for actions that require an Environmental Impact Study.

4.1.3.2 State Regulations

California Endangered Species Act

The CESA was enacted in 1984. The California Code of Regulations (Title 14, §670.5) lists animal species considered endangered or threatened species by the state. Section 2090 of CESA requires state agencies to comply with endangered species protection and recovery and to promote conservation of these species. Section 2080 of the Fish and Game Code prohibits "take" of any species that the commission determines to be an endangered species or a threatened species. "Take" is defined in Section 86 of the Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." A Section 2081 Incidental Take Permit from the CDFW may be obtained to authorize "take" of any state listed species.

California Fish and Game Code

Birds. Section 3503 of the Fish and Game Code states that it is "unlawful to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Section 3503.5 prohibits the killing, possession, or destruction of any birds in the orders Falconiformes or Strigiformes (birds-of-prey). Section 3511 prohibits take or possession of fully protected birds. Section 3513 prohibits the take or possession of any migratory nongame birds designated under the federal MBTA. Section 3800 prohibits take of nongame birds.

Fully Protected Species. The classification of fully protected was the state's initial effort in the 1960's to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish (§5515), mammals (§4700), amphibians and reptiles (§5050), and birds (§3511). Many fully protected species have also been listed as threatened or endangered species under the more recent endangered species laws and regulations. Fully protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock.

Species of Special Concern. As noted above, the CDFW also maintains a list of animal "species of special concern." Although these species have no legal status, the CDFW recommends considering these species during analysis of project impacts to protect declining populations and avoid the need to list them as endangered in the future.

Native Plant Protection Act

The CNPPA of 1977 directed the CDFW to carry out the legislature's intent to "preserve, protect and enhance rare and endangered plants in the state." The CNPPA prohibits importing rare and endangered plants into California, taking rare and endangered plants, and selling rare and endangered plants. The CESA and CNPPA authorized the Fish and Game Commission to designate endangered, threatened and rare species and to regulate the taking of these species (Sec. 2050 et seq., Fish and Game Code). Plants listed as rare under the CNPPA are not protected under CESA.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act of 1969 (Porter-Cologne) is California's statutory authority for the protection of water quality and applies to surface waters, wetlands, and groundwater, and to both

point and nonpoint sources. Under Porter-Cologne, the State Water Board has the ultimate authority over State water quality policy. Porter-Cologne also establishes nine Regional Water Quality Control Boards (Regional Water Board) to oversee water quality on a day-to-day basis at the local/regional level. The project study area is located within the Central Coast Regional Water Board. Porter-Cologne incorporates many provisions of the federal CWA, such as delegation to the State Water Board and Regional Water Boards of the National Pollutant Discharge Elimination System (NPDES) permitting program.

Under Porter-Cologne, the state must adopt water quality policies, plans, and objectives that protect the state's waters for the use and enjoyment of the people. Regional authority for planning, permitting, and enforcement is with the nine Regional Water Boards. Porter-Cologne sets forth the obligations of the State Water Board and Regional Water Boards to adopt and periodically update water quality control plans. Persons discharging or proposing to discharge waste that could affect the quality of waters of the State must notify the Regional Water Boards through the filing of Reports of Waste Discharge (RWD). Porter-Cologne authorizes the State Water Board and Regional Water Boards to issue and enforce waste discharge requirements (WDRs), NPDES permits, Section 401 water quality certifications, or other approvals. The Regional Water Boards also have authority to issue waivers of RWD requirements and WDRs for broad categories of "low threat" discharge activities that have minimal potential for adverse water quality effects, when implemented according to prescribed terms and conditions.

The term "Waters of the State" is defined by Porter-Cologne as "any surface water or groundwater, including saline waters, within the boundaries of the state." The Regional Water Boards protect all waters in their regulatory scopes but have special responsibility for wetlands, riparian areas, and headwaters, including isolated wetlands, and waters that may not be regulated by the ACOE under Section 404 of the CWA. Waters of the State are regulated by either the State Water Board or the Regional Water Boards under the State Water Quality Certification Program, which regulates discharges of fill and dredged material under Section 401 of the CWA and the Porter-Cologne.

4.1.3.3 Local

The proposed project would use existing Cal-Am wells and would not entail the construction of any facilities. Therefore, the proposed project does not require any permits by the County of Monterey or the City of Carmel-by-the-Sea. The Carmel Valley Master Plan includes the policies related to the protection of biological resources. The purpose of these policies is to address the physical impacts of new development (e.g., erosion, habitat loss, etc.). The proposed project does not include the physical construction of any new improvements. The proposed project would rely on existing Cal-Am infrastructure to divert water under License 13868A. Given the nature of the proposed project, Carmel Valley Master Plan policies are generally not applicable to the project. The development of existing legal lots of record would be subject to local plans and ordinances (e.g., the Carmel Valley Master Plan and City of Carmel-by-the-Sea General Plan) and new development would be reviewed for consistency with applicable plans and policies in effect at the time of development. No Carmel Valley Master Plan policies are relevant to the direct effects of the proposed project.

4.1.4 THRESHOLDS OF SIGNIFICANCE

In accordance with CEQA Guidelines, a project impact would be considered significant if the project would:

- have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the Department or Service;
- have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the Department or Service;
- have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- conflict with any local policies or ordinances protecting biological resources, such as tree preservation policy or ordinance;
- conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan; or
- impede the use of native wildlife nursery sites or directly harm nesting species protected under the provisions of the MBTA.

4.1.5 EXISTING CONDITIONS

4.1.5.1 Setting

The proposed project involves a change petition that, if approved, would allow the diversion and use of water from the Carmel River subterranean stream for municipal purposes within the Carmel River watershed and the City of Carmel-by-the-Sea. The existing PODs and POU for License 13868, the proposed PODs and POU for License 13868A, and the proposed POU for License 13868B all are located within the Carmel River watershed or the City of Carmel-by-the-Sea. As described elsewhere in this EIR, the amount of water that would be diverted under proposed License 13868A, which could be used outside of the watershed, equals the amount of current consumptive use under the existing license. As a result, the proposed project would not adversely affect the existing water balance in the Carmel River system. The following is an overview of the Carmel River watershed; please refer to **Section 4.2, Hydrology and Water Quality** for more information.

The Carmel River watershed is located south of the Monterey Peninsula on the Central California coast (**Figure 3-1**). The watershed, which consists of approximately 250 square miles, is bounded by the Sierra de Salinas ranges on the northeast and the Santa Lucia Range on the southeast (Smith, et. al., 2004) (**Figure 3-2**). The Carmel River originates approximately 35 miles upstream from the Pacific Ocean at an elevation of 3,500 feet above sea level (DWR, 2003). The Carmel River flows northwest from the Santa Lucia Mountains, through Carmel Valley, and into the Pacific Ocean (Kondolf and Curry, 1982; Maloney, 1984).

The watershed has a typical coastal California wet-dry seasonal pattern. Mean annual rainfall varies across the watershed from about 14 inches along the northeast perimeter of the watershed to over 40 inches in the upper watershed area, with an average of about 17 inches/year (DWR, 2003; USGS, 1984). More than 90 percent of the annual rainfall occurs over the watershed during the six-month period between November and April (DWR/ACOE, 2008).

Historically, the Carmel River meandered along the floor of the valley, resulting in a dynamic riparian corridor that spanned much of the valley floor. Development of the valley has confined the river and isolated portions of the historic riparian corridor both physically and hydrologically.

The following description of existing biological conditions includes only the areas of the Carmel River corridor between the existing authorized POD and the proposed additional PODs, where physical changes in the environment could occur as a result of the project.

4.1.5.2 Sensitive Habitats

Sensitive habitats within the project study area with the potential to be impacted by the project include riparian and wetland habitat and habitat for special-status wildlife species. Riparian and wetland habitat are addressed below while habitat for special-status wildlife species is addressed in a **Section 4.1.4.3, Special-Status Species**.

The Carmel River riparian corridor consists of a dynamic mosaic of wetland, riparian, and aquatic habitat that is continually in flux (**Figure 4.1-1**). This habitat is affected by the presence and availability of surface and groundwater interacting with the substrate that it traverses, and associated land use activities. Surface water drives the structure of wetland and riparian habitats within a riverine system by removing vegetation and alluvial material during large flow events, resulting in varied topography that changes with each event, and subsequent sedimentation during small events. Bank location and slope, sand and gravel bar configuration, and depressions and placement of large woody debris (LWD) are all the result of surface flows. Subsurface flow drives the presence and distribution of wetland and riparian vegetation, as these plants and trees require access to subsurface hydrology for some period into the dry season. While all of the vegetated areas directly associated with the river are considered riparian, a subsection of those areas are also wetland (**Figure 4.1-1**), satisfying certain criteria in regard to the duration of saturation of the substrate. Within the riparian corridor, there is not always a distinct boundary between these habitat types as they transition into each other. The dynamic interplay between precipitation, surface water, groundwater, and the resulting plants and animals that occupy the area constitute the riparian corridor habitat. All components of the corridor are considered sensitive and require management consideration as part of the CEQA process.

Riparian

The typically accepted definition of riparian habitat is all of the vegetation associated with the bed and bank of a river that is distinct from the surrounding upland vegetation. Wetlands, on the other hand, are vegetated areas that meet certain hydrologic, vegetative, and soils criteria. Often, riparian habitat meets the criteria for wetlands within a riparian corridor. Where they differ is in the dryer up-slope portions of a riparian corridor near or at the top of the riverbank. In these areas, the riparian habitat may not be wet enough to meet the hydrology criteria of a wetland, depending on the methodology used to delineate the wetland features. As a result, while much of the riparian habitat within the Carmel River riparian corridor can be identified as both

wetland and riparian, drier portions are only considered riparian habitat (**Figure 4.1-1**). The project study area contains approximately 119.1 acres of riparian habitat.

Healthy riparian corridors are an essential part of a river's overall health. Riparian corridors, including wetlands and aquatic habitat, provide erosion control, shade, improved water quality, and habitat for aquatic and terrestrial species. Species that benefit from a healthy riparian corridor include the California red-legged frog (CRLF, *Rana draytonii*) and south-central California coast steelhead (steelhead, *Oncorhynchus mykiss irideus*), which are both listed as threatened under the ESA in the Carmel River watershed. The riparian corridor along the Carmel River consists primarily of red willow (*Salix laevigata*), arroyo willow (*S. lasiolepis*), black cottonwood (*Populus trichocarpa*), white alder (*Alnus rhombifolia*), and sycamore (*Plantanus racemosa*).

Within this reach of the river, the riparian corridor is an average of approximately 200 feet wide, but widths vary greatly based on site history and current land use, as much of the corridor is adjacent to residential development and golf courses. In some areas the riparian corridor is very narrow (as little as one or two trees wide along the stream bank) due to urbanization. In these locations, wildlife mobility is limited by the poor quality and quantity of the riparian corridor.

The quality of riparian habitat within the Carmel River watershed also varies. According to MPWMD, the furthest upstream portions of the Carmel River (the nine-mile reach upstream of Los Padres Reservoir) are the least impacted by human influences and remain naturally sustainable (MPWMD, 2004). Between Los Padres Dam and the Narrows,⁶ a distance of approximately 15 miles, riparian areas appear to be in reasonably good condition, although channel degradation (incision into sediment deposits) immediately downstream of Los Padres Dam and San Clemente Dam has left the root structures of many streamside trees exposed to scour and erosion. Between the Narrows and the Pacific Ocean, a distance of approximately 10 miles, much of the riparian-wetland area is functionally impaired due to groundwater extraction and development adjacent to the stream banks (CRWC, 2005). To minimize potential upstream impacts to biological resources due to groundwater withdrawals, the majority of groundwater extraction occurs within the lower 10 miles of the Carmel River, which includes the five-mile project study area. To offset potential impacts due to groundwater withdrawals, MPWMD implements a variety of measures (e.g., irrigation, vegetation maintenance, stream bank reconstruction, etc.) as part of the Mitigation Program. In addition, MPWMD also implements annual CRLF and steelhead rescues, habitat enhancement activities, and monitoring to minimize potential effects due to groundwater withdrawals.

Wetland

Wetlands are vegetated areas that meet certain hydrologic, vegetative, and soils criteria. Wetlands are a dominant component of a riparian corridor, providing many of the functions and values identified above, including erosion control, shade, improved water quality, and habitat for aquatic and terrestrial species. The distribution of wetland and riparian habitats were mapped using the National Wetland Inventory (USFWS, 2013b) and aerial photographs. The National Wetland Inventory classifies the majority of the area within the project study area (approximately 46.9 acres) as seasonally-flooded, palustrine, forested or scrub/shrub wetland (USFWS, 2013b) (identified as freshwater forested/shrub wetland on **Figure 4.1-1**). Scrub/shrub areas are dominated by woody vegetation less than six meters (20 feet) tall, while forested areas are characterized by woody vegetation that is six meters or taller. Some small areas (approximately 2.2 acres) are

⁶ Narrows refers to the portion of the Carmel River upstream of the alluvial valley.



Title: **Project Affected Reach Habitat Map**

Date: 10/24/2014
Scale: 1 inch = 0.2 miles
Project: 2013-24



Monterey | Truckee | San Jose
Denise Duffy and Associates, Inc.
Environmental Consultants Resource Planners
947 Cass Street, Suite 5
Monterey, CA 93940
(831) 373-4341

Figure
4.1-1

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also dominated by emergent erect, rooted, herbaceous hydrophytes (identified as freshwater emergent wetland on **Figure 4.1-1**). The seasonally-flooded water regime is characterized by the presence of surface water for extended periods, especially early in the growing season, but an absence of water by the end of the growing season in most years. The water table after flooding ceases is variable, extending from saturated to the surface to a water table well below the ground surface.

Other Waters

The project study area contains approximately 21.6 acres of riverine habitat (**Figure 4.1-1**). This habitat is classified by the National Wetland Inventory as a seasonally- to permanently-flooded, lower perennial riverine system with an unconsolidated shore and bottom (USFWS, 2013b). The “lower perennial” subsystem is characterized by a low gradient and slow water velocity where the substrate consists mainly of sand and mud and the floodplain is well developed. These areas are critical to steelhead passage. Unconsolidated shores include wetland habitats having two characteristics: 1) unconsolidated substrates with less than 75 percent areal cover of stones, boulders or bedrock; and, 2) less than 30 percent areal cover of vegetation. Unconsolidated bottoms include all wetlands with: 1) at least 25 percent cover of particles smaller than stones (less than 6-7 cm); and, 2) a vegetative cover less than 30 percent

4.1.5.3 Special-Status Species

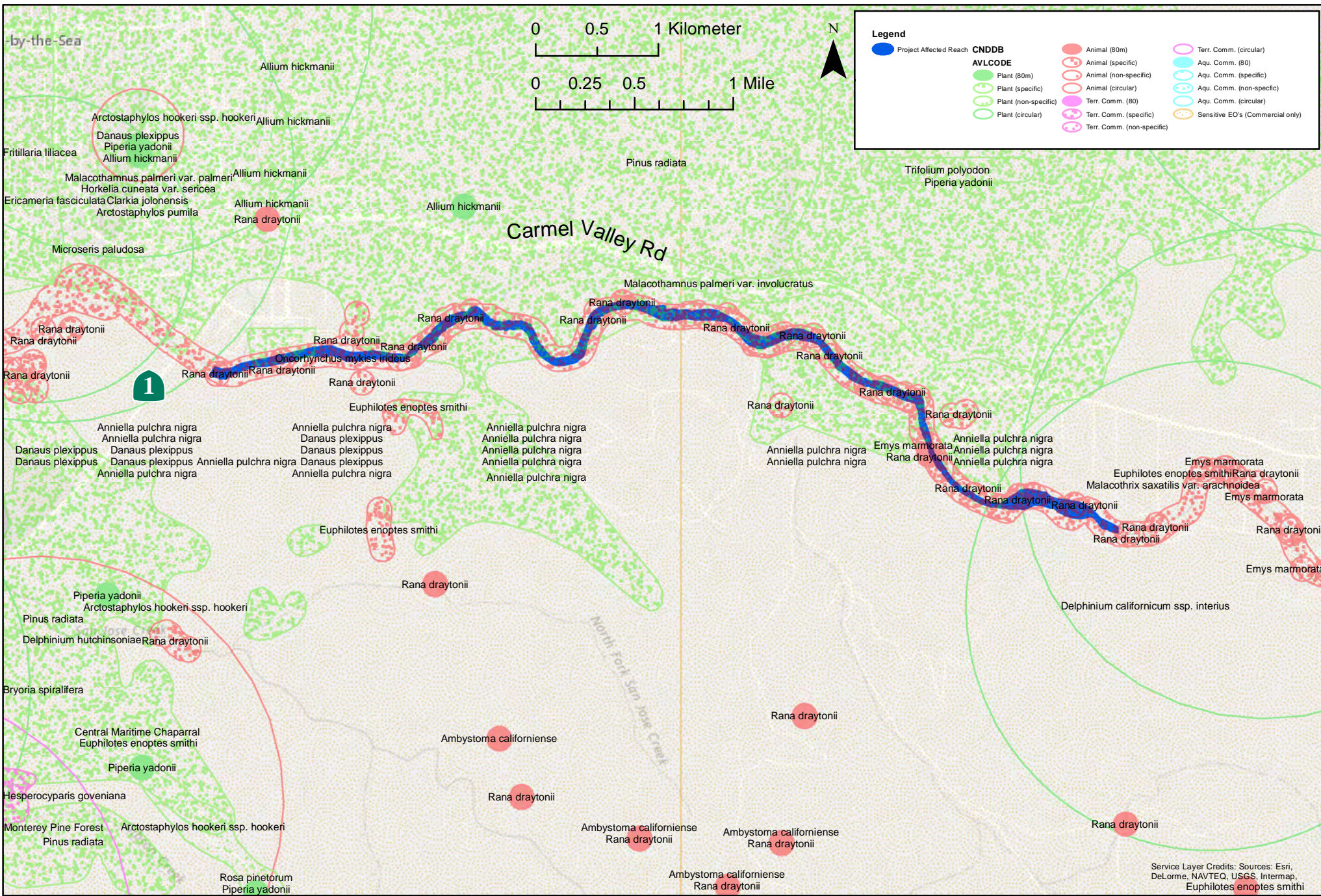
Published occurrence data within the project study area and surrounding USGS topographic maps were evaluated to compile a table of special-status species known to occur within the vicinity of the project (**Appendix B**). Each of these species was evaluated for their likelihood to occur within and immediately adjacent to the project study area. The special-status species that are known to or have been determined to have a moderate or high potential to occur within or immediately adjacent the project study area are discussed below. All other species presented in **Appendix B** are assumed “unlikely to occur” or have a low potential to occur for the reasons presented in the table. CNDDDB occurrence data for the species identified below is shown in **Figure 4.1-2**.

Special-Status Plants

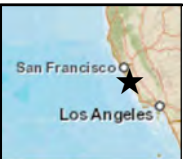
No special-status plant species are known to occur within the Carmel River riparian corridor or project study area (**Appendix B**). As a result, no special-status plant species are expected to occur.

Special-Status Wildlife

The project study area and surrounding area was evaluated for the presence or potential presence of a variety of special-status wildlife species (**Appendix B**). The following species are discussed due to their moderate or high potential to occur or known presence within the project study area. All other species presented in **Appendix B** are assumed “unlikely to occur” or have a low potential to occur for the reasons presented in the table.



Service Layer Credits: Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, Euphilotes enoptes smithi



Title: **California Natural Diversity Database Occurrence Map**

Date: 10/24/2014
 Scale: 1 inch = 1 miles
 Project: 2013-24



Monterey | Truckee | San Jose
Denise Duffy and Associates, Inc.
 Environmental Consultants Resource Planners
 947 Cass Street, Suite 5
 Monterey, CA 93940
 (831) 373-4341

Figure
4.1-2

Monterey Dusky-Footed Woodrat. The Monterey dusky-footed woodrat (*Neotoma macrotis fuscipes*) is a CDFW species of special concern. This is a subspecies of the dusky-footed woodrat (*Neotoma macrotis*), which is common to oak woodlands and other forest types throughout California. Dusky-footed woodrats are frequently found in forest habitats with moderate canopy cover and a moderate to dense understory, including riparian forests; however, they may also be found in chaparral communities. Relatively large nests are constructed of grass, leaves, sticks, and feathers and are built in protected spots, such as rocky outcrops or dense brambles of blackberry and poison oak. Typical food sources for this species include leaves, flowers, nuts, berries, and truffles. Dusky-footed woodrats may be a significant food source for small- to medium-sized predators. Populations of this species may be limited by the availability of nest material. Within suitable habitat, nests are often found in close proximity to each other.

The CNDDDB does not report any occurrences of Monterey dusky-footed woodrat within the eight quadrangles reviewed. However, this species is known to occur throughout the Carmel River corridor. Therefore, for the purposes of this EIR the Monterey dusky-footed woodrat is assumed present.

California Legless Lizard. The California legless lizard (*Anniella pulchra*) is a fossorial (burrowing) species that typically inhabits sandy or friable (loose) soils. Habitats known to support this species include (but are not limited to) coastal dunes, valley and foothill grasslands, chaparral, and coastal scrub at elevations from near sea level to approximately 1,800 meters (6,000 feet). The California legless lizard forages on invertebrates beneath the leaf litter or duff layer at the base of bushes and trees or under wood, rocks, and slash in appropriate habitats. Little is known about the specific habitat requirements for courtship and breeding; however, the mating season for this species is believed to begin late spring or early summer, with one to four live young born between September and November. The diet of this species likely overlaps to some extent with that of juvenile alligator lizards and perhaps some salamanders. California legless lizards eat insect larvae, small adult insects, and spiders. This species may be preyed upon by alligator lizards, snakes, birds, and small mammals.

The CNDDDB reports 36 occurrences of California legless lizard within the eight quadrangles reviewed. The CNDDDB reports non-specific location occurrences of this species within four of the eight quadrangles, including the Monterey and Seaside quadrangles within which the project occurs. Suitable habitat for California legless lizard is present within the project study area where appropriate cover conditions occur. Therefore, the California legless lizard has a moderate potential to occur within the project study area.⁷

Western Pond Turtle. Western pond turtles (*Emys marmorata*) are uncommon to common in permanent or nearly permanent aquatic resources in a wide variety of habitats throughout California, west of the Sierra-

⁷ The CDFW has recognized two subspecies of the California legless lizard as species of special concern, the black-legless lizard (*Anniella pulchra ssp. nigra*) and silvery-legless lizard (*A. p. ssp. pulchra*). These subspecies are based primarily on phenotypic differences (black-legless lizard being much darker, having fewer scales on the back, and a relatively shorter tail) and very limited genetic work. Further, the range of the black-legless lizard has historically been classified as “restricted to coastal and interior dune sand other areas of sandy soils in the vicinity of Monterey Bay and the Monterey Peninsula” (USFWS, 1998), while the range of silvery-legless lizard has been classified as widespread throughout central California (Parham and Papenfuss, 2008). However, recent genetic studies have revealed five lineages of this species that correspond with different geographic areas of California (Parham and Papenfuss, 2008). These studies do not, however, identify the legless lizards occurring on the coast of Monterey Bay (i.e. the currently designated black-legless lizard) as a separate lineage. As such, for the purposes of this EIR, the California legless lizard is discussed on a species level and not at the CDFW-recognized subspecies level. Additionally, both subspecies and all lineages are considered CDFW species of special concern.

Cascade crest and are absent from desert regions, except in the Mojave Desert along the Mojave River and its tributaries. Elevation range extends from near sea level to 1,430 meters (4,690 feet). Western pond turtles require basking sites such as partially submerged logs, rocks, mats of floating vegetation, or open mud banks. The home range of western pond turtles is typically quite restricted; however, ongoing research indicates that in many areas, turtles may leave the watercourse in late fall and move into upland habitats where they burrow into duff and/or soil and overwinter (Holland, 1994). Western pond turtles remain active year-round and may move several times during the overwintering period. The time spent in the terrestrial habitat appears highly variable; in southern California western pond turtles may remain in these sites for only a month or two. In pond and lake habitats, however, some turtles remain in the pond during the winter (Holland, 1994). Additionally, during the spring or early summer, females move overland for up to 100 meters (325 feet) to find suitable sites for egg-laying. Nests are typically excavated in compact, dry soils in areas characterized by sparse vegetation, usually short grasses or forbs (Holland, 1994). Three to 11 eggs are laid from March to August depending on local conditions (Ernst and Barbour, 1972). The western pond turtle is not known to be territorial, but aggressive encounters, including gesturing and physical combat, are common and may function to maintain spacing on basking sites and to settle disputes over preferred spots (Bury and Wolfheim, 1973). This species is considered omnivorous and food sources include aquatic plant material, beetles, and a wide variety of aquatic invertebrates. Fishes, frogs, and carrion have also been reported among their food (Stebbins, 1972).

The CNDDDB reports 12 occurrences of western pond turtle within the eight quadrangles reviewed, including occurrences within the Carmel River near the proposed POD, and suitable habitat for western pond turtle is present within the project study area. Therefore, the western pond turtle is known to occur within the project study area.

Two-Striped Garter Snake. The two-striped garter snake (*Thamnophis hammondi*) is a CDFW species of special concern. The two-striped garter snake occurs throughout the South Coast Range and the Transverse Range, from the eastern slope of the Diablo Range to the Mexican border. This species is associated with permanent or semi-permanent bodies of water in a variety of habitats from sea level to 2,400 meters (8,000 feet). Habitat types include perennial and intermittent streams with rocky riverbeds, large sandy-bottom river beds, and natural and artificial ponds (Jennings and Hayes, 1994). Two-striped garter snakes forage primarily for fish and their eggs, amphibians, and amphibian larvae, but small mammals and invertebrates are also taken. Courtship and mating occur in the spring and one to 25 young are born in later summer and fall.

The CNDDDB reports one occurrence of the two-striped garter snake within the eight quadrangles reviewed, located approximately 10.6 miles from the project study area. Suitable habitat for this species is present within the Carmel River corridor. Therefore, the two-striped garter snake has a moderate potential to occur within the project study area.

California Red-Legged Frog. The CRLF was listed as a federal ESA threatened species on June 24, 1996 (61 FR 25813-25833) and is also a CDFW species of special concern. Critical habitat was designated for CRLF on April 13, 2006 (71 FR 19244-19346) and revised on March 17, 2010 (75 FR 12816-12959). The revised critical habitat went into effect on April 16, 2010.

The CRLF is the largest native frog in California (44-131 mm snout-vent length) and was historically widely distributed in the central and southern portions of the state (Jennings & Hayes, 1994). Adults generally inhabit aquatic habitats with riparian vegetation, overhanging banks, or plunge pools for cover, especially

during the breeding season (Jennings and Hayes, 1988). They may take refuge in small mammal burrows, leaf litter, or other moist areas during periods of inactivity or to avoid desiccation (Rathbun, et al., 1993; Jennings and Hayes, 1994). Radiotelemetry data indicates that adults engage in straight-line breeding season movements irrespective of riparian corridors or topography and they may move up to two miles between non-breeding and breeding sites (Bulger et al., 2003). During the non-breeding season, a wider variety of aquatic habitats are used including small pools in coastal streams, springs, water traps, and other ephemeral water bodies (USFWS, 1996). CRLF may also move up to 300 feet from aquatic habitats into surrounding uplands, especially following rains, where individuals may spend days or weeks (Bulger et al., 2003).

This species requires still or slow-moving water during the breeding season where it can deposit large egg masses, which are most often attached to submergent or emergent vegetation. Breeding typically occurs between December and April depending on annual environmental conditions and locality. Eggs require six to 12 days to hatch and metamorphosis generally occurs after 3.5 to seven months, although larvae are also capable of over-wintering. Following metamorphosis, generally between July and September, juveniles are 25-35 mm in size. Juvenile CRLF appear to have different habitat needs than adults. Jennings and Hayes (1988) recorded juvenile frogs mostly from sites with shallow water and limited shoreline or emergent vegetation. Additionally, it was important that there be small one-meter breaks in the vegetation or clearings in the dense riparian cover to allow juveniles to sun themselves and forage, but to also have close escape cover from predators. Jennings and Hayes also noted that tadpoles have different habitat needs and that in addition to vegetation cover, tadpoles use mud. It is speculated that CRLF larvae are algae grazers, however, foraging larval ecology remains unknown (Jennings, et al., 1993).

It has been shown that occurrences of CRLF are negatively correlated with presence of non-native bullfrogs (Moyle, 1973; Jennings and Hayes, 1986 and 1988), although both species are able to persist at certain locations, particularly in the coastal zone. It is estimated that CRLF has disappeared from approximately 75percent of its former range and has been nearly extirpated from the Sierra Nevada, Central Valley, and much of southern California (USFWS, 1996).

The CNDDB reports 59 occurrences of CRLF within the eight quadrangles reviewed, including several occurrences within the Carmel River near the proposed POD. CRLF have been observed in backwater and off-channel pools along the Carmel River and its tributaries (EcoSystems West Consulting Group, 2001; Reis, 2002; Reis, 2003; CDFW, 2013). These backwater and off-channel pools provide breeding habitat that is associated with still water areas within the project study area. Therefore, CRLF are known to occur within the project study area.

Steelhead. The south-central California coast steelhead is currently designated as a federal ESA threatened species in all naturally spawned populations (and their progeny) in streams from the Pajaro River (inclusive) located in Santa Cruz County, California, to (but not including) the Santa Maria River (71 FR 833-862) in San Luis Obispo County. The designation of critical habitat for steelhead became effective on January 2, 2006 (70 FR 52488-52627). Primary constituent elements include freshwater spawning sites, freshwater rearing sites, freshwater migration corridors, estuarine areas, nearshore marine areas, and offshore areas.

In North America, steelhead are found in Pacific Ocean drainages from southern California to Alaska. In California, known spawning populations are found in coastal streams from Malibu Creek in Los Angeles County to the Smith River near the Oregon border, and in the Sacramento and San Joaquin River systems. The present distribution and abundance of steelhead in California has been greatly reduced from historical

levels. In general, steelhead migrate to the sea as two year old fish, spend two years in the ocean, and then return to fresh water to spawn. Peak spawning for steelhead occurs from December through April in small streams and tributaries (HDR, 2014a). Unlike Pacific salmon, steelhead do not necessarily die after spawning, although repeat spawning rates are generally low and vary considerably among populations. Steelhead have traditionally been grouped into seasonal runs according to their peak migration period; in California there are well-defined winter, spring, and fall runs.

The CNDDDB reports two occurrences of steelhead within the eight (8) quadrangles evaluated, including the Carmel River. Suitable habitat is present within the aquatic portions of the project study area. Steelhead are known to occur within the project study area.

The MPWMD is also responsible for conducting annual surveys of the lower Carmel River (downstream of River Mile 5.5) to assess locations and conditions where upstream migration of adult steelhead might be blocked or impaired and assess whether the need for channel modification is necessary (MPWMD, 2010; MPWMD, 2011; MPWMD 2012; MPWMD 2013).⁸ The MPWMD annually monitors five locations that are critical for fish passage. The MPWMD refers to these locations as “critical riffles.”⁹ While the locations, configurations, and conditions of the critical riffles vary from year to year, MPWMD has identified five general locations where low flows or channel configurations could potentially block or impair upstream migration of steelhead. **Figure 4.1-3** shows the general locations of these riffles based on the most recent monitoring information collected by MPWMD. According to MPWMD, the precise locations of these riffles may vary from year to year (ibid.).

At each of the five locations, MPWMD surveys channel cross-sections and compares the results to impairment and blockage criteria established in the Aquifer Storage and Recovery Project (ASR) FEIR (ibid). A detailed description of the ASR Project is contained in Chapter 5, CEQA Considerations. Applicable criteria include blockage, impaired, and no impairment. MPWMD defines blockage as when the width and depth of a continuous section is less than five feet wide and less than 0.6 feet deep. MPWMD defines impaired as when the width and depth of a continuous section is five to ten feet wide and greater than or equal to 0.6 feet deep. No impairment is defined as when the width and depth of a continuous section is greater than or equal to 10 feet wide and greater than or equal to 0.6 feet deep (MPWMD, 2013). **Table 4.1-1** summarizes the results of MPWMD’s monitoring for Water Year (WY) 2010 through 2013. The results of MPWMD’s annual monitoring indicate upstream adult steelhead migration passage at some riffles is likely to be blocked at river flows of less than 50 cfs, may be impaired at river flows between 50 and 90 cfs, and is unlikely to be impaired at river flows greater than 90 cfs (Balance, 2014b).

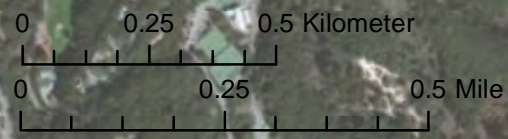
⁸ The MPWMD is required to conduct annual monitoring of the lower reaches of the Carmel River based on Mitigation Measure AR-1 identified in the Final Environmental Impact Report/Environmental Assessment of the Monterey Peninsula Water Management District Phase 1 Aquifer Storage and Recovery Project (MPWMD, 2006). Mitigation Measure AR-1 requires that the MPWMD “conduct annual survey below River Mile 5.5 and monitor river flow during the January through June Period.” The purpose of the annual survey is to monitor locations where low flow and channel configuration could potentially block or impair upstream migration of adult steelhead. These areas are generally referred to as “critical riffles.”

⁹ Riffles are habitat units in streams and rivers with relatively shallow depth and swiftly flowing turbulent water. They serve multiple functions in the ecological processes of cold water streams and rivers, and are an integral link in the life histories of salmon and trout. Changes in streamflow and associated water depth may limit the hydrologic connectivity of river habitats and impede critical life history tactics of salmon and trout (CDFW, 2013).



Legend

- Existing Points of Diversion
- New Points of Diversion
- MPWMD Critical Riffles
- Project Affected Reach



Service Layer Credits: Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013
 Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



Title: **MPWMD Critical Riffles**

Date: 10/24/2014
 Scale: 1 inch = 0.2 miles
 Project: 2013-24



Monterey | Truckee | San Jose
Denise Duffy and Associates, Inc.
 Environmental Consultants Resource Planners
 947 Cass Street, Suite 5
 Monterey, CA 93940
 (831) 373-4341

Figure
4.1-3

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**Table 4.1-1
MPWMD Critical Riffles (WY 2010-2013)**

WY	Blocked Riffles	Impaired Riffles	Non-impaired Riffles
2010	1 site blocked (at 48 cfs)	1 site impaired (at 57 cfs)	no impaired riffles at 159, 89, and 73 cfs
2011	none	some impaired riffles at 73, 84, and 94 cfs	no impaired riffles at 99 and 122 cfs
2012	1 site blocked (at 50 cfs)	3 sites impaired (at 62 and 68 cfs)	no impaired riffles at 103 and 78 cfs
2013	none	2 sites impaired (at 77 cfs)	3 sites not impaired (at 77 cfs)

Source: MPWMD, River Flow Monitoring for Phase 1 and 2 Aquifer Storage and Recovery Project (2010-2013), as summarized by Balance Hydrologics, Inc. (Balance, 2014b).

As described elsewhere in this EIR, the MPWMD is responsible for implementing a comprehensive Mitigation Program to address the environmental effects associated with the District's Water Allocation Program. As described above, the District is also responsible for implementing additional mitigation measures as outlined in the ASR Phase 1 FEIR (MPWMD, 2006; MPWMD, 2012). An important component of the Mitigation Program includes the Steelhead Resource Program (also referred to as "Fisheries Program"). As part of the Steelhead Resource Program, the District: 1) conducts fish rescues and rearing; 2) manages water resources to sustain and optimize flows in the lower reaches of the river; 3) monitors the status of steelhead population and its habitat; 4) evaluates and modifies/rehabilitates critical riffles; 5) monitors the lagoon, monitoring surface water quality; 6) addresses on-going steelhead passage issues; and, 7) implements applicable MMRP requirements.¹⁰ The CRSA also implements fish rescue operations.

According to the MPWMD, District staff conducted fish rescues in the lower reaches of the river on March 3, 2014, which was the earliest rescue start date since 1991 (MPWMD, 2014). By the end of the month, MPWMD rescued 1,092 fish, including: 473 smolts, 617 non-smolted juveniles, and two adults. Smolts and adults were acclimated to seawater and then released into the ocean at Stewarts Cove, near the mouth of Carmel River. MPWMD transported the juveniles further upstream and released them. On March 18, 2014, MPWMD staff set up a steelhead smolt trap to catch downstream migrates before they reach the drying section of the river. MPWMD operated the trap for eight days. 293 fish were captured, including: 91 smolts, 192 juveniles, and 1 adult. According to the MPWMD's 2011-2012 annual report (MPWMD, 2013c), MPWMD rescued a total 1,751 steelhead, including: 1,670 young of the year (YOY), 81 yearlings, and 0 mortalities (MPWMD, 2013c). MPWMD transported and released rescued steelhead at two locations: Sleepy Hollow Steelhead Rearing Facility (SHSRF) or Garland Park. CRSA also conducts steelhead rescues following MPWMD rescue operations. In 2011, CRSA rescued 7,713 steelhead from five Carmel River tributaries; CRSA did not do any rescue in the mainstem of the Carmel River in 2011. According to the MPWMD 2012-2013 annual report (MPWMD, 2014a), MPWMD rescued a total of 8,159 steelhead including 7,365 young of the year (YOY), 765 yearlings, and 29 mortalities (0.35%). Compared to previous rescue seasons, rescue totals in the 2012 dry season were below the 1989-2012 average.

Nesting Raptors, Migratory Birds, and Other Protected Avian Species. Raptors and their nests and migratory birds are protected under Fish and Game Code and the MBTA. While the life histories of these

¹⁰ These efforts are more thoroughly discussed in the annual reporting prepared by MPWMD; the most recent annual report for WY 2013 is available at the following website:

http://www.mpwmd.dst.ca.us/programs/mitigation_program/annual_report/2012_2013/Ry%202013%20Mitigation%20Report%20Final.pdf

species vary, overlapping nesting and foraging similarities (approximately February through August) allow for their concurrent discussion. Most raptors are breeding residents throughout most of the wooded portions of the state. Stands of live oak, riparian deciduous, or other forest habitats, as well as open grasslands, are used most frequently for nesting. Breeding occurs February through August, with peak activity May through July. Prey for these species includes small birds, small mammals, and some reptiles and amphibians. Many raptor species hunt in open woodland and habitat edges. Various species of raptors (such as red-tailed hawk [*Buteo jamaicensis*], red-shouldered hawk [*B. lineatus*], great horned owl [*Bubo virginianus*], and American kestrel [*Falco sparverius*]) have a potential to nest within any of the large trees present within riparian corridor. Additionally, migratory bird species that may be present within the project study area includes, but is not limited to, black-headed grosbeak (*Pheucticus melanocephalus*), cedar waxwing (*Bombycilla cedrorum*), common merganser (*Mergus merganser*), Pacific-slope flycatcher (*Empidonax difficilis*), spotted sandpiper (*Actitis macularia*), violet-green swallow (*Tachycineta thalassina*), and Swainson's thrush (*Catharus ustulatus*). For a more comprehensive list of avian species known to occur within the Carmel River riparian corridor, please refer to reports prepared for the MPWMD by the Ventana Wildlife Society, including the Avian Diversity and Riparian Focal Species Abundance on the Lower Carmel River, Monterey County, CA 1992-2007 (Ventana Wildlife Society, 2008).

4.1.6 IMPACTS AND MITIGATIONS

4.1.6.1 Impact Analysis Approach

The potential direct physical changes to the environment associated with the proposed project are limited to changes in surface water flows and groundwater pumping between the existing authorized POD and the proposed new PODs. This area is described in this section as the five-mile reach of the Carmel River, which constitutes the project study area. No other direct physical impacts (e.g., ground-disturbance, construction, etc.) would occur in connection with the project; the project would rely on existing Cal-Am infrastructure to pump water under proposed License 13868A.

The analysis contained in this section assumes that MPWMD or Cal-Am will continue to implement the requirements of the Mitigation Program to offset impacts associated with Cal-Am groundwater withdrawals, and continue to implement additional mitigation measures as outlined in the ASR Phase 1 FEIR. In addition, as described in **Chapter 3, Project Description**, Cal-Am would be responsible for implementing any additional irrigation at the three proposed POD that may be necessary due to the incremental increase in pumping associated with proposed License 13868A. As a result, the following analysis assumes that the Mitigation Program and applicable ASR project mitigation measures will continue to be implemented by MPWMD or Cal-Am and that Cal-Am would be responsible for implementing irrigation, if necessary, to offset impacts due to pumping under proposed License 13868A. As a result, there are existing programs and measures in place to address potential impacts to riparian and other biological resources due to groundwater withdrawals along the Carmel River. In addition, proposed License 13868A and License 13868B would also subject to certain specific conditions, as described in the proposed draft licenses.¹¹ Applicable conditions include, but are not limited to, maintaining separate records of water use, and conducting additional irrigation of the riparian corridor if irrigation is not performed by the MPWMD, Cal-Am or County of Monterey, among other conditions. Adherence with applicable conditions of approval, in addition to existing measures implemented as part of the Mitigation Program and applicable ASR mitigation measures would ensure that

¹¹ Copies of the Draft Licenses are available for review on the State Water Board Division of Water Rights website: http://www.waterboards.ca.gov/waterrights/water_issues/programs/applications/petitions/2013.shtml

potential effects to biological resources would be minimized. The proposed project could have a potentially significant effect requiring mitigation if it would result in additional mitigation requirements beyond those associated with the MPWMD Mitigation Program and individual irrigation requirements that may be necessary due to pumping under proposed License 13868A.

The following CEQA analysis specifically evaluates the proposed project's potential impacts on biological resources. Where applicable, this analysis relies on the findings of project-specific technical analyses prepared by Balance Hydrologics, Inc (Balance) (**Appendix C-1** and **Appendix C-2**) and HDR, Inc. (**Appendix D-1** and **Appendix D-2**). These reports evaluated the project's potential effects on surface water, groundwater, and fishery and riparian resources due to the change in authorized POD as proposed under License 13868A. This EIR describes each of the applicable technical reports and their findings below. This information is provided in support of the following CEQA analysis. For more information, please refer to each of the applicable technical reports.

Balance Hydrologics - Geomorphic and Hydrologic Context Memorandum

Balance prepared a technical memorandum for the project, which evaluated the potential impacts of the proposed project on hydrologic and geomorphic aspects of the Carmel River and associated habitat.¹² This analysis considered the potential direct impacts of the project on instream flows, riparian vegetation along the river and floodplain, and the cumulative effects of past, present, and reasonably foreseeable projects that are likely to affect flows and/or aquifer levels within the project study area/project affected reach. In April 2014, Balance prepared an addendum to that technical memorandum in response to specific comments received during the NOP period and scoping meeting. The following is an overview of Balance's findings that are relevant to the analysis of potential project effects to CRLF, riparian habitat, and critical riffles. Other technical findings related to hydrology and water quality are only discussed to the extent that they provide information relevant to the analysis of biological effects. Please refer to **Section 4.2, Hydrology and Water Quality** for further discussion.

Riparian. Adding three additional PODs to License 13868A would result in localized increases in pumping at three existing Cal-Am wells located in the lower reaches of the Carmel River. For the purposes of this EIR, the primary issue of concern related to riparian habitat is whether potential increases in pumping would significantly increase stress to riparian vegetation that relies on groundwater when soil-moisture declines after the rainy season.

McNiesh (1986) assessed the influence of groundwater drawdown on riparian vegetation, looking specifically at vegetation near several Cal-Am wells within the lower Carmel Valley. He was able to discern a significant correlation between groundwater drawdown and water-stress levels in plants, and he established guidelines that could be used to determine if, and when, supplemental irrigation is necessary to maintain a healthy riparian corridor. McNiesh's findings are as follows:

- Drawdown (relative to winter base levels) of less than 1 foot over a 7-day period, or total seasonal drawdown of less than 4 feet, has little to no effect on riparian stress.

¹² This analysis included a detailed review of aerial photographs, field reconnaissance, review of technical material previously prepared by Davids Engineering and West Yost Associates, and an evaluation of the project's potential effects on streamflow and other resource considerations.

- Drawdown of 1 to 2 feet in a 7-day period, or total seasonal drawdown of 4 to 8 feet will result in mild water stress.
- Drawdown of more than 2 feet in a 7-day period or total seasonal drawdown greater than 8 feet will result in severe water stress.
- Rate of groundwater drawdown appears to be a more significant limiting factor than seasonal drawdown, in part because riparian vegetation is better able to acclimate to higher seasonal fluctuations by developing a deeper root system. (Constraints on the rate of drawdown are related to the time it takes for the plant to shift the “active” root zone, which can be an issue regardless of how deep the total root structure is.)

Seasonal drawdown at the Cal-Am wells under existing conditions is regularly five to 15 feet in normal years, and during drought years groundwater can be as much as 50 feet below ground surface (West Yost, 2013). As a component of the Mitigation Program, MPWMD maintains a Riparian Corridor Management Program that includes, among other activities, periodic irrigation around Cal-Am wells in the lower Carmel Valley to mitigate impacts to vegetation caused by groundwater drawdown (MPWMD, 2013). The irrigation program offsets the tendencies of the wells to diminish the amount of woody riparian vegetation over their drawdown cones. Under current practices, irrigation has proven successful in sustaining the needed riparian fringe and preventing such impacts.

West Yost (2013) estimated the additional drawdown resulting from the proposed project at each of the Cal-Am wells where water would be pumped, and determined that the project would result in an approximate 2-4 percent increase in drawdown, relative to existing conditions at the river, near the various Cal-Am wells. As discussed above, stated ranges of plant stress levels (McNiesh, 1986) are on the order 0-4 feet, 4-8 feet, and greater than 8 feet of seasonal groundwater decline (relative to winter base levels). While it is recognized that these thresholds may be somewhat arbitrary and that the actual correlation of seasonal groundwater decline relative to riparian stress is a continuum, the scale of potential additional drawdown as a result of the proposed project is small (at most 0.31 foot) relative to threshold range and the existing seasonal fluctuations within the aquifer. Therefore, the proposed project is not anticipated to substantially affect existing rates of groundwater drawdown such that additional measures would be necessary to offset potential impacts due to localized increases in groundwater pumping (Balance, 2014a).

MPWMD bases its irrigation mitigation program on weekly measurements of water levels at several monitoring wells within the lower Carmel River aquifer. Riparian irrigation is triggered when certain thresholds, based on the McNiesh criteria, are exceeded. It is possible that the proposed project could trigger irrigation slightly sooner than under existing conditions if the additional project drawdown results in exceedance of an irrigation threshold that would not otherwise have been exceeded. However, this potential change in irrigation schedule would not result in a significant change in the total amount of water extracted from the aquifer, because:

1. The amount of additional drawdown is small relative to the magnitude of the threshold ranges, and thus unlikely to often result in the crossing of a particular threshold based on the weekly well readings; and
2. The irrigation water applied to the riparian vegetation is simply replacing water that would otherwise have been consumed by vegetation, had the water levels not exceeded the stress threshold.

CRLF. Off-channel and backwater resources within the project study area, which can sustain CRLF breeding, are a function of site-specific hydrogeomorphological conditions. Significant riverine flows or floods move substrate and LWD, carving new channels sometimes creating temporary pools. This process can result in features suitable for CRLF breeding if they are located in an area that has sufficient hydrology to sustain surface water well into late summer. The presence, density and distribution of these potential breeding resources are dynamic and may change each year, or at a minimum, after each large flow event. The project's effects on these resources are relevant only to the potential for pools to dry significantly sooner in the dry season than they would otherwise, prior to the transformation of tadpoles.

CRLF habitat existing downstream of the project study area in the Carmel lagoon would not be affected by the project. A portion of the amount of water authorized under the existing License 13868 equal to the estimated average amount of return flow and undiverted water from current irrigation of the POU (46.2 acre-feet per year; Davids Engineering, 2013; Macaulay, 2013) would not be diverted and instead would be dedicated to instream uses. This dedication would ensure that there is no net loss of water from the aquifer due to the proposed project. For this reason, the proposed project would only involve changes in points of diversion, because the net volume of water that is currently being pumped is already accounted for in the water balance for the lagoon under existing conditions (Balance, 2014a).

Streamflow Analysis. Balance also conducted streamflow analysis to evaluate the potential effects of the project on seasonal flows in the Carmel River. Balance's analysis was intended to assess the potential impacts of temporal changes in pumping within the project affected reach. The streamflow analysis relied on a comparison between existing monthly distribution of pumping from Odello Well #2 under the existing license and changes proposed as part of the project. The changes in distribution of monthly pumping associated with the proposed project would result in no change or decrease in flow within the project study area/project affected reach during six months of the year (May through October). Reach-wide net reductions would be minor (at most 0.05 cfs) and would occur in the winter months when river flows are normally their highest. For a more detailed discussion, please refer to **Section 4.2, Hydrology and Water Quality**. Balance concluded that reach-wide streamflows would be the same or higher during May through October and slightly less from November through April, under the proposed project (Balance, 2014a).

Balance used this information to evaluate the potential impacts of changes in streamflow as it relates to critical life stages for steelhead. To evaluate the magnitude and significance of the changes in river flow that could occur due to the proposed project, Balance applied the estimated seasonal changes in pumping rates to the 52-year USGS record of daily streamflow at Via Mallorca, which is located in the middle of the lowermost reach of the Carmel River. **Table 4.1-2** shows pre-project, post-project and changes in numbers of days of constraints due to the proposed project. Constraints to downstream migration, smolt outmigration, and juvenile rearing were based on criteria used by MPWMD to evaluate potential impacts associated with the ASR Project. As shown in **Table 4.1-2**, the proposed project would have a relatively insignificant effect on the numbers of days of constraints to downstream migration, smolt outmigration, and juvenile rearing. This analysis indicates that the proposed project would have relatively insignificant effects, particularly during the summer period when surface flows are at their lowest. This approach is consistent with the approach used by others in order to evaluate the temporal effects of the proposed project on fisheries and is a reasonable approach to assess such effects (HDR, 2014a; HDR, 2014b).

**Table 4.1-2
Potential Streamflow Impacts
Between Proposed POD and Highway 1**

Year type ⁴	Number of years in record	Days of constraint to fall/winter downstream migration ¹			Days of constraint to spring smolt outmigration ²			Days of constraint to summer juvenile rearing ³		
		Pre-project average days per year	Post-project average days per year	Change in number of days per year	Pre-project average days per year	Post-project average days per year	Change in number of days per year	Pre-project average days per year	Post-project average days per year	Change in number of days per year
Extremely Wet	7	75.7	76	0.3	0	0	0	93.7	93.7	0
Wet	6	80.2	80.7	0.5	0	0	0	142.2	142.2	0
Above Normal	8	67.9	68.1	0.2	1.3	1.3	0	97.3	97.8	0.5
Normal	11	70.5	72.9	2.4	5.1	5.1	0	144.8	144.9	0.1
Below Normal	5	80.4	80.6	0.2	12.6	12.6	0	176.8	177.4	0.6
Dry	6	80.5	81.3	0.8	25.8	25.8	0	163	163.2	0.2
Critically Dry	9	152.9	153.3	0.4	55.3	55.6	0.3	209	209.3	0.3
All years	52	88.3	89.1	0.8	15.0	15.1	0.1	146.6	146.8	0.2

Notes:

¹ Downstream migration is constrained when Carmel River flows fall below 10 cfs during the months of October through March, per Aquatic resources analysis in the ASR EIR (Jones and Stokes, 2006). This analysis includes days of zero flow early in the wet season prior to high flows that might trigger outmigration, so the actual number of constraining days would be less. The change in the number of days, however, is likely reflective of actual change in constraining days.

² Smolt outmigration is constrained when Carmel River flows fall below 10 cfs during the months of April and May, per Aquatic resources analysis in the ASR EIR (Jones and Stokes, 2006).

³ Juvenile rearing habitat is constrained when flow at the Near Carmel gage falls below one cfs during the months of June-December, per Aquatic resources analysis in the ASR EIR (Jones and Stokes, 2006), but the lower Carmel River is completely dry during much of this period.

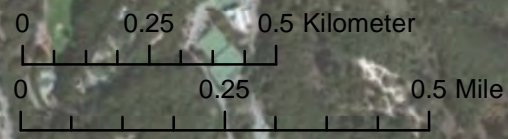
⁴ Water year type as classified by MPWMD. A water year begins on October 1 and ends on September 30 of the named year. For example, water year 2013 (WY 2013) began on Oct. 1, 2012, and concluded on September 30, 2013.

Critical Riffles. In addition to evaluating the temporal effects of the proposed project, Balance also conducted an analysis of the proposed project's potential spatial effects as it relates to critical riffles and applicable fish passage criteria. More specifically, Balance evaluated the relationship of the potential reductions in flow associated with the proposed project to fish passage (Balance, 2014a) by evaluating the effects of reduced surface flows on four (4) critical riffles located within the project study area (**Figure 4.1-4**). The lower Carmel River channel is typically between 150 to 300 feet wide.



Legend

- Existing Points of Diversion
- New Points of Diversion
- MPWMD Critical Riffles
- Riffles
- Project Affected Reach



Service Layer Credits: Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013
 Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



Title: **Riffle Location Map**

Date: 10/24/2014
 Scale: 1 inch = 0.2 miles
 Project: 2013-24



Monterey | Truckee | San Jose
Denise Duffy and Associates, Inc.
 Environmental Consultants Resource Planners
 947 Cass Street, Suite 5
 Monterey, CA 93940
 (831) 373-4341

Figure
4.1-4

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Even at relatively low flows, the riffles are between 15 to 30 feet wide, as measured in the aerial photographs at visible riffles when flow is present. At those widths, reductions in flow results in a much smaller drop in flow depth than would occur in a more confined riffle setting (Balance, 2014a).¹³

Balance evaluated potential impacts to critical flows based on the critical depth for fish passage developed by the CDFW (CDFW, 2013). More specifically, Balance identified a critical passage depth criteria of greater than 0.3 feet for smolts and 0.7 feet for adults across at least 25 percent of the riffle width. Based on the model results (Table 4.1-3), Balance identified that existing critical flows in the Carmel River range between 25 to 60 cfs for adult passage, and 11 to 16 cfs for smolt outmigration (Balance, 2014a). Balance subsequently calculated the change in depth at these flow rates based on the estimated maximum reduction in surface flows (0.16 cfs) associated with the proposed project (Table 4.1-3). The reduction in estimated surface flows corresponds to the maximum sustained pumping rate under proposed License 13868A (West Yost, 2013).

**Table 4.1-3
Assessment of Critical Flows for Fish Passage in the Lower Carmel River**

Riffle location	Existing conditions				With project					
	Adults		Smolt		Adults			Smolt		
	Flow ¹	Depth ²	Flow ¹	Depth ²	Flow ³	Depth ⁴	Change in depth	Flow ³	Depth ⁴	Change in depth
	(cfs)	(ft.)	(cfs)	(ft.)	(cfs)	(ft.)	(ft.)	(cfs)	(ft.)	(ft.)
0.36 miles downstream of Via Mallorca	60	0.70	16	0.30	59.84	0.70	0.00	15.84	0.30	0.00
0.20 miles upstream of Via Mallorca	36	0.70	11	0.30	35.84	0.68	-0.02	10.84	0.30	0.00
0.14 miles upstream of Rancho San Carlos Rd.	56	0.70	13	0.30	55.84	0.70	0.00	12.84	0.29	-0.01
0.42 miles downstream of Valley Greens Dr.	25	0.70	13	0.30	24.84	0.70	0.00	12.84	0.29	-0.01

Notes:

¹ Calculated flow that meets the corresponding depth criteria for 25% of the width of the riffle.

² Critical depth for fish passage, per CDFW (2013).

³ Critical flow minus 0.16 cfs (proposed maximum sustained Project pumping rate)

⁴ Calculated depth of the critical flow with Project pumping.

The modeling results indicated that the proposed project would result in minor reductions if water depths at the four critical riffles evaluated by Balance. The model results ranged from no detectable change in water depths to a maximum reduction of 0.02 feet for adults and 0.01 feet for smolts. The maximum estimated pumping rate of .016 cfs would occur in July when the Carmel River is normally dry or nearly dry in most years and there is no in-stream aquatic habitat. As a result, the model results are conservatively high and

¹³ Balance used the HEC-RAS flood-control model of the lower Carmel River (originally prepared by FEMA in 2007) to calculate critical flows. A flood-control model may not provide sufficient cross-section detail or resolution to do a detailed fish passage assessment and therefore these calculations represent estimates. Nevertheless, the results of this analysis illustrate that the potential impacts of the proposed project on critical riffles would be barely perceptible in the affected reach of the Carmel River.

actual reduction in depth during periods relevant to adult passage and smolt migration would be less than the negligible changes identified in **Table 4.1-3** (Balance, 2014a).

During the course of the NOP review period, the State Water Board received public comments stating that the proposed project could potentially affect critical riffles monitored by the MPWMD and thereby affect adult steelhead migration passage. As described above, MPWMD monitors five (5) riffles in the lower reach (below RM 5.5) of the Carmel River as part of the ASR Project mitigation program. MPWMD conducts annual surveys of the lower Carmel River to assess the locations and conditions where upstream migration of adult steelhead might be constrained or blocked and assess whether the need for channel modification is necessary. According to MPWMD, the precise riffle configuration and conditions vary from year to year (MPWMD, 2013). However, the results of MPWMD's monitoring indicate that adult steelhead mitigation passage at some riffles is likely to be blocked at river flows of less than 50 cfs, may be impaired at river flows between 50 and 90 cfs, and is unlikely to be impaired at river flows greater than 90 cfs (**Table 4.1-1**) (MPWMD, 2010-2013; Balance, 2014b).

Balance previously determined that critical flows for adult steelhead upstream migration passage in the lower Carmel River could be constrained or blocked at river flows between 25 and 60 cfs (Balance, 2014a; Balance, 2014b). These flows are slightly less, although of a similar magnitude to, the range of critical flow thresholds for “blocked” and “impaired” conditions described by MPWMD (see MPWMD, 2010 through 2013). Balance determined that the reductions in riffle depth due to the proposed project (at flows between 25 and 60 cfs) would be less than 0.02 feet at one of the four riffles evaluated by Balance and less than 0.005 feet at the other three riffles (Balance, 2014b).

Based on the critical flow thresholds described by MPWMD (**Table 4.1-1**), the potential effects of the proposed project on upstream adult steelhead migration passage depths would be less than the maximum 0.02-foot reduction previously estimated by Balance (Balance, 2014b). As described by Balance, the proposed project's potential effects would be less since the potential reduction of 0.16 cfs in river flow would represent a lower percentage of the river flows than those evaluated previously. For this reason, the proposed project would have similar or lesser impacts on river depths at the critical riffles at the MPWMD range of critical river flow thresholds. Based on Balance's review of applicable MPWMD critical review information, Balance concluded that they reasonably described, and possibly overestimated, the very small changes in riffle water depth at critical flows that could occur due to the proposed project (Balance, 2014b).

HDR, Inc. – Steelhead Assessment Memorandum

HDR, Inc. (“HDR”) prepared a technical memorandum for the project, which evaluated the potential impacts of the proposed project on steelhead in the Carmel River. This analysis considered the potential direct impacts of the project on steelhead riverine and lagoon habitat, as well as steelhead spawning, juvenile rearing, and migration. Based on comments received by the State Water Board during the NOP public review period and scoping meeting, HDR prepared an addendum to its original technical memorandum clarifying the nature and quality of steelhead habitat in the lower reaches of the Carmel River, as well as providing supplemental information concerning potential impacts to steelhead according to information provided by Balance (2014b). The following is a summary of HDR's findings that are relevant to the analysis of potential project effects to steelhead and steelhead critical habitat.

Riverine Habitat. The riverine reach of the proposed project study area (River Mile [RM] 1.09 to RM 5.68) has been designated critical habitat for the South-central California Coast steelhead distinct population

segment (NMFS, 2005). NMFS (2005, 2002) described the reach as primarily a migration corridor for adult and juvenile steelhead. Migration can occur from October through June. The upper part of this reach (upstream of Potrero Creek, RM 3.88), is also considered to be potential spawning habitat (NMFS, 2005). Spawning can occur from mid-December through mid-April (NMFS, 2002).

The reach is typically dry during the low flow period (i.e., it is dry 50 percent of the time in July to 70 percent of the time in October). Smith and Huntington (2004) provide a qualitative description of non-flow related habitat and fish conditions within the lower Carmel River that they observed during a survey of LWD during fall 2003. For example, they found that LWD accumulations, a significant component of steelhead habitat in the Carmel River, gradually disintegrate into single pieces of LWD downstream from RM 5. Likewise single pieces associated with rootballs appear to lose their rootballs as they move downstream. Riffle habitat becomes less prevalent downstream as cobble and gravel substrates give way to sand. Run habitat takes the place of riffle habitat in the river, especially after sand becomes the dominant substrate near RM 5. Overall, Smith and Huntington (2004) determined that aquatic habitat availability and utility, assessed in terms of LWD, substrate, channel morphology, and flow, decreased moving downstream from RM 15, and was of very low quality downstream of RM 5.

Lagoon Habitat. The Carmel River lagoon, like many lagoons throughout the range of steelhead in California, provides an important function for the steelhead population (Bond, 2006; Bond et al., 2008). The lagoon provides over summer rearing and generally supports enhanced growth, which increases the potential survival of steelhead when they migrate into the ocean and then return as adult spawners. Increased lagoon salinity may adversely affect steelhead habitat. Availability of fresh water is a key, limiting factor in lagoons with respect to steelhead rearing habitat. Without fresh water, stratification is enhanced, leading to poor mixing below the surface, low dissolved oxygen, and high temperatures (Watson and Casagrande, 2004).

Watson and Casagrande (2004) evaluated the Carmel River lagoon and provided the following description. A relatively fresh layer is normally maintained near the surface of the lagoon. This originates as the residual from the last river flows of spring. Data also suggest that the freshwater layer is maintained by shallow groundwater inputs from the lower Carmel Valley aquifer. The relatively fresh layer fluctuates in thickness during the summer, apparently being dissipated by saltwater ocean inputs through and over the sandbar, and being re-established by both local and distant groundwater inputs once the ocean inputs subside.

Current groundwater pumping of approximately 5 cfs in the Rancho Cañada area several miles upstream of the lagoon leads to an annual cycle – with pre-winter groundwater depressions extending west to above Rio Road, followed by rapid wintertime recovery. If pumping at the current PODs for License 13868 is causing similar depressions, the primary source of summer freshwater flow into the lagoon currently is being reduced by this pumping. Because the proposed project has the potential to reduce or eliminate pumping at the current PODs for License 13868, the proposed project would slightly increase surface flow immediately upstream of the lagoon during pre-winter conditions, potentially improving steelhead habitat in the lagoon (HDR, 2014a).

Steelhead Spawning. Adult sea-run steelhead enter the Carmel River once the sand bar at the river's mouth breaches. Typically, spawning occurs after December even when the mouth opens before then, and spawning can extend into April. Until recently, nearly all spawning occurred upstream of the Narrows (MPWMD, 2013). Spawning habitat did not historically exist in the lower Carmel River (RM 0—5). Recent improvements in sediment management however, have resulted in exposure of some gravel. MPWMD has reported that

conditions, primarily the increased availability of larger, gravel-sized substrate, have improved in the lower Carmel River, including within and downstream of the project study area (downstream of RM 5.7), and that steelhead spawning has been observed in this lowermost reach (MPWMD, 2013c; HDR, 2014b).¹⁴

While spawning has been observed in the lower reaches of the Carmel River, the majority of recently observed spawning occurred upstream of Schulte Road (MPWMD, 2013c). According to MPWMD, steelhead spawning downstream of Schulte Road occurred because those individuals did not have access to the upper reaches of the Carmel River during 2012 due to insufficient flow to provide access past critical migration riffles within this lowermost reach during most of the monitoring period (MPWMD, 2013c; HDR, 2014b). MPWMD also noted that there was concern about stranded adults being forced to spawn in “sub-standard habitat” (i.e., downstream of critical riffles, thus downstream of the project study area) and adult fish rescues were being discussed (HDR, 2014b). Conditions were similar to those in 2007 when many adults became trapped and spawned in the lower reach of the river where many of those redds were dewatered. Based on these observations, HDR (2014b) concluded that:

- Steelhead spawning in the Carmel River occurs predominantly upstream of the project study area. Habitat quality has improved, but effective spawning habitat availability, and the ultimate survivability of fish spawned in the available habitat downstream of the project study area is rare.
- Spawning activity observed in the lower Carmel River, downstream of Schulte Road, is inversely related to access to upstream reaches of the Carmel River.

The proposed project would result in negligible decreases in flow (< 0.13 cfs) in the affected river reach during the spawning period. Because the relationship between flow and spawning habitat availability is undefined for this reach, HDR relied on Balance’s (2014a) analysis of the effect of flow reduction on water depth over riffles within the reach to assess effects on spawning habitat. Balance (2014a) calculated the change in depth for flows between 11 and 60 cfs that would result from a reduction of 0.16 cfs, which corresponds to the proposed project’s maximum sustained pumping rate. The analysis evaluated the potential effect of flow reduction on fish passage. Balance estimated that decreases in water depth at the riffles within the project reach ranged from no detectable change to a maximum of 0.02 feet. (The 0.16 cfs reduction in flow is associated with the maximum estimated pumping rate, which would occur in July, well after the spawning period has ended and when the stream is dry or nearly dry in most years). Steelhead spawning habitat is typically 0.5 feet deep or deeper (Barnhart, 1986). A reduction in depth of less than 0.02 feet, associated with the maximum projected reduction in flow during the steelhead spawning period would not adversely affect spawning habitat or cause the loss of steelhead spawning habitat (HDR, 2014a, HDR, 2014b). Given the estimated maximum level of reduction in flow during the steelhead spawning period (0.13 cfs) and the associated negligible decrease in depth (< 0.02 feet), as well as the poor quality of spawning habitat within the project reach, the project would not adversely affect steelhead spawning in the Carmel River.

Juvenile Steelhead Rearing. Juvenile steelhead rearing is seasonally distributed along the Carmel River. Juvenile steelhead rarely occur in the lowermost river (downstream of Schulte Road, [RM 6.7]) year round

¹⁴ MPWMD (2013) observed some spawning in this lowermost reach during 2011 (eight redds downstream of RM 3.24 including one redd observed near RM 2.0) (HDR, 2014a).

(NMFS, 2002; MPWMD, 2013) due to low flow or no flow, and warm temperatures during the summer.¹⁵ MPWMD has been monitoring juvenile rearing since the early 1990s (MPWMD, 2013). The results of the monitoring consistently show that juvenile rearing is substantially greater, measured as fish per foot of stream, moving upstream (MPWMD 2013, Table XVI-6; HDR, 2014b). During the 2011-2012 reporting period, juvenile steelhead population density at the five monitoring stations averaged 0.40 fish-per-foot (fpf) of stream and ranged from 0.11 fpf at the downstream most station (Valley Greens Station, RM 4.8) to 1.07 fpf at the Sleepy Hollow Station (RM 17.5) (MPWMD, 2013).

Based on the results of long-term monitoring by MPWMD, juvenile rearing density increases moving upstream and is greatest at the monitoring locations farthest upstream of Schulte Road (MPWMD, 2013; HDR, 2014b). In addition, year-long juvenile rearing habitat availability also increases upstream of Schulte Road and year-long juvenile rearing is absent from the project affected reach more than 50 percent of the time (HDR, 2014b). Juvenile rearing is directly associated with spawning distribution. The spawning and juvenile rearing distributions observed by MPWMD are consistent with the distribution of spawning and rearing habitats (HDR, 2014b).

During the fall, fish produced in the upper watershed descend into the lower reaches when evapotranspiration declines, flow connects the upper and lower reaches, and seasonal water temperatures drop. These fish typically leave the Carmel River within the next few months. In the spring, fish spawned in the lower watershed can distribute throughout the lower reach. However, they are generally lost (or rescued) when flow in these areas drops or disappears altogether, and water temperature increases, which typically occurs anytime between late spring and early summer.

Jones and Stokes (2006) determined that juvenile rearing habitat is constrained in the lower Carmel River when flow at the Near Carmel gage falls below one cfs during the months of June-December. As discussed above, the lower Carmel River is completely dry during much of this period. When flow does occur at the Near Carmel gage during this period, the project could decrease surface flow in the project reach by up to a maximum instantaneous rate of 0.16 cfs. Balance (2014a) determined that a 0.16 cfs reduction in flow would increase the time that rearing habitat is constrained by less than 1 percent.

Historically, monthly average river flows were greater than zero but less than five cfs approximately 16 percent of the time. Flows in that range are most common during the months of June through November. The proposed project would decrease the frequency of flows between 0 and 5 cfs to 14 percent. The net effect on surface flow is an increase in the frequency of zero flow (from 35 to 37 percent of the time) essentially when flow without the project would be less than 0.16 cfs. The project would not adversely affect steelhead rearing habitat or cause the loss of steelhead rearing habitat during the rare occasions when flows in the project affected reach persist through the summer (HDR, 2014a; HDR, 2014b).

Steelhead Migration. Adult upstream migration can occur from November through May, but primarily occurs from January through March (Dettman and Kelly, 1986). Juvenile migration, including smolt downstream migration, can occur from October through June. The proposed project would reduce flow by up to 0.15 cfs during much of the adult and juvenile migration period (October through June).

¹⁵ Historically, monthly average river flows in the project area (measured at the Near Carmel Gauge) were zero approximately 37 percent of the time. Zero flows occurred much more often during the months of July through November (WYA, 2013).

Both upstream and downstream migration can be physically hindered or halted by flow reductions. MPWMD (2013) reports that when flows were 20 cfs, an increased flow release (28 cfs) provided conditions that allowed adult steelhead to migrate from the lower reaches. Jones and Stokes (2006) identified a minimum flow condition (10 cfs measured at the Near Carmel gage) for downstream migration. Balance (2014a) determined that the minimum flow that met upstream fish passage criteria (CDFW, 2013) at critical riffles within the project affected reach ranged from 25 to 60 cfs.

As discussed above, Balance (2014a) evaluated fish passage by estimating the reduction in depth associated with a 0.16 cfs reduction in flow when flows were considered critical for fish passage at several riffles within the project reach.¹⁶ Under such conditions, the project-related reduction in flow during the period of upstream migration (November through May) was determined to have no effect (no change in depth over critical riffles at critical flow (25 to 60 cfs). Because the estimated reduction in flow during the adult migration period would be 0.15 cfs or less, the project would have no effect on adult migration.

Similar evaluations of project-related flow reductions on downstream migration found that the number of days that the Jones and Stokes (2006) criteria for downstream passage (10 cfs) were constrained increased less than 1 percent (Balance, 2014a). Balance (2014a) determined that the minimum flow that met downstream fish passage criteria (CDFW, 2013) at critical riffles within the project reach ranged from 11 to 16 cfs. Assessment of the effect of a 0.16 cfs flow reduction on downstream passage at the critical riffles identified within the project reach showed that passage criteria were met at two of four riffles and fell short by 0.01 feet at two riffles. Because the criteria was essentially still met where there is a flow reduction of 0.16 cfs, the projected flow reduction of 0.14 cfs during the October through March period would have no adverse effect on steelhead migration.

As described above, the State Water Board received comments during the NOP period relating to the proposed project's potential effects to critical riffles monitored by MPWMD as part of the ASR Project MMRP. In response to these comments, Balance prepared an addendum to their geomorphic and hydrologic context memorandum to include an evaluation of MPWMD critical riffles in terms of fish passage. Balance determined that the flow conditions required to provide passage beyond these critical riffles, relative to the timing and rate of diversion associated with the proposed project, would not adversely affect adult steelhead migration within the Carmel River. Based on applicable MPWMD critical flow thresholds (MPWMD, 2010-2013), Balance concluded that their original evaluation of critical riffles (2014a) may have overestimated the potential effects of the proposed project in passage conditions (i.e., depth). While Balance (2014b) did not directly assess juvenile migration in its addendum, HDR determined that the potential effects to downstream migration associated with the proposed project (Balance, 2014a) were also likely overstated as well (HDR, 2014b). As a result, HDR concluded that the proposed project would not adversely affect flow and associated depth conditions characterizing juvenile migration within the project study area (HDR 2014b).

During the NOP process, the State Water Board received comments regarding fish passage at river flows of 0.1 cfs. Specifically, public comments stated that young of the year have been observed migrating to the lagoon at flows of 0.1 cfs. The analysis contained in this EIR and supporting technical reports relied on commonly accepted methodologies and criteria for evaluating potential impacts to fish passage at critical riffles. HDR reviewed material prepared by Balance (2014a, 2014b) and determined that the criteria used by

¹⁶ Balance (2014) estimated the minimum (i.e., critical) flow required to meet fish passage criteria defined by the CDFW (2013) for both upstream adult migration and downstream juvenile/smolt migration.

Balance is consistent with the approach defined by CDFW (CDFW, 2013) and other resource agencies responsible for the management of fishery resources. HDR further concluded that, absent additional information regarding the conditions during the reported migrations young-of-year (YOY) steelhead at low flows (0.1cfs), Balance's assessment of potential effects on downstream migration is appropriate. HDR concluded that the evaluations conducted by Balance (2014a, 2014b) represent the best available information on fish passage in the project study area and that the proposed project would not adversely affect juvenile or adult migration in the Carmel River (HDR, 2014b).

4.1.6.2 Impact Analysis

The following CEQA impact analysis is based on the conclusions of the project-specific technical reports described above, as well as existing technical material prepared by the MPWMD and other agencies.

IMPACT BIO – 1: WOULD THE PROJECT HAVE A SUBSTANTIAL ADVERSE EFFECT, EITHER DIRECTLY OR THROUGH HABITAT MODIFICATIONS, ON ANY SPECIES IDENTIFIED AS A CANDIDATE, SENSITIVE, OR SPECIAL-STATUS SPECIES IN LOCAL OR REGIONAL PLANS, POLICIES, OR REGULATIONS, OR BY THE DEPARTMENT OR THE SERVICE?

Monterey Dusky-footed Woodrat and California Legless Lizard. The Monterey Dusky-footed woodrat and California legless lizard, CDFW species of special concern, have the potential to occur within riparian portions of the evaluation area. The proposed project does not include any ground disturbing activities. As a result, the project would not result in any significant direct impacts to riparian habitat where these species have the potential occur.

Secondary or indirect impacts could occur if riparian habitat were to be significantly affected by a reduction in available hydrology. However, the amount of water proposed for extraction under the proposed project is insignificant in relation to the total groundwater extractions of the existing private and public wells within the project study area and the proposed project would reduce the extent of groundwater pumping as compared to existing, pre-project, conditions. The extent of potential impacts associated with the proposed project would be indiscernible in comparison to existing baseline conditions. As detailed above, the MPWMD and Cal-Am continue to implement on-going mitigation requirements to address impacts associated with municipal pumping on the Carmel River, including the irrigation or riparian habitat. For these reasons, potential impacts to Monterey Dusky-footed woodrat and California legless lizard would not be significant.

Significance: Less-than-Significant.

Mitigation: None

Western Pond Turtle and Two-Striped Garter Snake. The western pond turtle and the two-striped garter snake, CDFW species of special concern, have the potential to occur within slow moving or ponded aquatic, as well as, riparian and wetland portions of the evaluation area. The proposed project does not include any ground disturbing activities. As a result, the project is not anticipated to result in any significant direct impacts to habitats where these species have the potential occur.

Secondary or indirect impacts could occur if aquatic, riparian or wetland habitats were significantly affected by a reduction in available hydrology. However, the amount of water proposed for extraction associated with the proposed project is insignificant in relation to the total groundwater extractions of the existing private and

public wells within the project study area. In addition, the proposed project would reduce the extent of groundwater pumping within the project study area as compared to existing, pre-project, conditions. The extent of project impacts would be indiscernible in comparison to existing baseline conditions. As detailed above, the MPWMD and Cal-Am continue to implement on-going mitigation requirements to address impacts associated with municipal pumping on the Carmel River, including the irrigation of riparian habitat. As a result, potential secondary effects to western pond turtle and two striped garter snake associated with the proposed project would not be significant.

Significance: Less-than-Significant.

Mitigation: None

California Red-Legged Frog. CRLF have been observed in backwater and off-channel pools along the Carmel River and its tributaries (EcoSystems West Consulting Group, 2001; Reis, 2002; Reis, 2003; CDFW, 2013). These backwater and off-channel pools provide potential breeding habitat that is associated with still water areas within the project study area. Impacts to CRLF could occur if backwater and off-channel pools were to dry significantly earlier in the season prior to transformation of tadpoles as a result of the proposed project.

Adult CRLF also use wetland and riparian habitat within the project study area as upland and dispersal habitat. As concluded by Balance (2014a, 2014b), the project would not result in a significant effect to sensitive habitat areas (i.e., wetlands or riparian habitat). As a result, there will be no significant effect on CRLF non-breeding habitat.

The amount of water proposed for extraction for this project is insignificant in relation to the total groundwater extractions of the existing private and public wells within the project study area. Moreover, the proposed project would reduce the extent of groundwater pumping within the project affected reach as compared to existing, pre-project, conditions. The extent of project impacts would be indiscernible in comparison to existing baseline conditions. As detailed above, the MPWMD and Cal-Am continue to implement on-going mitigation requirements to address impacts associated with municipal pumping on the Carmel River, including the rescue and relocation of CRLF tadpoles in the vicinity of Cal-Am production wells when necessary (these measures are also being implemented in connection with the removal of San Clemente dam). Therefore, project impacts to CRLF would not be significant.

Significance: Less-than-Significant.

Mitigation: None

Steelhead. Steelhead, a federally threatened species, is known to occur in the evaluation area. The riverine reach of the proposed project study area (River Mile [RM] 1.09 to RM 5.68) has been designated critical habitat for the South-central California Coast steelhead distinct population segment (NMFS, 2005). NMFS (2005, 2002) described the reach as primarily a migration corridor for adult and juvenile steelhead. Migration can occur from October through June. The upper part of this reach (upstream of Potrero Creek, RM 3.88), is also considered to be potential spawning habitat (NMFS, 2005). Spawning can occur from mid-December through mid-April (NMFS, 2002). Additionally, the Carmel River lagoon provides over summer rearing and

generally supports enhanced growth, which increases the potential survival of steelhead when they migrate into the ocean and then return as adult spawners.

As discussed above, HDR Inc. evaluated the potential effects of the project on steelhead riverine and lagoon habitat, juvenile rearing, adult spawning, and migration. The evaluation concluded that the reductions in flow resulting from the proposed project would not be large enough to prevent or interfere with steelhead or their various life stages or habitat requirements, particularly their migration, in a manner that would substantially reduce their numbers or restrict their range. The evaluation also concluded that riverine habitat availability and utility, assessed in terms of LWD, substrate, channel morphology, and flow, was of very low quality within the evaluation area. Also, because the project has the potential to reduce or eliminate pumping at the current PODs for License 13868, it could slightly increase surface flow immediately upstream of the lagoon during pre-winter conditions, potentially improving steelhead habitat in the lagoon (HDR, 2014a).

Therefore, because of: 1) the location of the project and the habitat quality in the potentially affected reach of the Carmel River, 2) the timing of potential impacts relative to steelhead life-stage periodicity in the potentially affected reach, and 3) the very small changes in surface flow in the project affected reach that would occur due to the proposed project, the proposed project would not significantly affect Carmel River steelhead population or its designated critical habitat (HDR, 2014a; HDR 2014b; Balance 2014a; Balance 2014b).

Significance: Less-than-Significant.

Mitigation: None

Special-Status and Protected Avian Species. Special status and protected avian species have the potential to occur within riparian portions of the evaluation area. The proposed project does not include any ground disturbing activities. As a result, the proposed project would not result in any significant direct impacts to habitats where these species have the potential occur. Secondary or indirect impacts could occur if aquatic, riparian or wetland habitats were to be significantly affected by a reduction in available hydrology.

As discussed previously above, the proposed project would not cause a significant reduction in available hydrology. The amount of water proposed for extraction for this project is insignificant in relation to the total groundwater extractions of the existing private and public wells within the project study area. Moreover, the proposed project would reduce the extent of groundwater pumping within the project affected reach as compared to existing, pre-project, conditions. The extent of project impacts would be indiscernible in comparison to existing baseline conditions. For these reasons, the proposed project would not cause a significant secondary (or indirect) effect to special-status and protected avian species.

Significance: Less-than-Significant.

Mitigation: None

Special-Status Plant Species. No reported special-status plant species occurrences have been reported in the project study area and no special-status plant species have the potential to occur within the project study area. Additionally, the proposed project does not include any ground disturbing activities. As a result, the project would not affect any special-status plant species.

Significance: No Impact.

Mitigation: None

IMPACT BIO – 2: WOULD THE PROJECT HAVE A SUBSTANTIAL ADVERSE EFFECT ON ANY RIPARIAN HABITAT OR OTHER SENSITIVE NATURAL COMMUNITY IDENTIFIED IN LOCAL OR REGIONAL PLANS, POLICIES, REGULATIONS OR BY THE DEPARTMENT OR SERVICE?

Approximately 119.1 acres of riparian habitat is present within the project study area. The proposed project would result in a change in authorized PODs for proposed License 13868A to include three existing Cal-Am wells located in the lower reach of the Carmel River. License 13868A would result in localized increases in pumping at each of these wells. However, the amount of water proposed for extraction for the proposed project is insignificant in relation to the total groundwater extractions of the existing private and public wells within the project study area and the proposed project would reduce the extent of groundwater pumping as compared to existing, pre-project, conditions. In addition, the extent of project impacts would be indiscernible in comparison to existing baseline conditions. Moreover, the MPWMD and Cal-Am continue to implement on-going mitigation requirements to address impacts associated with municipal pumping on the Carmel River, including irrigation to sustain and maintain defined riparian habitat function and value. As a result, the proposed project would not significantly affect riparian habitat or other sensitive habitat.

Significance: Less-than-Significant.

Mitigation: None

IMPACT BIO – 3: WOULD THE PROJECT HAVE A SUBSTANTIAL ADVERSE EFFECT ON FEDERALLY PROTECTED WETLANDS AS DEFINED BY SECTION 404 OF THE CWA (INCLUDING, BUT NOT LIMITED TO, MARSH, VERNAL POOL, COASTAL, ETC.) THROUGH DIRECT REMOVAL, FILLING, HYDROLOGICAL INTERRUPTION, OR OTHER MEANS?

Approximately 49.1 acres of wetland are present within the evaluation area, based on information provided by the National Wetlands Inventory (USFWS, 2013b). The proposed project would result in a change in authorized PODs for proposed License 13868A to include three existing Cal-Am wells located in the lower reach of the Carmel River. License 13868A would result in localized increases in pumping at each of these wells. However, the amount of water proposed for extraction for the proposed project is insignificant in relation to the total groundwater extractions of the existing private and public wells within the project study area and the proposed project would reduce the extent of groundwater pumping as compared to existing, pre-project, conditions. In addition, the extent of project impacts would be indiscernible in comparison to existing baseline conditions. Therefore, the proposed project would not significantly affect wetland habitat.

Significance: Less-than-Significant.

Mitigation: None

IMPACT BIO – 4: WOULD THE PROJECT INTERFERE SUBSTANTIALLY WITH THE MOVEMENT OF ANY NATIVE RESIDENT OR MIGRATORY FISH OR WILDLIFE SPECIES OR WITH ESTABLISHED NATIVE RESIDENT OR MIGRATORY WILDLIFE CORRIDORS, OR IMPEDE THE USE OF NATIVE WILDLIFE NURSERY SITES?

The proposed project would not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridor, or impede the use of native wildlife nursery sites. The proposed project consists of a change petition for an existing water right license and no physical improvements are proposed as part of the project. As a result, the project would not involve the construction of physical improvements that could affect wildlife habitat. The proposed project could indirectly affect habitat due to potential reductions in surface flows; the proposed project's potential effects on riverine flow in the context of wildlife habitat are addressed in **Impact Bio-1**, and are considered less-than-significant.

Significance: Less-than-Significant.

Mitigation: None

IMPACT BIO – 5: WOULD THE PROJECT CONFLICT WITH ANY LOCAL POLICIES OR ORDINANCES PROTECTING BIOLOGICAL RESOURCES, SUCH AS TREE PRESERVATION POLICY OR ORDINANCE?

The proposed project consists of a change petition to split License 13868 into two new licenses (License 13868A and 13868B). The proposed project, if approved, would allow a change in authorized POU, POD and type of use (i.e., municipal). The proposed project would not result in any new diversion of Carmel River subterranean flows beyond existing levels currently associated with the existing license and the project would dedicate 46.2 af/yr of the existing license to instream uses. The proposed project, therefore, would not conflict with any adopted plans or ordinances related to biological resources.

Significance: No Impact.

Mitigation: None

IMPACT BIO – 6: WOULD THE PROJECT CONFLICT WITH THE PROVISIONS OF AN ADOPTED HABITAT CONSERVATION PLAN, NATURAL COMMUNITY CONSERVATION PLAN, OR OTHER APPROVED LOCAL, REGIONAL, OR STATE HABITAT CONSERVATION PLAN?

The proposed project consists of a change petition to split License 13868 into two new licenses (License 13868A and 13868B). The proposed project, if approved, would allow a change in authorized POU, PODs and purpose of use (i.e., municipal). The proposed project would not result in any new diversion of Carmel River subterranean flows beyond existing levels currently associated with the existing license and the project would dedicate 46.2 af/yr of the existing license to instream uses. The proposed project, therefore, would not conflict with any adopted conservation plans related to biological resources.

Significance: No Impact.

Mitigation: None

IMPACT BIO – 7: WOULD THE PROJECT IMPEDE THE USE OF NATIVE WILDLIFE NURSERY SITES OR DIRECTLY HARM NESTING SPECIES PROTECTED UNDER THE PROVISIONS OF THE MBTA?

The proposed project would not impede the use of native wildlife nursery sites or directly harm nesting species protected under the provisions of the MBTA. The proposed project consists of a change petition for an existing water right license and no physical improvements are proposed as part of the project. As a result, the project would not involve the construction of physical improvements that could affect avian wildlife habitat. The proposed project could indirectly affect habitat due to a reduction in hydrology supporting riparian habitat, which provides habitat for species protected under the MBTA; the proposed project's potential effects due to changes in surface water flows is addressed in the context of wildlife habitat (see **Impact Bio-1**) and are considered less-than-significant.

Significance: Less-than-Significant.

Mitigation: None

4.2 HYDROLOGY AND WATER QUALITY

4.2.1 INTRODUCTION

This section describes the hydrology and water quality conditions related to the proposed project, including a discussion of the existing conditions and the potential effects of the proposed project on surface and groundwater resources. This section also summarizes the regulations and laws that are relevant to the proposed project.

As described in **Chapter 3, Project Description**, the proposed project includes the split of an existing water-right license into two new licenses. The first new license, License 13868A, which would allow the pumping of up to 85.6 af/yr, would: 1) add three new authorized PODs along the Carmel River at existing Cal-Am operated wells located within the alluvial portion of the river, 2) add municipal uses as an authorized purposes of use, and, 3) change the existing authorized POU to include 16,595 acres of Cal-Am's service area in the Carmel River watershed and 526 acres of Cal-Am service area within the City of Carmel-by-the-Sea. The second license, License 13868B, would be for the permanent dedication of 46.2 af/yr to instream beneficial uses. Please refer to **Chapter 3, Project Description** for more information.

The analysis contained in this section is based, in part, on information prepared by Monterey Peninsula Water Management District (MPWMD)¹ and project-specific technical analyses prepared for this project. The project-specific reports identified below are included as appendices to this EIR. For a detailed list of references, please see **Chapter 7, References**.

- Balance Hydrologics, Inc. (2014a). Geomorphic and hydrologic context for Eastwood/Odello water rights change petition, Monterey County, California. Dated January 2014. (**Appendix C-1**)
- Balance Hydrologics, Inc. (2014b). Addendum to 'Geomorphic and hydromorphic context' memorandum for Eastwood/Odello water rights changes petition, Monterey County, California. Dated April 2014 (**Appendix C-2**)
- Balance Hydrologics, Inc. (2013). Technical Review of Hydrology Reports Supporting the Eastwood/Odello Water Rights Change Petition. Dated November 2013
- Davids Engineering, Inc. (2013). Technical Memorandum, Odello Ranch Crop ET and ET of Applied Water Estimates. Dated April 2013 (**Appendix E**)
- Macaulay Water Resources (2013). Estimated Ranges of Monthly Pumping Amounts Under Proposed Eastwood Water Right License 13868A. Dated October 2013. (**Appendix F**)
- West Yost Associates (2013). Groundwater and Surface Water Evaluation Report; Eastwood/Odello Water Right Change Petition Project. Dated October 2013. (**Appendix G**)

¹ Since 1991, MPWMD has carried out a comprehensive Mitigation Program that addresses the environmental impacts of providing water to the Monterey Peninsula and surrounding area from the Carmel River and Seaside Groundwater Basins. The program focuses on baseline hydrologic and water quality information, the Carmel River steelhead fish population, the Carmel River riparian habitat, and the Carmel River Lagoon. The Mitigation Program is a required component of the MPWMD Water Allocation Program identified in the Environmental Impact Report that was certified by the District Board in November 1990. Each year, a detailed Annual Report is prepared that describes the District's specific mitigation activities, data collected, and results.

This section also includes pertinent information provided in response to comments received during the Notice of Preparation (NOP) public review period. The NOP was circulated to responsible and trust agencies, and other interested parties on March 4, 2014 to solicit comments on the scope and breadth of the environmental analysis contained in the EIR. The public scoping period ended on April 2, 2014. A public scoping meeting was conducted on April 2, 2014. The following concerns related to hydrology and water quality were raised during the scoping period and are addressed in this section:

- Diversion of up to 85.6 afy of Carmel River subterranean flow for use outside the Carmel River watershed would adversely affect fish and wildlife resources by reducing instream flows and causing a net reduction in available groundwater.
- An evaluation of potential impacts due to groundwater drawdown that assumes a constant rate of pumping across all proposed POD downplays the effects of the proposed project because not all wells would be operated at a constant rate.
- The proposed project would affect inflows to the lagoon and consequently would adversely affect lagoon function.

The majority of comments received during the public scoping period were related to biological resources and the impact of the proposed project on those resources. Please refer to **Section 4.1, Biological Resources**, for a discussion of those comments.

4.2.2 ENVIRONMENTAL SETTING²

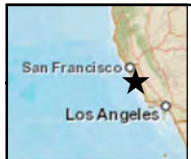
4.2.2.1 Regional Setting

The proposed project is located within the Central Coast Hydrologic Region (HR), the Carmel River Hydrologic Unit (HU), and Carmel River watershed. The Central Coast Hydrologic Region covers approximately 7.22 million acres and includes all of Santa Cruz, Monterey, San Luis Obispo, and Santa Barbara counties, as well as parts of San Benito, San Mateo, Santa Clara, and Ventura counties (**Figure 4.2-1**). Major geographic features that define the region include: the Pajaro, Salinas, Carmel, Santa Maria, Santa Ynez, and Cuyama valleys; the coastal plain of Santa Barbara; and the Coast Range. Major drainages include the Salinas, Cuyama, Santa Ynez, Santa Maria, San Antonio, San Lorenzo, San Benito, Pajaro, Nacimiento, Carmel, and Big Sur rivers (DWR, 2003). The region includes urban areas such as the Monterey Peninsula and the Santa Barbara coastal plain; prime agricultural lands in the Salinas, Santa Maria, and Lompoc Valleys; National Forest lands, extremely wet areas like the Santa Cruz mountains; and arid areas like the Carrizo Plain (CCRWQCB, 2011).

² Information contained in this report was obtained from published information obtained from MPWMD, USGS, and others. Streamflow data used in this analysis and supporting technical reports are based on the most recent published data available at the time of report preparation. During the course of preparing this EIR, California Governor Edmund G. Brown, Jr. declared a drought emergency due to record levels of low precipitation, which have resulted in low streamflows and diminished reservoir storage capacity throughout California. According to recent, albeit incomplete, MPWMD streamflow data, recorded flows between July and October averaged 0 cfs. The highest recorded flow in 2014 occurred on February 28, 2014 and was recorded as 3.1 cfs.



Service Layer Credits: Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap



Title: **Hydrologic Map**

Date: 10/24/2014
Scale: 1 inch = 45 miles
Project: 2013-24



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Environmental Consultants Resource Planners
947 Cass Street, Suite 5
Monterey, CA 93940
(831) 373-4341

Figure
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The region is largely defined by the northwest-trending southern Coast Range (DWR, 2009). Topographic features are dominated by a rugged seacoast and three parallel ranges of the southern Coast Mountains. These southern Coast Ranges abut the west to east trending Santa Ynez Mountains of the Transverse Ranges, which parallel the southern exposed terraces of the Santa Barbara Coast. This coastal area includes urbanized and agricultural areas along Monterey Bay, the Big Sur Coast, Morro Bay, Pismo Beach, and a varied coastline south to Point Conception and eastward along the terraces and recreational beaches that line the Santa Barbara Channel. Variations in terrain, climate, and vegetation account for many different landscapes; sea cliffs, sea stacks, white beaches, cypress groves, and redwood forests along the coastal areas contrast with the dry interior landscape of small sagebrush, short grass, and low chaparral.

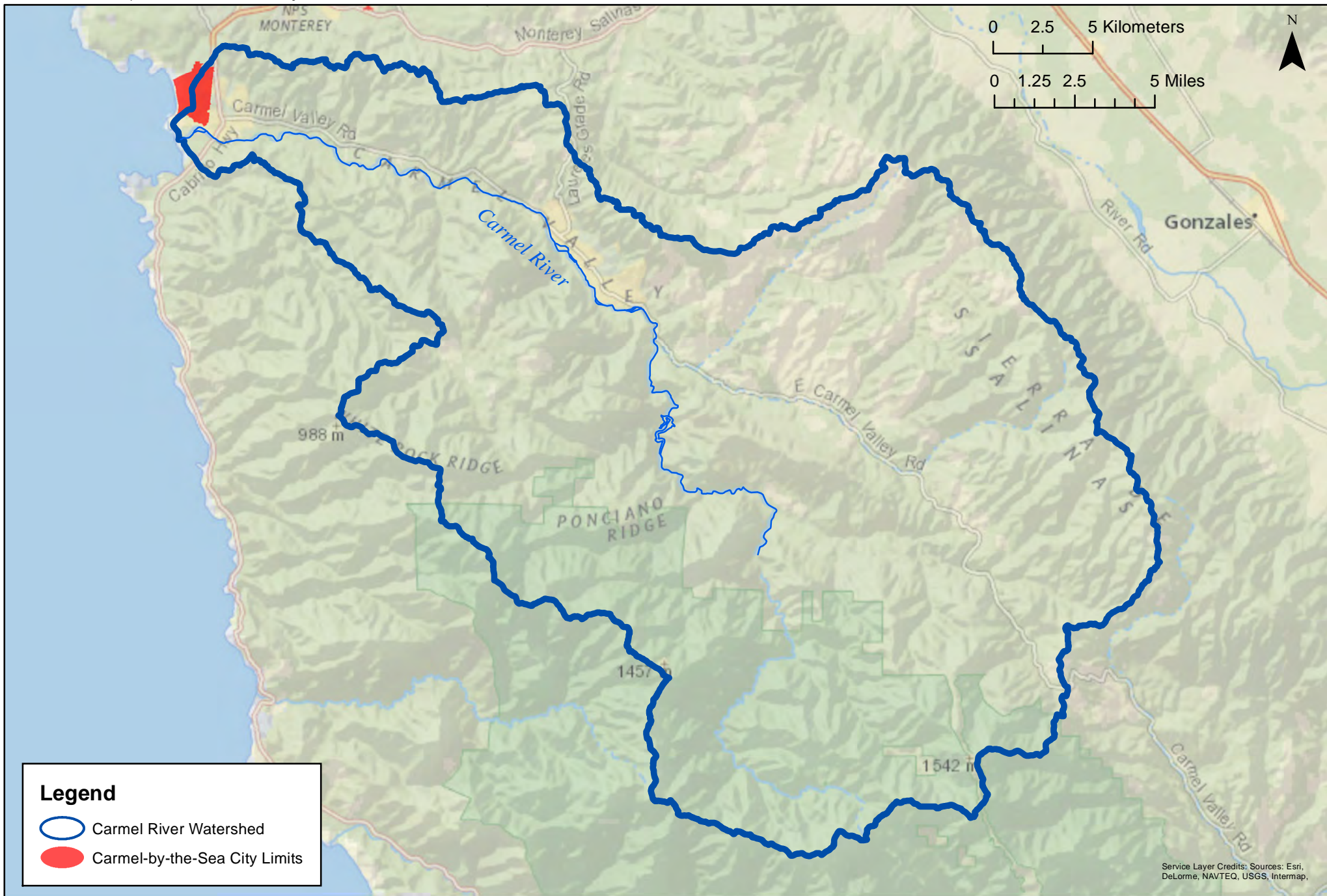
4.2.2.2 Carmel River Watershed

The Carmel River watershed represents the northernmost of a series of northwest-southwest trending valleys that dissect the Santa Lucia Mountains, which are part of the California Coastal Ranges (Smith, et. al. 2004). The drainage area of the watershed is approximately 256 square miles and the watershed ranges in elevation from zero to 4,000 feet above sea level (asl) (DWR, 2003). The watershed includes the Santa Lucia Mountains to the south and the Sierra del Salinas to the north. Water flowing through the watershed consists of the Carmel River surface channel of the mainstem and associated tributaries, a subsurface flow, and a shallow sub-stream aquifer beneath the river channel (Kondolf and Curry, 1982; Maloney, 1984). **Figure 4.2-2** shows the boundaries of the watershed.

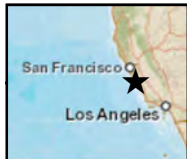
The Carmel River watershed experiences large seasonal variability in instream flow levels. Many of the watershed's streams go dry during the summer months, with most of the small headwater streams located in the upper watershed not having enough shallow groundwater to sustain them through the summer. As a result, these smaller headwaters typically go dry during the summer. The Carmel River originates in the Santa Lucia Range of the Coast Mountains and generally flows north and west. The lower reach of the Carmel River also goes dry during the summer months when surface water flows are their lowest. During this period, surface water percolates through the river channel to replenish the alluvial groundwater aquifer. This phenomenon causes portions of the lower reach of the river to go dry.

Vegetation in the Carmel River watershed consists of California chaparral, grasslands, and oak woodlands and includes conifer and redwood forests at higher elevations. The Carmel River watershed supports a complex of terrestrial, riparian, freshwater aquatic, and coastal estuarine habitats that supports an assemblage of species, including state and federally listed steelhead trout (*Oncorhynchus mykiss*) and California red-legged frog (*Rana aurora draytoni*) (CMRC, 2007). For more information concerning biological resources, please refer to **Section 4.1, Biological Resources**.

The physical and ecological functions of the Carmel River watershed are influenced by a number of factors including, but not limited to, climate and seasonal variations, private and municipal water supply facilities (e.g., wells, dams, reservoirs, etc.), and associated groundwater pumping from the alluvial aquifer. These factors directly affect the biological and hydrological functional condition of the watershed (CRWC, 2004; Smith, et al., 2004; MPWMD, 2004). As described in further detail in **Chapter 5, CEQA Considerations**, a number of water supply projects are in the planning, design, and implementation phases that are intended to restore and enhance the physical and ecological function of the Carmel River watershed.



Service Layer Credits: Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap.



Title: Carmel River Watershed

Date: 10/24/2014
 Scale: 1 inch = 4 miles
 Project: 2013-24



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 Environmental Consultants Resource Planners
 947 Cass Street, Suite 5
 Monterey, CA 93940
 (831) 373-4341

Figure
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The following is a brief overview of key factors affecting the watershed.

Climate

Climate plays an important role in the watershed and can result in significant seasonal variation due to changes in annual precipitation from year to year. The watershed has a typical coastal California wet-dry seasonal pattern that can vary significantly. Mean annual rainfall varies from about 14 inches along the northeast perimeter of the watershed to over 40 inches in the upper watershed area. Average annual precipitation is about 17 inches/year (DWR, 2003; Kapple et. al, 1984). More than 90 percent of the annual rainfall occurs over the watershed during the six month period between November and April (DWR/ACOE, 2008).

Water Supply Facilities

Cal-Am owns and operates a network of water supply facilities within the Carmel River watershed, including municipal water supply wells, treatment facilities, conveyance pipelines, and dams and associated reservoirs. Currently, Cal-Am operates ten wells within the watershed, which account for approximately 77 percent of the Monterey Peninsula's water supply (MPWMD, 2013). Cal-Am also owns and operates two dams, the San Clemente (River Mile (RM) 18.61) and Los Padres dams (RM 24.80), within the watershed.³ These dams are located at the headwaters of the Carmel River. The dams were originally constructed as the two primary water supply facilities in the watershed.

The smaller of the two dams, the San Clemente Dam, is a 106-foot high, concrete arch dam completed in 1921. The original reservoir had a capacity of 1,425 acre-feet (AF). Over time, sediment collected behind the dam reducing its storage capacity. In 2008, the dam had a storage capacity of approximately 70 AF (MPWMD, 2012). The San Clemente Dam is currently in the process of being removed as part of the Carmel River Re-Route and San Clemente Dam Project (see **Chapter 5, CEQA Considerations** for further discussion).

The Los Padres Dam consists of a rock-and-earth fill dam and is located approximately nine miles above the San Clemente Dam. The Los Padres Dam originally had a capacity of 3,130 AF. According to MPWMD, the dam currently has 1,626 AF of usable storage capacity (MPWMD, 2012). MPWMD is currently in the process of exploring the long-term viability of the Los Padres Dam as part of MPWMD evaluation of water resource development in the upper portions of the Carmel River watershed.⁴

³ River miles are measured as the distance from the ocean to a specific location (i.e., infrastructure, geographic feature, river tributary, etc.) on the Carmel River. References to river miles in this EIR are based on the most recent Carmel River Mileage Survey conducted by MPWMD (MPWMD, 2010).

⁴ In February 2014, MPWMD issued a draft report entitled "Long-term Strategic and Short-term Tactical Plan" for the Los Padres Dam and Reservoir. This plan includes a variety of alternatives, including enhancing existing storage, removing the dam, constructing a new lower Los Padres dam, as well as potential tributary dams and reservoirs. New tributary dams and reservoirs include the development of new "off-mainstem" storage facilities that would capture excess runoff in one of the basins many tributaries. Two potential alternative "off-mainstem" facilities include a new Pine Creek Dam and Reservoir (approx. 20,000 af of storage) and a new San Clemente Creek Dam and Reservoir (approx. 13,000 af of storage).

Water Use

Cal-Am is responsible for approximately 77% of the total water diversions from the Carmel River system and its associated aquifer (MPWMD, 2013c). The remaining 23% of diversions are made by non-Cal-Am entities (ibid.). Approximately 9,388.8 AF of water was diverted from the Carmel River in 2012. **Table 4.2-1** presents the draft water production summary for water year 2012, as reported by MPWMD. Of this amount, Cal-Am diverted 5,742 AF under existing riparian and appropriative water rights; the remainder was diverted without any basis of water right (State Water Board, 1995a). On October 4, 2013, Cal-Am received a permit for an appropriative right to divert an additional 1,488 af/yr during the winter season (December 1 – May 31) when rains have increased the rivers flows above certain levels stipulated by the NMFS.^{5 6}

4.2.2.3 Surface Water Resources

Carmel River

The northwesterly flowing Carmel River originates approximately 35 miles upstream from Carmel Bay at an elevation of 3,500 feet asl. The upper reaches of the Carmel River flow northwesterly, generally following the trend of the fault block structure of the Coast Ranges, to a confluence with Tularcitos Creek. The lower reach of the river flows in a more westerly direction through Carmel Valley and into the Pacific Ocean (**Figure 4.2-2**). The 15-mile alluvial reach that passes through Carmel Valley is sub-divided by a bedrock constriction and narrowing of the valley (the "Narrows") into a lower 10-mile reach (the "Lower Carmel") and the middle 5-mile reach (the "Middle Carmel"). The "Upper Carmel" indicates the segment above San Clemente Dam (**Figure 4.2-2**) (Kondolf and Curry, 1986).⁷ While the upper river has perennial flow, the lower river has intermittent flows, with flows typically occurring from December through June (Kondolf and Curry, 1986; Smith et. al., 2004; MPWMD, 2013.). The proposed project is located in the lower reach of the river and would move existing diversions upstream. The bed of the lower Carmel River is dominated by sand and fine-gravel deposits, though some larger gravel and cobble deposits are also present.

⁵ All private or public water diversions, retentions, or withdrawals from the watershed tributaries and upland aquifers that include consumptive use have cumulative impacts on the volume of water in the lower valley river/aquifer system (Smith et al., 2004). Although most individual diversions of water are an insignificant proportion of the watershed hydrologic budget, the collective effect of water diversions and use throughout the watershed has resulted in the stream being declared by State Water Board as fully appropriated in summer months (State Water Board, 1995b; see Declaration of Appropriated Streams, Order WR 98-08). Table 13 in State Water Board Decision 1632 includes a list of applications of water users in the Carmel Valley that are for permits for long-standing uses of water. State Water Board Decision 1632 includes a finding that water is available for appropriation for those applications listed in Table 13. State Water Board Decision 1632 directed staff to include the Carmel River on the list of fully appropriate streams for the period of May 1 to December 31. The decision specified "that after accounting for water needed for the projects specified in D-1632, the Carmel River is fully appropriated from May 1 through December 31 of each year." The projects specified in Decision 1632 include those listed in Table 13.

⁶ While approximately 9,388.88 AF was diverted from the Carmel River in 2012, the total amounts of water diversions have historically been significantly greater. At the time that State Water Board Order WR 95-10 was issued, State Water Board stated that Cal-Am was diverting 10,730 af/yr from the Carmel River without a legal basis. Since that time, Cal-Am's diversions have been substantially reduced and Cal-Am has obtained additional rights to divert from the Carmel River subterranean flow through new permits issued by the State Water Board. Some of these permits allow diversions by Cal-Am during certain months of the year, and other permits are associated with the Aquifer Storage and Recovery efforts jointly pursued by Cal-Am and the MPWMD.

⁷ The "Narrows" represent a river constriction at RM 9.6 that is commonly used as a geographic reference to distinguish between the lower and middle reaches of the river. Generally, the lower reaches (below the Narrows) have experienced reductions in surface water flows and dewatering which has reduced available habitat in the lower reaches of the river. The project affected reach is located below the Narrows.

**Table 4.2-1
MPWMD 2012 Water Production Summary
Carmel River Aquifer Only**

SOURCE AREAS ^{1,2}	NON CAW (NON CAL-AM) WELLS						CAW (CAL-AM WELLS)		AQUIFER SUBUNIT TOTALS	
	WATER METER		LAND USE		SUB-TOTAL		WATER METER		NO. OF WELLS	PRODUCTION (AF)
	NO. OF WELLS	PRODUCTION ³ (AF)	NO. OF WELLS	PRODUCTION (AF)	NO. OF WELLS	PRODUCTION (AF)	NO. OF WELLS	PRODUCTION (AF)		
AS1	7	62.2	1	0.1	8	62.3	0	0	8	62.3
AS2	45	136.6	36	40.1	81	176.7	3	420.7	84	597.4
AS3	126	989.5	49	52.2	175	1,014.70	6	5,464.60	181	6,506.40
AS4	30	593	7	2.7	37	595.8	1	1,629.10	38	2,224.90
ACTIVE	208	1,781.30	93	95.1	301	1,849.50	10	7,514.40	797	9,391.00
Source: MPWMD, 2013						SUMMARY CARMEL RIVER AQUIFER PRODUCTION				
NOTES:						SURFACE WATER DIVERSIONS:				
1. Shaded areas indicate production within the Monterey Peninsula Water Resources System. The LSS was added to the Monterey Peninsula Water Resources System in September 2008						CAW Diversions (San Clemente Dam):			0	
2. CAW – California American Water.						Non Cal-Am Diversions:			24.9	
3. Source areas are as follows:						CAW WELLS:				
AS1 – UPPER CARMEL VALLEY – San Clemente Dam to Esquiline Bridge						Carmel Valley:			7,514.40	
AS2 – MID CARMEL VALLEY – Esquiline Bridge to Narrows						Within the Water Resources System:			7,539.30	
AS3 – LOWER CARMEL VALLEY – Narrows to Via Mallorca Bridge										
AS4 – LOWER CARMEL VALLEY – Via Mallorca Bridge to Lagoon						Outside the Water Resources System:			0	
4. Any minor numerical discrepancies in addition are due to rounding.						<i>CAW TOTAL, Wells and Diversion:</i>			7,539.30	
5. 131.7 AF was subtracted from CAW production in AS3 to account for water provided to ASR Water Project. (ASR Wells #1, 2 and 3) in WY 2012.						NON CAW WELLS:				
6. This total includes 1,117 AF of WY 2011 ASR injection recovery, 106.8 AF recovery of Pre-Permanent Water Rights and 3,071 AF of Native Groundwater.						Within the Water Resources System:			1,849.50	
						<i>NON CAW TOTAL, Wells and Diversion</i>			1,849.50	
						GRAND TOTAL:			9,388.80	

The major tributary to the Carmel River is Tularcitos Creek (RM 15.85). Approximately 65 percent of the river's watershed is upstream of the confluence with Tularcitos Creek (CDFW, 1983). Other creeks and tributaries include: Klondike Creek (RM 15.42), Hitchcock Creek (RM 14.57), Las Garzas Creek (RM 12.48), Miramonte Creek (RM 11.13), Don Juan Creek (RM 10.91), Coyote Gulch Creek (RM 9.11), Buckeye Creek (RM 8.48), Berwick Canyon Creek (RM 8.13), Robinson Canyon Creek (RM 8.11), Potrero Creek (RM 3.88), and Hatton Creek (RM 1.45).

Surface water in the Carmel River comes from four main sources: (1) direct runoff from rainfall, (2) planned releases from the Los Padres dam, (3) seeps and springs of groundwater, and (4) return flow from urban uses including irrigation, septic systems, and waste-water treatment plants (Smith et al., 2004). Runoff flows into and through the Carmel River and its tributaries. Flows in the Carmel River are gaged by the USGS at two locations: Robles Del Rio (RM 14.143) and Near Carmel ("Carmel Gage") at RM 3.24. MPWMD also maintains a series of monitoring gages within the Carmel River.

Flows in the Carmel River and its tributaries respond rapidly to rainfall, and there is a high rate of runoff per unit area. According to the MPWMD, average annual runoff (1962 to 2011) was approximately 76,400 AF (MPWMD, 2012). **Table 4.2-2** lists the annual streamflow summaries for mainstem sites and tributary sites based on MPWMD monitoring and reporting, which began in 1992. Values are presented in acre-feet (AF). **Table 4.2-3** includes a summary of average annual streamflows according to information obtained from the USGS Robles Del Rio and Carmel gages for years 1962 through 2012 (USGS, 2013). The peak flow of record during this period was 9,590 cubic feet per second (cfs) and occurred on February 28, 1983. The mean flow during the same period was approximately 103 cfs (West Yost Associates, 2013). **Figure 4.2-3** provides a graphical depiction of average annual flows based on information obtained from USGS.

**Table 4.2-2
Carmel River Basin – Annual Streamflow Summary
Water Years 1992 – 2011
(Values in Acre-Feet)**

TRIBUTARY SITES	Drainage Area (Sq. Miles)	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
CHACHAGUA CREEK	46.3	1,780	7,340	560	16,320	3,840	4,990	23,800	2,590	1,730	1,500	245	1,270	1,250	4,340	5,210	261	2,200	1,020	5,030	5,320
PINE CREEK	7.8	3,750	9,800	1,230	11,110	6,550	8,300	15,610	4,540	5,300	3,270	2,300	4,250	2,350	8,910	8,020	849	3,840	2,830	6,130	6,960
SAN CLEMENTE CREEK	15.6	5,450	17,070	1,820	20,580	9,310	14,100	33,380	7,130	9,830	5,340	3,270	5,850	3,720	16,330	13,720	1,360	5,520	4,270	9,950	12,950
TULARCITOS CREEK	56.3	635	3,220	444	5,100	1,650	2,450	22,610	3,810	2,450	1,490	630	552	503	1,000	2,480	503	917			
HITCHCOCK CREEK	4.6	•	•	52	1,820	451	716	2,970	169	482	214	18	274	234	863	691	2	383			
GARZAS CREEK	13.2	3,700	11,170	746	12,140	4,890	8,570	24,610	5,050	4,980	3,070	1,200	2,760	1,810	8,590	7,420	381	3,010			
ROBINSON CANYON CREEK	5.4	619	2,360	89	2,230	619	1,430	6,890	545	8230	433	82	448	354	1,710	1,010	25	455			
POTRERO CREEK	5.2	•	•	30	1,790	506	1,210	5,970	855	1,020	310	43	210	164	1,470	1,050	13	308			
SAN JOSE CREEK (OUTSIDE CRB)	14.2	•	•	•	•	•	•	•	6,400	6,260	2,890	1,100	1,880	1,480	7,640	6,870	862	1,740			
MAINSTEM SITES																					
CR AT ROBLES DEL RIO	193	38,240	109,000	11,800	155,000	75,210	99,340	250,300	54,640	76,750	47,180	31,850	60,560	38,060	114,400	110,100	12,220	49,080	45,930	104,540	110,300
CR AT DON JUAN BRIDGE	216	•	122,000	12,760	173,600	83,090	111,800	252,200	53,570	73,960	49,360	31,330	60,420	38,330	121,800	118,300	12,150	52,510	47,410	106,300	116,500
CR NEAR CARMEL	246	35,570	123,400	8,200	177,400	74,500	104,100	261,100	55,000	76,190	47,790	28,340	55,400	35,220	119,200	119,200	7,440	43,960	41,590	105,840	115,800
CR AT HIGHWAY 1 BRIDGE	252	•	123,000	7,410	179,500	83,430	112,000	280,900	50,810	72,660	42,860	24,860	52,000	30,300	115,200	115,000	6,470	42,520	39,170	102,700	111,200

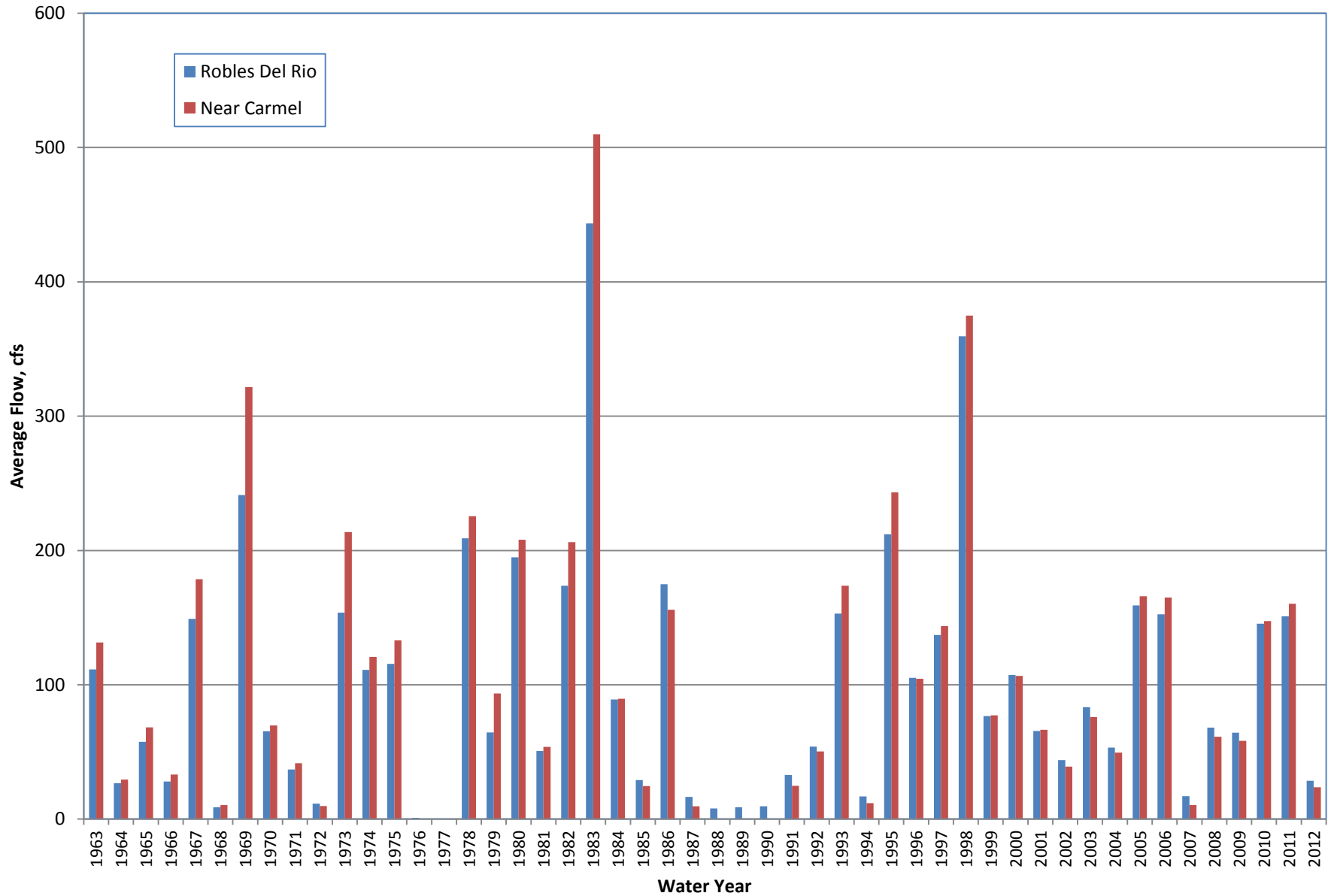
- Notes:
1. Carmel River (CR) at Robles del Rio and near Carmel sites are maintained by the USGS.
 2. (*) No continuous stage data collected.
 3. Streamflow sites listed in downstream order.
 4. San Jose Creek is outside the Carmel River Basin, but is shown for comparison.
 5. Water Year 2009-2011 data where available are provisional and are subject to revision.
 6. A complete record of stage and discharge measurements exist for blank cells, but records have not yet been processed

Table 4.2-3
Average Annual Flows (cfs)
Robles del Rio and Near Carmel USGS Gages
Water Years 1963 - 2012

Water Year	USGS Gage		Water Year	USGS Gage	
	Robles Del Rio	Near Carmel		Robles Del Rio	Near Carmel
1963	111.4	131.6	1988	7.9	0.0
1964	26.7	29.4	1989	8.9	0.0
1965	57.5	68.3	1990	9.6	0.5
1966	28.0	33.2	1991	32.9	24.9
1967	149.0	178.6	1992	54.0	50.4
1968	8.9	10.4	1993	153.1	173.8
1969	241.3	321.7	1994	16.8	11.9
1970	65.5	69.7	1995	212.2	243.3
1971	37.0	41.6	1996	105.3	104.5
1972	11.6	9.8	1997	137.1	143.6
1973	153.7	213.7	1998	359.5	374.8
1974	111.0	120.8	1999	76.7	77.3
1975	115.6	133.2	2000	107.3	106.6
1976	0.9	0.2	2001	65.7	66.6
1977	0.0	0.0	2002	43.9	39.0
1978	209.1	225.6	2003	83.3	76.1
1979	64.5	93.6	2004	53.2	49.4
1980	194.8	208.0	2005	159.1	165.8
1981	50.7	53.7	2006	152.5	165.0
1982	173.7	206.2	2007	17.2	10.5
1983	443.4	509.9	2008	68.1	61.2
1984	89.1	89.7	2009	64.4	58.2
1985	29.1	24.5	2010	145.6	147.4
1986	174.9	156.0	2011	151.0	160.3
1987	16.6	9.6	2012	28.6	23.6

Source: USGS, 2013 Robles Del Rio and Near Carmel Gage; West Yost Associates, Inc., 2013

Carmel River Annual Average Flows, Water Years 1963–2012



Source: USGS, 2013; West Yost Associates, 2013

Title:
Carmel River Annual Average Flows
 (Water Years 1963 through 2012)

Date: 10/24/2014

Project: 2013-24



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Denise Duffy and Associates, Inc.
 Environmental Consultants Resource Planners
 947 Cass Street, Suite 5
 Monterey, CA 93940
 (831) 373-4341

Figure
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Monthly average flows are shown in **Table 4.2-4**. **Figure 4.2-4** provides a graphical comparison of average monthly flows at both USGS gages. **Figure 4.2-5** depicts the monthly average flow data at each of the USGS gages and shows the general location of the existing gages within the watershed. As demonstrated in **Table 4.2-4**, average monthly flows vary according to season. Lower flows generally occur between May and October.

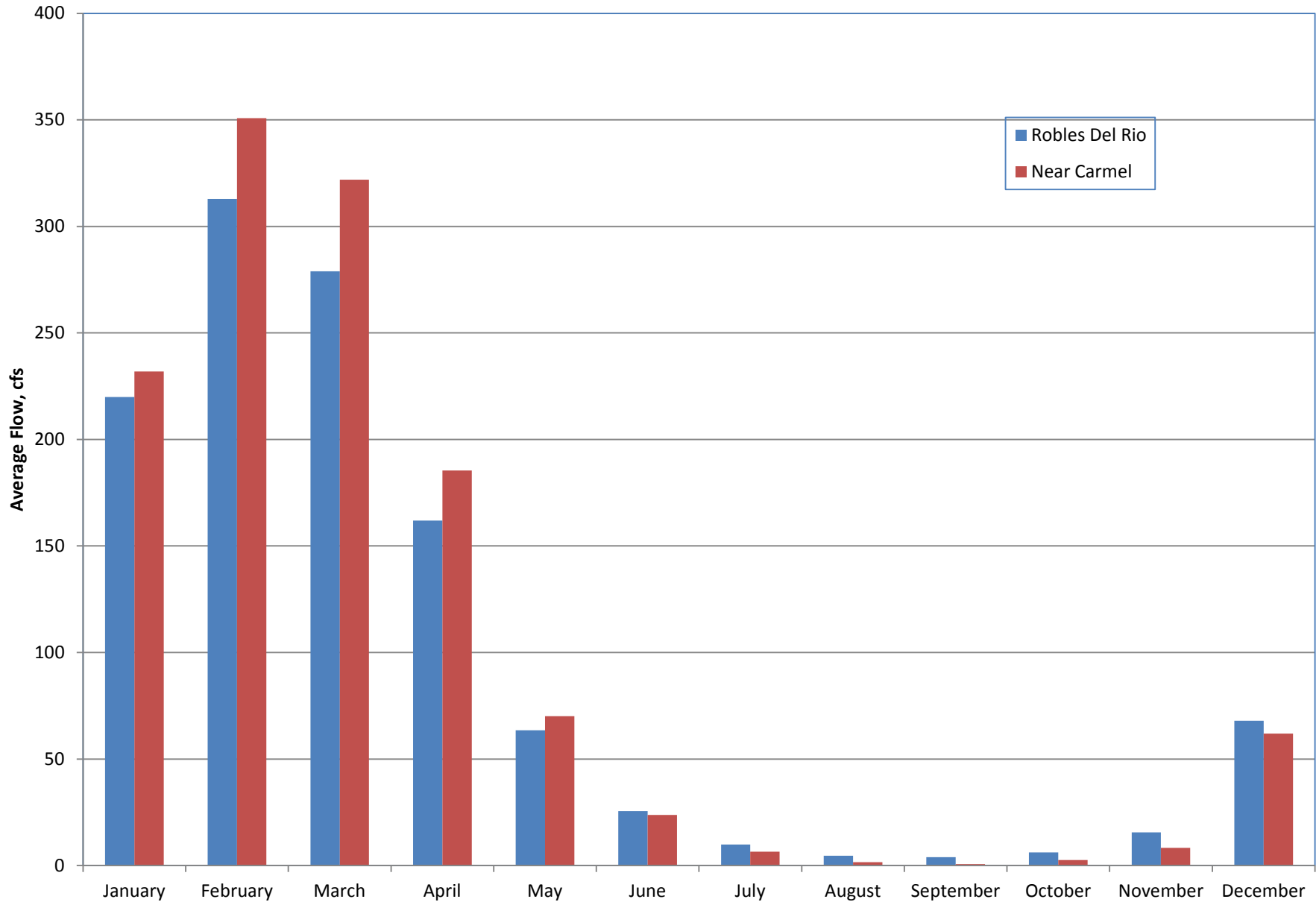
Table 4.2-4
Carmel River Monthly Average Flows (cfs)
Water Years 1963 – 2012

Month	USGS Gage	
	Robles Del Rio	Near Carmel
January	219.9	231.9
February	312.9	350.8
March	278.9	321.9
April	161.9	185.5
May	63.5	70.2
June	25.5	23.7
July	9.9	6.5
August	4.6	1.5
September	4.0	0.7
October	6.1	2.6
November	15.6	8.4
December	68.0	62.0

Source: USGS, 2012; West Yost Associates, 2013

The flow regime of the river is variable depending upon the season and the year, as shown in **Table 4.2-3** and **Table 4.2-4**. Over 90 percent of the average annual precipitation typically occurs between November and April, with January and February being the wettest months (ACOE, 2008). During the dry months, which are typically from May through October, the inflow varies. During low flow periods, the lower reaches of the Carmel River, below San Clemente Dam (RM 18.61), may experience complete or partial drying of the river channel due to groundwater pumping and low tributary inflow (MPWMD, 2004).

Carmel River Monthly Average Flows, Water Years 1963–2012



Source: West Yost Associates, 2013

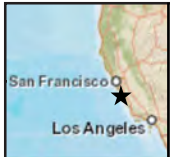
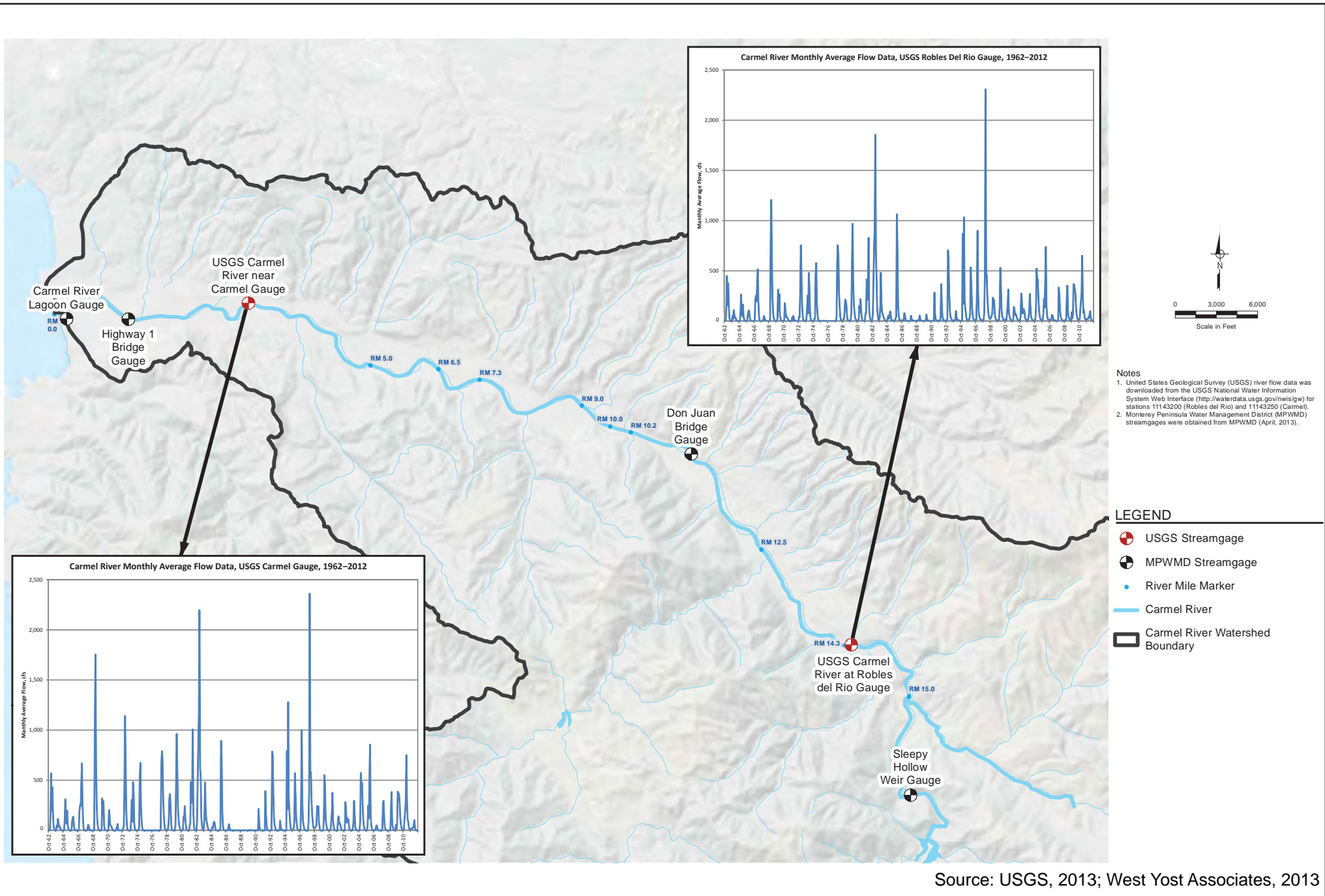
Title: **Carmel River Monthly Average Flows**
(Water Years 1963 through 2012)

Date: 10/24/2014
Project: 2013-24



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Denise Duffy and Associates, Inc.
Environmental Consultants Resource Planners
947 Cass Street, Suite 5
Monterey, CA 93940
(831) 373-4341

Figure
4.2-4



Title: **Carmel River Stream Gages, Monthly Average Flows (Water Years 1963 through 2012)**

Date: 10/24/2014

Project: 2013-24



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 Environmental Consultants Resource Planners
 947 Cass Street, Suite 5
 Monterey, CA 93940
 (831) 373-4341

Figure
4.2-5

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Surface water flow in the Carmel River has been directly affected by existing groundwater pumping from the Carmel River alluvial aquifer (discussed below).⁸ In normal years, the alluvium of the Carmel Valley undergoes a seasonal cycle of recharge by early winter flows, loss of water from bank storage in late spring, and drawdown from the unconfined alluvial aquifer by pumping. The pumping occurs year round, but the drawdown is most pronounced in summer and early fall, when streamflow is not adequate to recharge the underlying aquifer (Maloney, 1984; Kondolf and Curry, 1986; Smith et al., 2004). To offset the impacts of upstream groundwater pumping, Cal-Am has shifted its pumping to the lower reaches of the river to maintain streamflow within the mainstem of the river for longer periods of time. As a result, groundwater extraction downstream of the Narrows (see **Figure 4.2-2**) has increased during the summer and fall. The change in location of groundwater pumping from upstream to further downstream has increased summer and fall surface flow upstream of the Narrows, and caused an increase in aquatic habitat quality, quantity, and diversity further upstream (MPWMD, 2004). Cal-Am's increased groundwater extraction downstream of the Narrows has, however, resulted in partial drying of the lower river channel, causing increased vegetation stress, loss of streamside vegetation, and increased bank instability (MPWMD, 2004). To mitigate the effects of increased groundwater pumping on the riparian corridor in this area, the MPWMD implements on-going vegetation management and irrigation practices, as described more thoroughly in **Section 4.1, Biological Resources**.

Carmel River Lagoon

The Carmel River Lagoon represents the interface between the river and the Pacific Ocean. Most of the lagoon and wetlands lie within the Carmel River Lagoon and Wetland Natural Preserve, part of the Carmel River State Beach. Historically, the lagoon was altered to accommodate artichoke farming activities west of State Route 1 and levees were constructed to reduce the size of the estuary and control flood flows.⁹ The lagoon is separated from the Pacific Ocean by a tall beach berm from approximately May through October. Under natural conditions, the berm is breached when winter streamflow is high enough to top the sand and carve a path to the sea. During winter high flows, the Monterey County Department of Public Works breaches the berm mechanically to lower the chance of flooding adjacent neighborhoods and infrastructure located in the floodplain. The lagoon supports a wide variety of biological resources and is recognized as one of the most important ecological sites along the Central Coast. The habitat is critical to a significant population of native steelhead, and also supports the CRLF (both listed as threatened species). Please refer to **Section 4.1, Biological Resources** for more information.

4.2.2.4 Groundwater Resources

There are two types of groundwater aquifers in the watershed: the unconfined alluvial aquifer and a bedrock aquifer located in the upper hills of the watershed. The unconfined alluvial aquifer underlies the bed, floodplain, and terraces of the Carmel River and represents the primary source of groundwater along the Carmel River (Logan, 1983; Kapple et al., 1984; Smith et al., 2004).¹⁰ Although all water occurring below

⁸ The State Water Board has noted that the Carmel River is impaired due to groundwater pumping (State Water Board, 1995).

⁹ These levees are proposed to be removed in connection with planned restoration conducted as part of the Carmel River Restoration and Environmental Enhancement Project.

¹⁰ Alluvial aquifers are formed by the normal depositional process for fluvial (river) deposits (sediment). During periods of flooding, the alluvium (river sediment) is deposited in the channel as well as the floodplain when the flow velocities start to decrease. As flow velocity decreases, it is no longer able to suspend particles in the river flow and they settle out.

ground surface within soils or geologic media is considered groundwater, for the State Water Board's water right permitting purposes there is a legal distinction between percolating groundwater and groundwater flowing in a subterranean stream. Groundwater withdrawals from the alluvial aquifer are from a subterranean stream. The MPWMD and State Water Board define the alluvial aquifer as the water-bearing strata directly associated with the Carmel River (State Water Board, 1995; State Water Board, 2002). As a result, groundwater and surface water are treated as the same resource for State Water Board permitting processes.¹¹ The proposed project does not involve diversions from the subtle bedrock aquifer; therefore, it is not discussed further in this EIR. The following presents an overview of the Carmel River alluvial aquifer.

Carmel River Alluvial Aquifer

The Carmel Valley alluvial aquifer is approximately 16 miles long and varies in width from 300 to 4,500 feet (Kapple et al., 1984; DWR, 2003).¹² The thickness of the water bearing formations ranges from approximately 30 feet at the Narrows to about 180 feet near the mouth of the river. Groundwater flow is generally down valley, with gradients ranging from about 50 feet/mile in the upper drainage basin, to about 10 feet/mile toward the lower end (West Yost Associates, 2013). The aquifer is divided into four subunits for descriptive and computer modeling purposes. Aquifer Subunits (AS)-1 and AS-2 are collectively referred to as the upper aquifer; AS-3 and AS-4 are referred to as the lower aquifer. **Figure 4.2-6** shows the aquifer subunits and MPWMD monitoring well hydrographs.¹³

The aquifer is unconfined and is highly permeable, recharging rapidly after extended dry periods (MPWMD, 2006). After recovery, water table depths range from 5 to 30 feet below ground surface, with an average of about 15 feet. During normal rainfall years, water-level fluctuations are about 5 to 15 feet; during drought years, water levels drop to as much as 50 feet below ground surface (DWR, 2003; West Yost Associates, 2013). Groundwater levels within the aquifer are influenced by pumping or production at supply wells, evapotranspiration, seasonal river flow infiltration and subsurface inflow, outflow from the basin, and reservoir releases to augment summer low flows (Smith et al, 2004).

In the spring and summer, the alluvial aquifer is drawn down by existing groundwater production wells, which results in dewatering of the lower seven miles of the river for several months in most years and up to nine miles in dry to extremely dry years (MPWMD, 2006).¹⁴ About 85% of groundwater recharge occurs through the bed of the Carmel River, with additional recharge occurring from tributaries, precipitation, inflow from subsurface bedrock, and return flow from septic and irrigation systems (MPWMD/ACOE, 1994).

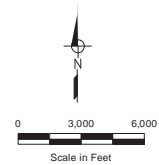
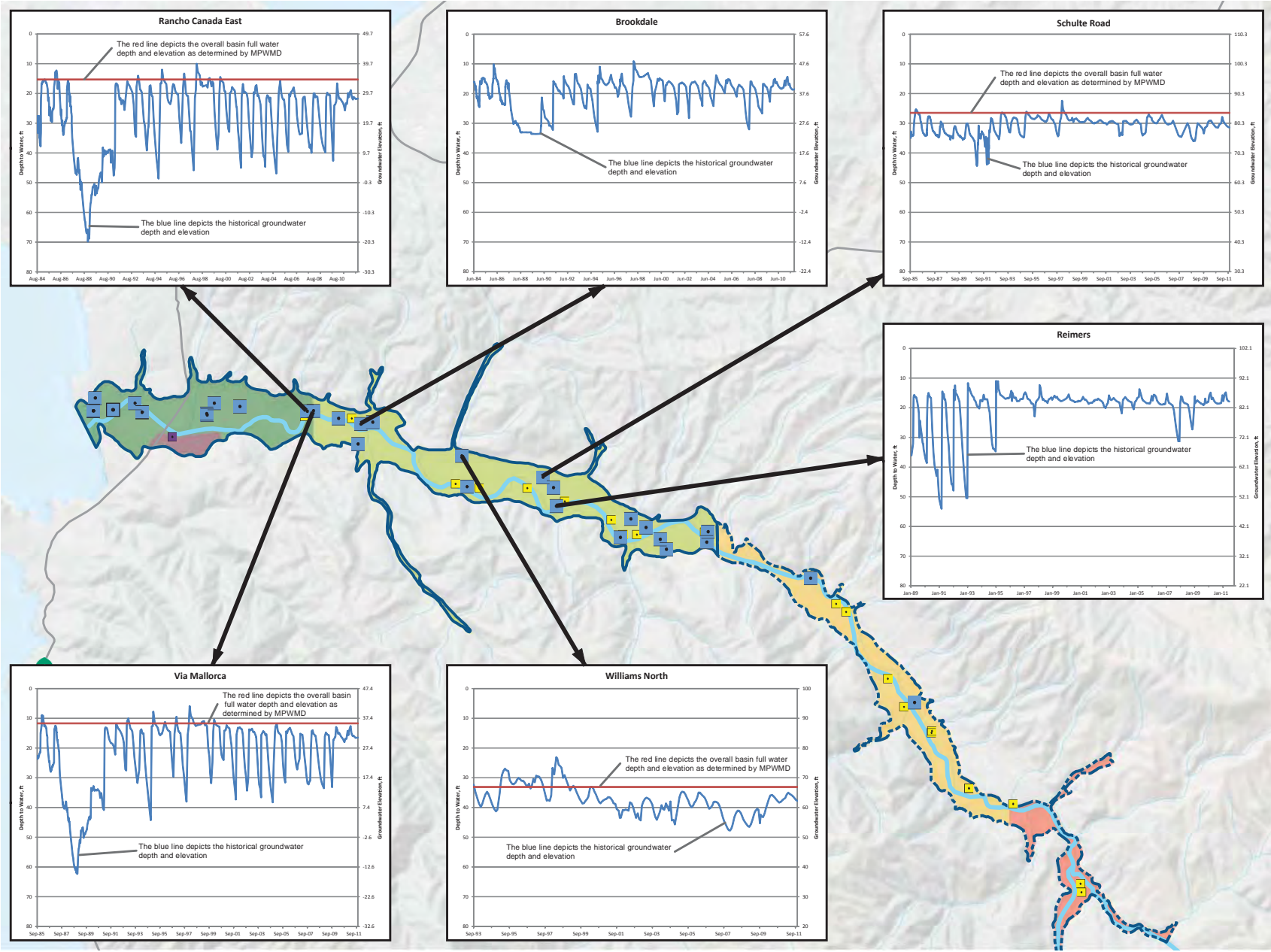
Coarse gravel is deposited in the stream channel, sand and fine gravel forms natural levees along the banks, and silt and clay are deposited on the floodplains (Fetter, 1980).

¹¹ State Water Board Order WR 95-10 includes a conclusion that downstream of RM 15, the aquifer underlying and closely paralleling the surface watercourse of the Carmel River is a subterranean stream subject to the State Water Board's permitting authority.

¹² The Carmel River Alluvial Aquifer is also referred to as the Carmel River Groundwater Basin (DWR, 2003).

¹³ The terms "upper" and "lower" refer to upstream and downstream regions; the terms do not refer to shallow versus deep aquifer zones. The proposed project proposes to pump water from Cal-Am wells that are located in the lower aquifer units 3 and 4 (AQ3 and AQ4).

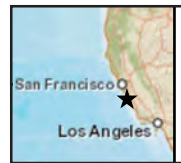
¹⁴ The potential recharge rate from the river to the aquifer is high, perhaps 100 cfs or more (Kapple et. al, 1984; MPWMD 2013). During normal or above-normal flow years, the water table recovers completely from the dry season lows. After the two-year drought of 1976 through 1977, precipitation that began in January 1978 caused water levels in the aquifer to recover to normal in 1978. Thus, it appears that the aquifer can recover in a month or less, even after large drawdowns. Water levels after recovery are often a few feet above the riverbed, indicating that additional and significant recharge occurs, mostly from tributary stream infiltration (Kapple, 1984).



- Notes**
1. Cal-Am = California-American Water Company
 2. MPWMD = Monterey Peninsula Water Management District
 3. MPWMD monitoring wells were obtained from MPWMD (March, 2013).
 4. Cal-Am wells were obtained from Cal-Am (April, 2013).
 5. Aquifer subunit endpoints were obtained from MPWMD (September, 2012).

- LEGEND**
- MPWMD Monitoring Well
 - Cal-Am Production Well
 - Eastwood/Odello Well 2
 - Carmel River
 - Lower Aquifer
 - Upper Aquifer
 - License 13868 Current Place of Use
 - Aquifer Subunit 1
 - Aquifer Subunit 2
 - Aquifer Subunit 3
 - Aquifer Subunit 4

Source: USGS, 2013; West Yost Associates, 2013



Title: **Carmel River Alluvial Groundwater Basin**

Date: 10/24/2014

Project: 2013-24

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Denise Duffy and Associates, Inc.

Environmental Consultants Resource Planners

947 Cass Street, Suite 5
Monterey, CA 93940
(831) 373-4341

Figure
4.2-6

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The volume of groundwater storage in the aquifer is a function of the geometry of the basin and the porosity of the alluvial sediments (DWR, 2003; MPWMD, 2006). Based on available information from logs of existing wells, the MPWMD estimates that the total groundwater storage capacity of the aquifer is approximately 48,000 AF. However, other estimates range between 36,000 and 52,000 AF (MPWMD, 2013; DWR, 2003). **Figure 4.2-6** includes hydrographs of key MPWMD monitoring wells that show historical groundwater levels relative to estimated basin storage.

4.2.2.5 Water Quality

MPWMD monitors surface water and groundwater quality in the Carmel River. Ambient conditions in surface waters are measured by dissolved oxygen, carbon dioxide, pH, temperature, turbidity, conductivity, and salinity. Groundwater is monitored for specific conductance, total alkalinity, pH, chloride, sulfate, ammonia nitrogen, nitrate nitrogen, total organic carbon, calcium, sodium, magnesium, potassium, iron, manganese, orthophosphate, and boron. MPWMD also monitors river temperatures continuously at six locations within the Carmel River Basin. The following information is provided for informational purposes to describe existing water quality conditions in the basin. All water pumped under proposed License 13868A would be treated at Cal-Am's existing treatment facilities.

Surface Water Quality

MPWMD collects surface-water quality data at three sampling stations along the Carmel River on a semi-monthly basis. The locations of the sampling stations are: (1) below Los Padres Reservoir (BLP) at RM 25.4; (2) below San Clemente Reservoir at the Sleepy Hollow Weir (SHW) at RM 17.1; and (3) at the Carmel River Lagoon (CRL) RM 0.1. The most recent water quality data is available from MPWMD Reporting Year (RY) 2012 (July 1, 2011 to June 30, 2012). MPWMD collected the following chemical and physical parameters (units in parentheses): temperature (°F), dissolved oxygen (mg/L), carbon dioxide (mg/L), pH, specific conductance (µS/cm), salinity (ppt), and turbidity (NTU). **Table 4.2-5** identifies the results of surface water quality monitoring conducted by MPWMD.

Table 4.2-5
Average MPWMD Surface Water Quality Data (2012)

Monitoring Station	Temperature (F)	Dissolved Oxygen (mg/L)	Carbon Dioxide (mg/L)	pH	Conductivity (µS/cm)	Turbidity (NTU)
Below Los Padres (BLP)	55.2	8.9	13.7	7.6	187	1.6
Sleepy Hollow Weir (SHW)	55.4	10.2	10.2	8.0	204	1.3
Carmel River Lagoon (CRL)	57	8.9	15.4	7.8	3547	1.2

Source: MPWMD, 2013

In general, water quality levels in the Carmel River mainstem for dissolved oxygen, carbon dioxide, and pH levels are consistent with the objectives contained in Central Coast Basin Plan developed by the Central Coast RWQCB (MPWMD, 2012; MPWMD, 2013). However, average daily water temperature during the late summer and fall commonly exceeds the range for optimum steelhead growth (50-60°F). Monitoring stations in the flowing portions of the river (i.e., excluding the Lagoon and mainstem reservoirs) show that water temperature during these months remains in a stressful range and can reach levels that threaten aquatic life (above 70°F) (MPWMD, 2012). Turbidity in the mainstem is normally low, except during the winter when

storm runoff events can elevate turbidity for several days during and after a storm event (ibid.). Very wet years, such as in 1998, can cause extensive landslides and bank erosion, which can increase turbidity.

MPWMD also collects water temperature data at six locations: 1) above Los Padres (RM 27.0); 2) below Los Padres Reservoir (RM 25.4); 3) above San Clemente Reservoir (RM 18.5); 4) Sleepy Hollow Weir (RM 17.1); 5) Garland Park (RM 10.8); and 6) South Arm Lagoon (RM 0.1). MPWMD collects this information to determine whether or not water quality criteria for aquatic life are being met at various reaches of the Carmel River. **Table 4.2-6** presents the continuous daily water temperature collected by MPWMD.

Table 4.2-6
MPWMD Temperature (2012)

Temperature (F)	Monitoring Station					
	Above Los Padres	Below Los Padres	Above San Clemente	Sleepy Hollow Weir	Garland Park	South Arm Lagoon
Maximum Annual Temperature	65.0	64.8	67.4	68.9	69.7	-
Average Annual Temperature	52.0	55.5	54.7	55.3	54.9	-
Maximum Daily Average Temperature	64.0	67.2	64.8	67.3	65.1	67.6

Source: MPWMD, 2013

Water quality in the Carmel River Lagoon is influenced by freshwater inflow from the Carmel River, tidal levels, and ocean waters over topping the sandbar from the Pacific Ocean (MPWMD, 2004). Water quality often declines during the late summer, fall and early winter months when Carmel River flows are reduced due to upstream groundwater pumping and storage (MPWMD, 2012). Water temperature can exceed 70°F, which is above Central Coast Basin Plan guidelines (MPWMD, 2013). Dissolved oxygen levels can also periodically drop below guidelines (not less than 7.0 mg/L), probably due to a combination of increasing water temperature and decomposition of marine organic material washed into the lagoon by high Ocean waves (MPWMD, 2004; MPWMD, 2012).

Groundwater Quality

MPWMD operates a network of groundwater quality monitoring wells as part of MPWMD's annual monitoring program. This program is in addition to the extensive water quality monitoring that Cal-Am conducts at its production wells. MPWMD collected groundwater quality data from six monitoring wells in 2011. The results indicate that, in general, there were only minor changes in overall water quality compared to samples collected in 2010 (MPWMD, 2013). **Table 4.2-7** presents groundwater quality data collected by MPWMD.

**Table 4.2-7
MPWMD Groundwater Quality Monitoring Results
October 2012**

Water Quality Constituent	Drinking Water Standard ⁽¹⁾	Sampling Location					
		16S/1W-13Lc (deep)	16S/1E-17J4	16S11E-17R2	16S/1E-23E4	16S/1E-23La	16S/1E-24N5
River Mile		.65	3.85	3.86	6.53	6.72	8.02
Specific Conductance (micromhos/cm)	900 1600 2200 ⁽²⁾	953	379	1164	1209	517	442
Total Alkalinity (as CaCO ₃)	NA	200	94	182	284	126	128
pH	NA	7.2	6.7	6.6	7	6.9	7
Chloride	250 500 600 ⁽²⁾	93	21	102	108	34	24
Sulfate	250 500 600 ⁽²⁾	131	54	248	180	75	50
Ammonia Nitrogen (as N)	NA	0.43	<0.05	0.22	0.06	0.13	<0.05
Nitrate Nitrogen (as NO ₃)	45	<1	1	<1	<1	<1	1
Total Organic Carbon	NA	2.7	1.6	5.6	2.9	4.4	2
Calcium	NA	82	34	132	124	43	42
Sodium	NA	90	23	83	104	41	28
Magnesium	NA	22	12	26	30	14	12
Potassium	NA	4.0	2.9	3.7	2	3.6	2.8
Iron	0.3	2.518	0.151	7.024	1.467	1.27	0.01
Manganese	0.05	0.752	<0.010	0.301	0.86	0.256	0.039
Orthophosphate		0.15	<0.10	<0.10	<0.10	<0.10	<0.10
Total Dissolved Solids	NA	631	240	808	806	320	266
Hardness (as CaCO ₃)	NA	295	134	437	433	165	154
Boron	NA	0.15	<0.05	0.05	0.12	0.05	<0.05
Bromide	NA	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Fluoride	NA	1.14	0.17	0.18	0.43	0.32	0.20

Notes:

(1) Maximum contaminant levels are from California Domestic Water Quality and Monitoring Regulations, Title 22, 1977.

(2) The three values listed for certain constituents refer to the "recommended level, the "upper" level, and "short-term" level, respectively.

(3) The "Practical Quantifiable Limit" for Orthophosphate and Bromide changed in 2012.

(4) Well 15S/1E-15K4 is being used as a "far-field monitor" for ASR well #4 and as such was sampled for additional constituents in 2012 that are not shown on this table.

4.2.2.6 Setting

The following section describes the environmental setting for the affected reach of the Carmel River that is relevant to the analysis of potential impacts to hydrology and water quality. In addition, this section also provides an overview of the existing water-right license held by the petitioners and the petitioners' historical water use associated with the irrigation of agricultural land as authorized under the existing water-right license.

Project Study Area/Project Affected Reach

The potentially affected reach of the Carmel River (i.e., project study area/project affected reach) consists of the five-mile portion of the Carmel River (**Figure 3-5**) between the existing authorized POD under existing License 13868, and the furthest upstream POD (the Pearse well) proposed for License 13868A. The Project Affected Reach consists of a broad channel, approximately 200 feet wide, incised 10 feet or more below the surrounding floodplain (Balance Hydrologics, 2014a). The Carmel River bed within this area is dominated by sand and fine-gravel deposits, though some larger gravel and cobble deposits are also present (Balance Hydrologics, 2014a). This reach of the river typically dries up completely by July in most years (Balance Hydrologics, 2013; NMFS, 2002).

Existing Water Right License 13868 & Historical Water Use

License 13868 authorizes the petitioners to pump water from the Carmel River subterranean stream at two authorized PODs located on the petitioners' property to irrigate up to 99 acres of agricultural land within the POU for License 13868.^{15, 16} The existing water-right license allows the diversion of up to 131.8 af/yr at a maximum instantaneous rate of 0.45 cfs. Water pumped under the existing license is pumped by a submersible well located south of the Carmel River, approximately 300 yards east of SR 1. The well pumps approximately 500 gallons per minute (gpm). Water pumped at the well is conveyed via a combination of steel and PVC 6-inch diameter mainline to 6-inch diameter aluminum sprinkler mainline pipe with ring-lock coupling and 4-inch risers (Davids Engineering, Inc., 2013). Based on an assumed operating pressure of 45 pounds per square inch (psi), each sprinkler head discharges approximately 2.3 gpm, resulting in a water application rate of approximately 0.19 inches per hour (Davids Engineering, Inc., 2013).

License 13868 authorizes the irrigation of farmland located south of the Carmel River. Davids Engineering, Inc. ("Davids Engineering") prepared a technical memorandum that estimated the long-term crop evapotranspiration ("ET") and the ET of applied water ("ET_{aw}") associated with the irrigation of agricultural land under the existing water-right license. This analysis developed a historical record of water use on the POU for License 13868 in connection with agricultural use to determine the extent of consumptive use associated with the existing license. The following is a summary of the findings and conclusions reached in the Davids Engineering analysis, including a description of the existing pumping regime and estimated water use; a copy of the complete Davids Engineering's report is included in **Appendix E**.

The Davids Engineering analysis consisted of a site reconnaissance, preparation of weather data for ET calculations, and the application of a Daily Root Zone Water Balance Model over a 26-year period (January 1, 1987 to December 31, 2012) to calculate the ET and ET_{aw} under current and future management.¹⁷ The model used a variety of input parameters to estimate the amounts of water flowing into and out of the root zone, as well as the amounts of stored water and precipitation in the root zone over time. Key input parameters used in the model included precipitation and ET. The Davids Engineering analysis determined

¹⁵ While the existing license includes two authorized POD, only one is used. Odello Well #1 was destroyed in 1997.

¹⁶ Currently, the existing agricultural land consists of irrigated pasture that includes a mixture of perennial grasses and clover. Irrigation and grazing practices on the License 13868 POU have been developed to ensure long term productivity and sustainability of the pasture to support rotational grazing of cattle. Irrigation is managed to prevent crop water stress through under-irrigation, and grazing is managed to avoid overgrazing and deterioration of the pasture stand (Davids Engineering, Inc., 2013).

¹⁷ This model is consistent with typical models developed for irrigation scheduling purposes, such as those described in FAO Irrigation and Drainage Paper No. 56: Crop Evapotranspiration (Allen et al., 1998).

that modeled annual crop (pasture) ET_{aw} (i.e., “consumptive use”) varied between approximately 60.7 and 98.9 af, and averaged 85.6 af, over the 26-year period. Modeled annual applied water varied between approximately 91.9 and 131.8 af and averaged approximately 124.0 af. **Table 4.2-8** presents the model results for each year, and also summarizes the 26-year period in terms of the minimum, maximum, mean and median values for annual precipitation, applied water, and evapotranspiration.

Table 4.2-8
Summary of Root Zone Water Balance Analysis

Year	Precipitation		Applied Water		Evapotranspiration		ET of Precipitation		ET of Applied Water	
	inches	acre-feet	inches	acre-feet	inches	acre-feet	inches	acre-feet	inches	acre-feet
1987	13.1	44.2	35.5	120.0	33.1	112.0	8.5	28.6	24.6	83.4
1988	10.1	34.1	39.0	131.8	33.9	114.6	6.4	21.7	27.4	92.8
1989	10.0	33.9	39.0	131.8	36.2	122.5	8.5	28.8	27.7	93.7
1990	10.8	36.5	38.2	129.4	37.2	126.0	8.0	27.1	29.2	98.9
1991	13.4	45.2	39.0	131.8	34.7	117.6	7.4	25.0	27.3	92.5
1992	16.3	55.0	39.0	131.8	37.4	126.6	9.0	30.5	28.4	96.1
1993	22.0	74.5	38.6	130.6	36.5	123.5	10.8	36.7	25.7	86.8
1994	12.5	42.4	37.9	128.3	34.2	115.8	7.7	25.9	26.6	89.9
1995	20.4	68.9	36.4	123.1	33.9	114.6	10.8	36.5	23.1	78.1
1996	24.0	81.3	33.7	113.9	33.5	113.4	10.6	35.8	22.9	77.6
1997	17.4	59.0	39.0	131.8	34.7	117.2	7.9	26.8	26.7	90.4
1998	33.0	111.6	27.2	91.9	32.1	108.7	14.2	48.1	17.9	60.7
1999	13.7	46.2	35.1	118.8	32.5	109.9	9.2	31.1	23.3	78.8
2000	19.7	66.5	35.3	119.4	33.7	113.9	10.0	33.7	23.7	80.2
2001	19.0	64.4	35.8	121.0	34.2	115.7	8.9	30.1	25.3	85.6
2002	12.8	43.2	38.2	129.1	34.3	116.1	8.2	27.8	26.1	88.4
2003	14.3	48.3	37.5	126.7	35.5	120.2	9.3	31.4	26.2	88.8
2004	16.2	55.0	36.8	124.6	33.8	114.3	8.8	29.8	25.0	84.5
2005	20.1	68.0	32.1	108.7	32.9	111.3	11.7	39.6	21.2	71.8
2006	19.5	65.9	33.1	112.0	34.9	118.0	12.1	41.0	22.8	77.0
2007	9.2	31.2	38.1	129.1	34.5	116.8	7.4	24.9	27.1	91.9
2008	13.5	45.5	38.7	130.8	34.0	115.0	6.7	22.8	27.3	92.2
2009	16.2	54.7	39.0	131.8	34.9	118.0	9.2	31.0	25.7	87.0
2010	21.1	71.5	34.1	115.4	33.6	113.8	10.3	34.7	23.4	79.0
2011	16.1	54.4	38.3	129.7	34.6	117.1	10.5	35.5	24.1	81.6
2012	11.0	37.2	39.0	131.8	34.8	117.8	5.7	19.5	29.1	98.3
Min.	9.2	31.2	27.2	91.9	32.1	108.7	5.7	19.5	17.9	60.7
Max.	33.0	111.6	39.0	131.8	37.4	126.6	14.2	48.1	29.2	98.9
Mean	16.4	55.3	36.7	124.0	34.4	116.6	9.1	30.9	25.3	85.6
Median	16.1	54.6	38.0	128.7	34.3	116.0	8.9	30.3	25.7	86.9

Source: Davids Engineering, Inc., 2013

The Davids Engineering analysis estimated the annual applied water on the POU for License 13868 using a combination of site-specific information on local soils and ranching practices on the property, available precipitation and evaporation information, and coefficients from recognized sources to model estimated annual irrigation demand, crop evapotranspiration and deep percolation for a modeled 26-year period. **Table**

4.2-9 provides estimates of long-term mean monthly applied water and evapotranspiration and provides an estimate of equivalent flow rate based on the analysis performed by Davids Engineering. Based on the information shown in **Table 4.2-9**, the equivalent flow rate under the existing license was estimated to range between 0.046 and 0.185 cfs. The average annual rate of water use on the POU for License 13868 was estimated to be 124.0 af/yr with an estimated annual evapotranspiration of 85.6 af/yr and an average annual cfs rate of 0.118. The estimated annual evapotranspiration rate (or “consumptive use”) was subsequently used to determine the maximum annual amount and rate of diversion under proposed water-right License 13868A.

Table 4.2-9
Existing Water Right License 13868
Estimated Long-Term Mean Monthly Applied Water, Evapotranspiration and Flow Rate

Month	Applied Water ^(a) , AF	Monthly Evapotranspiration Percentage ^(b)	Estimated Monthly Evapotranspiration ^(c) , AF	Equivalent Average Flow Rate ^(d)	
				cfs	gpm
January	4.1	3.3%	2.8	0.046	20
February	4.2	3.4%	2.9	0.052	23
March	5.8	4.7%	4.0	0.065	29
April	9.3	7.5%	6.4	0.108	48
May	13.6	11.0%	9.4	0.153	69
June	16.0	12.9%	11.0	0.185	83
July	16.0	12.9%	11.1	0.181	81
August	15.6	12.6%	10.8	0.176	79
September	13.8	11.1%	9.5	0.16	72
October	12.2	9.8%	8.4	0.137	61
November	8.0	6.5%	5.5	0.092	41
December	5.5	4.4%	3.8	0.062	28
ANNUAL	124.0	100.0%	85.6	0.118	53

^(a) Estimated monthly average applied irrigation water, distributed by month.

^(b) Percent of annual evapotranspiration by month.

^(c) Estimated monthly average evapotranspiration, distributed by month.

^(d) cfs = cubic feet per second; gpm = gallons per minute. Totals at the bottom of these columns are the average annual flow rates.

Source: West Yost Associates, 2013; Davids Engineering, Inc., 2013

4.2.3 REGULATORY SETTING

4.2.3.1 Federal Regulations

The Clean Water Act

In 1972, Congress passed the Federal Water Pollution Control Act, commonly known as the Clean Water Act (CWA), with the goal of “restor[ing] and maintain[ing] the chemical, physical, and biological integrity of the Nation’s waters.” 33 U.S.C. Sec. 1251(a). The CWA directs states to establish water quality standards for all “waters of the United States” and to review and update such standards on a triennial basis. Section 319 mandates specific actions for the control of pollution from non-point sources. The EPA has delegated responsibility for implementation of portions of the CWA, including water quality control planning and control programs, such as the National Pollutant Discharge Elimination System (NPDES) Program, to the State Water Board and applicable Regional Water Boards.

Section 303(c)(2)(B) of the CWA requires states to adopt water quality standards for all surface waters of the United States based on the water body's designated beneficial uses. 33 U.S.C. Sec. 1313(c)(2)(B). Water quality standards are typically numeric, although narrative criteria based upon biomonitoring methods may be employed where numerical standards cannot be established or where narrative criteria are needed to supplement numerical standards. Water quality objectives for the Carmel River are contained in the Water Quality Control Plan for the Central Coast Basin (Basin Plan).

Section 303(d) of the CWA bridges the technology-based and water quality-based approaches for managing water quality. Section 303(d) requires that states make a list of waters that are not attaining standards after the technology-based limits are put into place. For waters on this list (and where the U.S. EPA administrator deems they are appropriate), states are to develop "total maximum daily loads" (TMDL). 33 U.S.C. Sec. 1313(d). TMDLs are established at the level necessary to implement the applicable water quality standards. A TMDL must account for all sources of the pollutants that caused the water to be listed. The Carmel River is not an impaired water body and is not subject to any TMDLs (EPA, 2013).

Section 301(a) of the CWA prohibits the discharge of any pollutants into "waters of the United States," except as allowed by permit. 33 U.S.C. Sec. 1311(a); see 33 U.S.C. Secs. 1362(7) and 1362(12). Section 404 of the CWA authorizes the U.S. Army Corps of Engineers (Corps) to issue permits for discharges of dredged or fill materials into wetlands or other waters of the United States. 33 U.S.C. Sec. 1344. Under the CWA regulations, "waters of the United States" are broadly defined to include lakes, rivers, creeks, streams, and adjacent wetlands. 33 C.F.R. Sec. 328.3(a).

4.2.3.2 State Regulations

Streamflow Protection Standards.

Section 10001 of the California Public Resources Code directs the Director of California Department of Fish and Wildlife (CDFW) to identify and list those streams and watercourses throughout the state for which minimum flow levels need to be established to assure the continued viability of stream-related fish and wildlife resources. Section 10002 directs the CDFW Director prepare proposed streamflow requirements, in terms of cubic feet per second, for each stream or watercourse identified pursuant to Section 10001. The Carmel River is identified as a high priority stream for the development of flow recommendations (CDFW, 2008). Recommended instream flow requirements were developed by CDFW based on a biological reconnaissance of the Carmel River drainage in 1983. CDFW recommended the following instream flows for the Carmel River (CDFW, 1983):

- Maintain a minimum perennial flow of 50 cubic feet per second (cfs) from San Clemente Dam to Highway 1 to increase total production of sea-run adult steelhead by an estimated 177%.
- Alternatively, maintain a minimum perennial flow of 25 to 50 cfs from only San Clemente Dam to Tularcitos Creek to increase total production of sea-run adult steelhead by an estimated 29% to 36%.

The recommended instream flow requirements identified by CDFW in 1983 did not include any specific recommendations for minimum instream flow according to season. In 2002, NMFS issued a report, which identified recommended instream flows to protect stream-related fish and wildlife resources (i.e., steelhead). MPWMD recently indicated that it is studying instream flow requirements and that preliminary results

indicate that actual minimum instream flow requirements to protect stream-related fish and wildlife resources are anticipated to be lower than those initially estimated by NOAA and CDFW.¹⁸

Porter-Cologne Water Quality Act.

The Porter-Cologne Water Quality Control Act establishes the State Water Board and the Regional Water Boards as the principal state agencies for coordinating and controlling water quality in California. The Porter-Cologne Water Quality Control Act authorizes the State Water Board to adopt, review, and revise policies for all waters of the state (including both surface water and groundwater) and directs the Regional Water Boards to develop regional Basin Plans. The Porter-Cologne Water Quality Control Act (California Water Code, Section 13000 et seq.) is the basis for water quality regulation in the State. Below is an overview of the Central Coast Region Basin Plan.

Water Quality Control Plan for the Central Coast Region (Basin Plan).

The Basin Plan identifies beneficial uses of major surface waters and their tributaries and water quality objectives and implementation plans to protect these beneficial uses. The principal elements of the Basin Plan are: a statement of beneficial water uses protected under the plan; water quality objectives necessary to protect the designated beneficial water uses; and strategies and time schedules for achieving the water quality objectives. Together, narrative and numerical objectives define the level of water quality that shall be maintained in the region. The water quality objectives are achieved primarily through the establishment and enforcement of waste discharge requirements (WDR).¹⁹ The following is an overview of beneficial uses and associated water quality objectives for surface and groundwater resources potentially affected by the proposed project.

Beneficial Uses. Designated beneficial uses for the Carmel River include: municipal and domestic supply; agriculture supply; industrial service supply; groundwater recharge; freshwater replenishment; water contact and non-contact water recreation; wildlife habitat; cold and warm fresh water habitat; spawning, reproduction, and/or early development; commercial and sport fishing; preservation of biological habitats of special significance; rare, threatened, or endangered species; and, migration of aquatic organisms (Regional Water Board, 2011). Designated beneficial uses for the Carmel River Estuary (Lagoon) include: groundwater recharge; water contact and non-contact water recreation; wildlife habitat; cold fresh water habitat; spawning, reproduction, and/or early development; commercial and sport fishing; preservation of biological habitats of

¹⁸ While CDFW has identified recommended instream flow standards for the Carmel River, no official standards have been adopted and more-recent technical analyses indicate that actual instream flow requirements may be less (HDR, 2014). The analysis contained in this EIR is based on most recent technical analysis that considers project-specific impacts as it relates to the project affected reach. This EIR includes an evaluation of the proposed project's potential impacts based on the results of site-specific technical reports.

¹⁹ The Regional Water Board has the authority to implement water quality protection standards through the issuance of permits for discharges to waters in its jurisdiction. The Regional Water Boards may issue individual WDRs to cover individual discharges or general WDRs to cover a category of discharges. WDRs may include effluent limitations or other requirements that are designed to implement applicable water quality control plans, including designated beneficial uses and the water quality objectives established to protect those uses and prevent the creation of nuisance conditions. Violations of WDRs may be addressed by issuing Cleanup and Abatement Orders (CAOs) or Cease and Desist Orders (CDOs), assessing administrative civil liability, or seeking imposition of judicial civil liability or judicial injunctive relief.

special significance; rare, threatened, or endangered species; estuarine habitat; shellfish harvesting; and, migration of aquatic organisms (ibid.).

Water Quality Objectives. Applicable water quality objectives are based on the most stringent beneficial use and include non-numeric, numeric, and site specific objectives. The Basin Plan includes general water quality objectives for all surface waters, as well as specific water quality objectives based on the identified beneficial use. In addition, the Basin Plan also includes water quality standards for specific surface bodies, including the Carmel River. Specific surface water quality standards applicable to the Carmel River are identified in **Table 4.2-10**.

Table 4.2-10
Carmel River Surface Water Quality Standards (mg/l³)

	Total Dissolved Solids (TDS)	Chlorine (Cl)	Sulfate (SO ₄)	Boron (B)	Sodium (Na)
Carmel River	200	20	50	0.2	20

Source: Regional Water Board, Water Quality Control Plan for the Central Coast Region, June 2011

Other surface water quality objectives include the following:

- The dissolved oxygen concentration shall not be reduced below 7.0 mg/l at any time.
- The pH value shall not be depressed below 6.5 or raised above 8.3.
- At no time or place shall the temperature be increased by more than 5 degrees F above the natural receiving water temperature.
- At all areas where shellfish may be harvested for human consumption, the median total coliform concentration throughout the water column for any 30-day period shall not exceed 70/100 ml, nor shall more than ten percent of the samples collected during any 30-day period exceed 230/100 ml for a five-tube decimal dilution test or 330/100 ml when a three-tube decimal dilution test is used.

The Basin Plan also includes groundwater quality objectives according to beneficial use. Groundwater use for municipal purposes must meet the requirements of Title 22 of the California Code of Regulations. Groundwater quality objectives include the following:

- The median concentration of coliform organisms over any seven-day period shall be less than 2.2/100 ml.
- Ground waters shall not contain concentrations of organic chemicals in excess of the limiting concentrations set forth in California Code of Regulations, Title 22, Chapter 15, Article 5.5, Section 64444.5, Table 5 and listed in Table 3-1 of the Basin Plan.
- Ground waters shall not contain concentrations of chemical constituents in excess of the limits specified in California Code of Regulations, Title 22, Chapter 15, Article 4, Section 64435, Tables 2 and 3.
- Ground waters shall not contain concentrations of radionuclides in excess of the limits specified in California Code of Regulations, Title 22, Chapter 15, Article 5, Section 64443, Table 4

Section 303(d) of the CWA requires that States develop lists of water bodies that would not attain water quality objectives after implementation of required levels of treatment by point source dischargers (municipalities and industries). 33 U.S.C. § 1313(d). The Carmel River is not listed as impaired for meeting its designated beneficial uses on any CWA section 303(d) TMDL list (EPA, 2013).

State Water Board Orders.

State Water Board Order WR 95-10. In 1995 the State Water Board adopted Order WR 95-10. This order concluded that Cal-Am was diverting approximately 10,730 af/yr from the Carmel River or its underflow “without a valid basis of right” (Order WR 95-10, pp. 25, 39). This order also concluded that Cal-Am had legal rights to divert 3,376 af/yr from the Carmel River. (Ibid., p. 25.) Order WR 95-10 directed Cal-Am to cease and desist from diverting more than 14,106 af/yr from the Carmel River until Cal-Am’s unlawful diversions are ended (Order WR 95-10, p. 40). This order directed Cal-Am to implement one or more of the following actions to terminate Cal-Am’s unlawful diversions: (1) obtain appropriative rights for the Carmel River water being unlawfully diverted; (2) obtain water from other sources and make one-for-one reductions in the unlawful diversions; or (3) contract with other agencies having appropriative rights to divert and use water from the Carmel River (Order WR 95-10, p. 40.). Order WR 95-10 directed Cal-Am to implement an urban conservation plan, to implement urban and irrigation conservation measures with the goal of achieving 15 percent conservation by 1996 and 20 percent conservation in each subsequent year (Order WR 95-10, pp. 40-41) until unlawful diversions ceased. This order also directed Cal-Am to maximize production from the Seaside Groundwater Basin to serve existing connections and thereby reduce diversions from the Carmel River.²⁰

State Water Board Order WR 2009-0060. In 2009, the State Water Board adopted Order WR 2009-0060. In this order, the State Water Board noted that Cal-Am and the MPWMD had obtained water-right Permit 20808A in 2007, which authorized the diversion of 2,426 af/yr from the Carmel River to underground storage in the Seaside Groundwater Basin. As a result, Cal-Am had the right to divert a total of 5,742 af/yr of water from the Carmel River (Order WR 2009-0060, pp. 5-6). Nonetheless, the order concluded that Cal-Am still continued to divert an average of 7,602 af/yr without a basis of right (Order WR 2009-0060, p. 55). The order also concluded that, while Cal-Am had achieved the 20 percent water conservation required by Order WR 95-10 (Condition No. 3), Cal-Am had not made any meaningful progress toward securing an alternative water supply that would allow Cal-Am to reduce the amount of its illegal diversions (Order WR 2009-0060, p. 55).

²⁰ At the same time that the State Water Board adopted Order WR 95-10, it also adopted Decision 1632, which approved Application 27614 by MPWMD and issued Permit 20808 to appropriate water from the Carmel River through a New Los Padres Dam Project. This project would have allowed up to 42 cfs of water to be taken by direct diversion, and up to 24,000 af/yr to be diverted to storage. However, in 1995 the voters of MPWMD rejected the bond issue proposed to finance this project. Permit 20808 was amended in 1999 and amended and split in 2007. Permit 20808A rights refer to water rights that are held jointly by MPWMD and Cal-Am for the Phase 1 ASR project. Permit 20808A was issued by the State Water Board in November 2007 for a maximum annual diversion of 2,426 AF. The MPWMD currently holds Permit 20808B, which is an unused approved water right associated with the New Los Padres Reservoir, 18,674 AF. The MPWMD is currently exploring alternative ways to perfect this entitlement, which would involve amendments to Permit 20808B depending on which long-term water supply alternative is chosen by the MPWMD. To date, such alternative project has not yet been identified. (See Los Padres Dam and Reservoir Long-Term Strategic and Short-Term Tactical Plan, June 2014) Permit 20808C was issued in November 2011 for a maximum annual diversion of 2,900 AF as part of the MPWMD and Cal-Am Phase 2 ASR.

Order WR 2009-0060 directed Cal-Am to diligently implement actions to terminate its unlawful diversions from the Carmel River and to terminate all such unlawful diversions by December 31, 2016 (Order WR 2009-0060, p. 57). The order also directed Cal-Am to not divert more than a base amount of 10,978 af/yr from the river, and requires that this base amount be reduced by specified amounts each year thereafter. The order prohibits Cal-Am from diverting water from the Carmel River for new service connections or for any increased use of water at existing service addresses resulting from a change in zoning or use (Order WR 2009-0060, p. 57).

4.2.3.3 Local

The proposed project will use existing Cal-Am wells and does not entail the construction of any facilities. Therefore, the proposed project does not require any permits by the County of Monterey or the City of Carmel-by-the-Sea. The Carmel Valley Master Plan nonetheless includes the following policies:

CV-5.1 Pumping from the Carmel River aquifer shall be managed in a manner consistent with the Carmel River Management Program. All beneficial uses of the total water resources of the Carmel River and its tributaries shall be considered and provided for in planning decisions.

CV-5.2 Water projects designed to address future growth in the Carmel Valley may be supported.

CV-5.4 The County shall establish regulations for Carmel Valley that limit development to vacant lots of record and already approved projects, unless additional supplies are identified. Reclaimed water may be used as an additional water source to replace domestic water supply in landscape irrigation and other approved uses provided the project shows conclusively that it would not create any adverse environmental impacts such as groundwater degradation.

4.2.4 THRESHOLDS OF SIGNIFICANCE

In accordance with CEQA Guidelines, Appendix G, a project impact would be considered significant if the project would:

- Impair the achievement of beneficial uses (both surface water and groundwater) by either causing or contributing to a violation of water quality standards or waste discharge requirements;
- substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level that would cause, the production rate of pre-existing nearby wells to drop to a level which would not support existing land uses or planned uses for which permits have been granted or would cause lowered levels would a significant adverse impact on the health of the riparian corridor;
- substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site;
- substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;

- create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff;
- otherwise substantially degrade water quality;
- place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;
- place within a 100-year flood hazard area structures which would impede or redirect flood flows;
- expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; or
- substantially decrease the amount of streamflow such that there would be a potential for impacts to other public trust resources such as river functions, riparian vegetation, and lagoon functions.

Here, the proposed project would utilize existing Cal-Am infrastructure and no new physical improvements are proposed as part of the project. As a result, the proposed project would not result in any ground-disturbing activities or physical site improvements that could cause changes to existing drainage pattern, contribute additional sources or runoff, result in the placement of housing or structures within a 100-year flood hazard area, or expose people or structures to a significant risk of loss, injury or death involving flooding. For this reason, an evaluation of potential impacts associated with these criteria is not provided in this section. For further discussion regarding these impact criteria, please refer to **Chapter 5, CEQA Considerations**.

4.2.5 IMPACTS AND MITIGATIONS

4.2.5.1 Impact Analysis Approach

The proposed project could potentially affect surface water or groundwater quantity or quality due to increased pumping at the three proposed POD under proposed new water-right License 13868A. The significance of the proposed project's potential effects on water quantity and quality is directly associated with the project's potential to affect biological resources (i.e., riparian habitat, fisheries and special-status species). The effects of the proposed project on riparian vegetation and aquatic habitat are evaluated separately in **Section 4.1, Biological Resources** of this EIR.

The following CEQA analysis evaluates the proposed project's potential impacts on surface resources (i.e., streamflow) and groundwater resources (i.e., groundwater storage) based on the findings of project-specific technical analyses prepared by West Yost Associates (**Appendix G**), Macaulay Water Resources (**Appendix F**), and Balance Hydrologics, Inc. (**Appendix C-1 and C-2**).^{21, 22} These reports evaluated the proposed

²¹ Macaulay Water Resources prepared a memorandum that identified the anticipated monthly municipal demands under the proposed new water-right License 13868A, based on Cal-Am's historical water-use records. The Macaulay Water Resources memorandum was reviewed by Balance Hydrologics, Inc., which concluded that it was sufficient for developing reasonable monthly demand estimates, assuming municipal use. A complete copy of this technical memorandum is, however, included in **Appendix F**.

²² Balance Hydrologics, Inc. also completed a technical review of the materials prepared by West Yost Associates, David Engineering, Inc., and Macaulay Water Resources, to provide an objective assessment of those reports from a CEQA and technical adequacy perspective. A summary of that analysis is not included in this EIR because Balance Hydrologics, Inc. generally concluded that the analyses were completed in accordance with commonly accepted methodologies to

project's potential effects on surface water and groundwater resources due to the change in authorized POD as proposed under License 13868A. Each of the applicable technical reports and their findings are described below. This information is provided to support the following CEQA analysis. For more information, please refer to each of the applicable technical reports.

West Yost Associates – Groundwater and Surface Water Evaluation Report

West Yost Associates (West Yost) prepared an evaluation of potential impacts to groundwater and surface water resources associated with increased pumping at the proposed PODs under proposed License 13868A. The purpose of West Yost analysis was to: 1) evaluate the effects of the proposed project on adjacent wells and groundwater storage, and 2) evaluate the project's potential effects on surface water flows based on the municipal demand pattern shown in **Table 4.2-11**. The proposed new POD include three existing Cal-Am wells located in Aquifer Subunits (AS) 3 and AS 4 of the Carmel Valley alluvial aquifer system. Accordingly, the West Yost analysis evaluated potential groundwater and surface water impacts to these subunits and the overlying reaches of the Carmel River (West Yost Associates, 2013).

**Table 4.2-11
Proposed Eastwood/Odello Assignment on Municipal Demand Pattern**

Month	Monthly Municipal Demand Pattern ^(a)	Monthly Diversion of Proposed Eastwood/Odello Assignment (AF)	Well Extraction Rate for Diversion of Proposed Assignment (GPM)
January	6.4%	5.5	40
February	5.8%	5.0	40
March	6.7%	5.7	42
April	7.4%	6.4	48
May	9.4%	8.0	59
June	10.0%	8.6	65
July	10.8%	9.2	67
August	10.8%	9.2	67
September	9.8%	8.4	63
October	9.1%	7.8	57
November	7.2%	6.1	46
December	6.6%	5.6	41
ANNUAL	100.0%	85.6	53

Groundwater Resources. West Yost evaluated the potential impacts of the proposed project on groundwater resources using a mathematical solution developed by Moench (1997). This approach was used to determine the drawdown in the aquifer system over time and at various distances from the pumping wells (i.e., proposed PODs). This approach represented a conservatively high estimate of drawdown because: 1) the analysis assumed 100 days of sustained pumping at a rate equal to the highest pumping rate of record for that well (for the period 2008-2012), which is unlikely based on a municipal demand pattern; and 2) the total increased drawdown associated with the proposed project was assessed for each of the proposed POD

estimate potential projects impacts. Where necessary, Balance Hydrologics, Inc., built upon those analyses as part of a supplemental hydrologic and geomorphic context memorandum, which is summarized in this EIR.

whereas actual pumping would likely be distributed among two or all three of the proposed PODs (i.e., all pumping from one well would be unlikely).²³ The results of the West Yost groundwater drawdown analysis are presented in **Table 4.2-12**.

Table 4.2-12
Summary of Predicted Groundwater Level Declines
Historical Cal-Am Pumping vs. Proposed Project

Well	Observation Point	Existing Conditions				Existing + Project Conditions						
		Distance From Well, ft	Pumping Rate, gpm	Drawdown		Pumping Rate, gpm	Project Drawdown				% Increase after 100 days	
				30 days (ft)	100 days (ft)		30 days (ft)	100 days (ft)	Difference 30 Days (ft)	Difference 100 Days (ft)		
Odello #2			68			NA						
	River	310		0.21	0.27		0	0				
Cañada #2			2432			2478						
	River	121		10.92	12.96		11.13	13.21	0.21	0.25	1.9%	
	P199	360		7.24	9.27		7.38	9.45	0.14	0.18	1.9%	
	P186	219		8.92	10.95		9.09	11.16	0.17	0.21	1.9%	
	P209	923		4.13	6.11		4.21	6.22	0.08	0.12	1.9%	
Cypress			1617			1682						
	River	137		6.34	7.62		6.60	7.92	0.25	0.31	4.0%	
	P130	465		3.77	5.03		3.92	5.24	0.15	0.20	4.0%	
	MWWS	759		2.76	4.01		2.87	4.17	0.11	0.16	4.0%	
	P161	877		2.47	3.70		2.57	3.85	0.10	0.15	4.0%	
Pearse			1876			1916						
	River	477		3.81	4.84		3.89	4.94	0.08	0.10	2.1%	
	P143	303		4.58	5.62		4.68	5.74	0.10	0.12	2.1%	
	P122	584		3.46	4.49		3.53	4.59	0.07	0.10	2.1%	
	MWWS	767		3.00	4.02		3.06	4.11	0.06	0.09	2.1%	

Source: West Yost Associates, 2013, Table 3-1 Summary of Predicted Groundwater Level Declines Resulting From Historical Cal-Am Pumping and Eastwood Assignment Pumping

Note: Numerical values were rounded to the nearest thousandth.

Based on the results of West Yost's analysis, proposed pumping under License 13868A could increase drawdown by 1.9 percent (Cañada #2 Well) to 4.0 percent (Cypress Well) based on a 100 days of continuous pumping at a rate equal to the highest pumping rate of record for that well (ibid.). The results shown in **Table 4.2-12** assume that all pumping under proposed new water-right License 13868A would occur through a single well, which is unlikely to occur under the proposed project since pumping would be distributed

²³ According to Balance Hydrologics, Inc., this approach reasonably evaluated the proposed project's potential drawdown effects (Balance Hydrologics, Inc., 2013). The worst-case scenario would occur with sustained pumping from a single well at the proposed maximum instantaneous rate of 0.37 cfs (166 gpm) for 117 days for a total of 85.6 af/yr, and then no pumping during the rest of the year. However, this level of pumping would not be reasonable under a municipal demand pattern, because it would result in no available supplies for over eight (8) months of each year.

among several or all three of the Cal-Am wells. In addition, the model results presented in **Table 4.2-12** also likely overstate the extent of potential impacts because the model represents the results of 100 days of continuous pumping at the highest rate of record for that particular well. Actual drawdown would likely be less. Drawdown associated with pumping under proposed water-right License 13868A would be on the order of inches and would never exceed 0.31 foot (West Yost Associates, 2013).

Surface Water Resources. West Yost also evaluated the proposed project's potential impacts to surface water flows. West Yost collected existing USGS gage data between 1962 and 2012 to determine baseline flow conditions. The West Yost analysis did not use the upstream gage (Robles Del Rio) to evaluate the project's potential effects on surface water flow because it overlies aquifer zone AS-2 and would not be affected by the project (the project is located in AS-3 and AS-4)(West Yost Associates, 2013).

The analysis assumed that pumping under the proposed project would cause an instantaneous, one-to-one flow reduction in the surface water flows in the reach of the river between the point of the river that is adjacent to the well point and the point on the river that is adjacent to the existing Odello #2 well (i.e., the project study area/project affected reach) (West Yost Associates, 2013). This assumed one-to-one flow reduction conservatively estimates potential impacts and may over estimate actual impacts because actual impacts due to this change would be delayed and less than one-to-one due to the attenuating effects of withdrawing water from the aquifer as opposed to directly from the river. As a result, this approach likely overstates the project's potential impacts to surface flows (West Yost Associates, 2013). To evaluate potential surface water impacts, estimated monthly maximum pumping rates were developed based on the maximum historical percentage of annual pumping for each month from 1998 to 2007 (**Table 4.2-13**).

Table 4.2-13
Percent Monthly Pumping Values Based on Water Year Annual Total

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1998	6.97	6.34	7.00	6.94	8.28	9.14	10.18	10.91	9.72	10.03	7.64	6.88	100.00
1999	6.94	<i>5.51</i>	<i>6.10</i>	7.48	9.73	9.73	11.23	10.99	9.68	8.98	7.05	6.58	100.00
2000	6.70	5.65	6.74	8.18	9.36	9.82	<i>9.89</i>	10.19	<i>9.27</i>	9.14	7.47	7.60	100.00
2001	6.42	5.55	6.42	7.11	9.86	10.71	11.51	11.52	9.93	<i>7.79</i>	<i>6.52</i>	6.67	100.00
2002	<i>5.88</i>	5.72	6.62	8.02	9.59	10.22	11.04	10.89	10.10	9.07	7.02	<i>5.82</i>	100.00
2003	6.03	5.93	6.74	6.78	8.38	10.23	11.27	11.26	10.33	9.35	7.30	6.41	100.00
2004	5.90	5.68	7.15	8.83	10.70	10.16	9.90	<i>9.81</i>	9.60	9.49	6.71	6.08	100.00
2005	6.36	5.88	6.72	7.16	9.41	10.39	11.07	10.78	10.15	8.39	6.86	6.85	100.00
2006	6.04	6.34	6.23	<i>5.88</i>	9.35	10.27	11.55	11.02	9.57	9.52	7.87	6.36	100.00
2007	6.64	5.90	7.34	7.91	9.33	9.59	10.48	10.29	9.65	9.00	7.25	6.62	100.00
Min. Monthly	5.88	5.51	6.10	5.88	8.28	9.14	9.89	9.81	9.27	7.79	6.52	5.82	
Max Monthly	6.97	6.34	7.34	8.83	10.70	10.71	11.55	11.52	10.33	10.03	7.87	7.60	

Source: Macaulay Water Resources, October, 2013
Bold = Maximum
Italics = Minimum

The historical minimum and maximum percentage of annual pumping for each month was used to develop estimates for minimum and maximum future pumping associated with the proposed project on a monthly basis (**Table 4.2-14**). This information is consistent with the information depicted in **Table 4.2-12** above and demonstrates that monthly pumping may fluctuate from year to year. The West Yost analysis utilized maximum pumping rates, which may over estimate actual impacts.

Table 4.2-14
Estimated Minimum and Maximum Monthly Future Pumping

Pumping Amount	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Min Pumping af	5.03	4.71	5.22	5.03	7.08	7.82	8.47	8.40	7.93	6.67	5.58	4.98
Max Pumping af	5.96	5.42	6.28	7.56	9.16	9.17	9.88	9.86	8.84	8.58	6.73	6.51
Min Pumping cfs	0.08	0.08	0.09	0.08	0.12	0.13	0.14	0.14	0.13	0.11	0.09	0.08
Max Pumping cfs	0.10	0.09	0.10	0.13	0.15	0.15	0.16	0.16	0.15	0.14	0.11	0.11

Source: Macaulay Water Resources, October, 2013

The information contained in **Table 4.2-13** and **Table 4.2-14** was used to develop anticipated minimum and maximum average monthly pumping rates for the proposed project (see **Table 4.2-15** below). **Table 4.2-15** presents the distribution of estimated pumping under proposed new License 13868A based on a municipal demand pattern and historical Cal-Am pumping.

Table 4.2-15
Estimated Minimum and Maximum Monthly Future Pumping
Based on Historical Cal-Am Pumping Percentages for Each Month (1998-2007)

Month	Pumping Amount (af)		Pumping Amount (cfs)	
	Minimum	Maximum	Minimum	Maximum
January	5.03	5.96	0.08	0.10
February	4.71	5.42	0.08	0.09
March	5.22	6.28	0.09	0.10
April	5.03	7.56	0.08	0.13
May	7.08	9.16	0.12	0.15
June	7.82	9.17	0.13	0.15
July	8.47	9.88	0.14	0.16
August	8.40	9.86	0.14	0.16
September	7.93	8.84	0.13	0.15
October	6.67	8.58	0.11	0.14
November	5.58	6.73	0.09	0.11
December	4.98	6.51	0.08	0.11

Source: Macaulay Water Resources, 2013; West Yost Associates, 2013

The resulting monthly maximum expected sustained additional pumping rates shown in **Table 4.2-15** were then subtracted from the USGS daily mean streamflow records for the Carmel River near Carmel gage. West Yost subsequently developed cumulative frequency of occurrence plots for unadjusted and adjusted daily mean flows for a 50-year record (August 1962 to June 2013). The differences between the two plots

represent the direct effects of project pumping to all streamflow rates (or stages of the river). The impacts to streamflow were identified at threshold flows less than 5 cfs and tabulated by month and annually (**Table 4.2-16**).²⁴

Table 4.2-16
Summary of Carmel River Flow Ranges by Month, Carmel Gage, 1962–2012

Month	Maximum Measured Flow, cfs	Percent of Time the Indicated Flows (Q) Occurred					
		Unadjusted Flow			Adjusted flow		
		Q > 5 cfs	0 < Q ≤ 5 cfs	Q = 0 cfs	Q > 5 cfs	0 < Q ≤ 5 cfs	Q = 0 cfs
January	6,750	72	7	21	72	7	21
February	9,050	85	2	12	85	2	12
March	8,000	88	4	9	88	4	9
April	3,770	87	5	8	86	5	9
May	1,250	76	11	13	76	9	15
June	261	49	22	29	49	21	30
July	121	23	27	50	23	24	53
August	43	8	30	62	8	25	67
September	23	5	26	69	5	20	76
October	759	9	21	70	9	18	73
November	863	19	20	61	18	20	61
December	3,100	46	13	41	46	13	41
Year Round	9,050	47	16	37	47	14	39

Source: USGS, 2013; West Yost Associates, 2013

As shown in **Table 4.2-16**, the differences between the unadjusted and adjusted flows over the 50-year period of record during the higher flow periods (i.e., November – April) would be undetectable. The monthly amounts of project pumping during this period would be relatively small in comparison to monthly flows (West Yost Associates, 2013). During lower flow periods (May – October), the pumping associated with the proposed project could slightly increase the percentage of time that flows would be less than 5 cfs (or equal to zero cfs). This could cause portions of the river downstream of project pumping to dry slightly faster than they would without the project. **Table 4.2-17** summarizes the changes associated with the proposed project when flows are less than 5 cfs or equal to zero cfs and identifies the change in percentage of time due to the proposed project.

²⁴ This is a reasonable and conservative approach to assess project impacts and appropriate for a year-round application of the water right (Balance Hydrologics, Inc., 2013).

Table 4.2-17
Calculated Potential Effects to Carmel River Flows

Month	Percent of time 0<Q<5 cfs		Change due to Project	Percent of time Q = 0 cfs		Change due to Project
	Unadjusted	Adjusted	% of time	Unadjusted	Adjusted	% of time
January	7%	7%	0%	21%	21%	0%
February	2%	2%	0%	12%	12%	0%
March	4%	4%	0%	9%	9%	0%
April	5%	5%	0%	8%	9%	1%
May	11%	9%	-2%	13%	15%	2%
June	22%	21%	-1%	29%	30%	1%
July	27%	24%	-3%	50%	53%	3%
August	30%	24%	-5%	62%	68%	5%
September	26%	20%	-6%	69%	76%	7%
October	21%	18%	-3%	70%	74%	3%
November	20%	20%	0%	61%	61%	0%
December	13%	13%	0%	41%	41%	0%
Annual	16%	14%	-2%	37%	39%	2%

Source: Balance Hydrologics, Inc., 2014; West Yost Associates, 2013; HDR, 2014

Overall, the changes in percentage exceedances for average monthly flows that would occur with the project would be relatively insignificant (West Yost Associates, 2013). Surface flows are typically zero cfs approximately 37 percent of the time and flows are typically less than 5 cfs approximately 16 percent of the time. Pumping associated with the proposed project would increase the annual percentage exceedances by 2 percent during the periods when the river is typically dry. According to West Yost, the rate of maximum potential pumping (0.16 cfs) under the proposed new license (assuming a municipal demand pattern) would be relatively insignificant in comparison to existing flow rates, particularly during high flow periods.²⁵ While increased pumping at the proposed POD as part of the project would cause changes in the percentages of time that surface water flows are less than 5 cfs or equal to 0 cfs, the proposed project would have a negligible impact on surface water resources during this period because surface flows are typically zero cfs and the river would already be dry under existing conditions (West Yost Associates, 2013).²⁶

²⁵ The highest monthly project pumping would be approximately 0.16 cfs, while the average monthly flow in the river at the Carmel gage for the period of 1962 through 2012 is approximately 103 cfs. Thus, the highest monthly project pumping rate is less than 0.2 percent of the average monthly flow in the river.

²⁶ Although the proposed project would cause changes to the occurrence of flows less than 5 cfs and to the occurrence of periods of no flow (0 cfs at the USGS gauge) during the months of April through October, it is important to note that projected withdrawals rates in the summer months (May through September) are less than the calculated current extractions at Odello East (Balance Hydrologics, Inc., 2014).

Balance Hydrologics – Geomorphic and Hydrologic Context Memorandum²⁷

Balance Hydrologics, Inc. (“Balance”) evaluated the potential impacts of the proposed project on hydrologic and geomorphic aspects of the Carmel River and associated habitat.²⁸ This analysis considered the potential direct impacts of the proposed project on instream flows, riparian vegetation along the river and floodplain, and the cumulative effects of past, present, and reasonably foreseeable projects that are likely to affect flows and/or aquifer levels within the project study area/project affected reach. The following is an overview of Balance’s findings that are relevant to the analysis of potential project effects to hydrology and water quality. Other technical findings related to habitat quality, fisheries and riparian vegetation are only discussed to the extent that they provide information relevant to the analysis of the proposed project’s hydrologic effects. These findings are discussed in more detail in **Section 4.1, Biological Resources**.

Aerial Photograph Analysis. Balance conducted an aerial photograph analysis in order to identify the representativeness of the flow conditions at the USGS gage relative to other reaches of the river. The purpose of this analysis was to: 1) better understand how flow continuity fluctuates, 2) determine whether the flow ranges used by West Yost Associates (0 cfs, 0 to 5 cfs, and above 5 cfs) were appropriate to assess potential impacts due to increased pumping at any of the three proposed POD, and 3) determine whether any additional information could be obtained from a review of flow conditions along the entire length of the relevant reach (i.e., project study area/project affected reach). In other words, the analysis was intended to determine whether other reaches of the lower Carmel River had sustained wetted conditions that could be affected by the project when flows were recorded at zero at the USGS gage and whether flow continuity is already broken elsewhere in the lower Carmel River when low baseflows are measured at the USGS gage. Based on the results of the aerial photograph analysis, Balance concluded the following:

- When flow is present at the USGS gage, continuous flow conditions are likely to be present in the Carmel River throughout the entire reach downstream of Schulte Road. Given that the aerial photograph analysis suggested continuous flow at values of 6 to 8 cfs at the USGS gage, the 5 cfs flow rate used in the West Yost analysis appears to be a reasonable approximation of the flow value at the gage when continuous flow throughout this reach may begin to cease in the lower Carmel River as flows recede.
- With the exception of short segments near Schulte Road and Valley Greens Drive, the lower Carmel River appears to dry rapidly when flow reaches zero at the USGS gage. Most notably, 10 days after flow ceased at the USGS gage in 2007, no residual pools could be seen in the photos except in the short reaches at Schulte Road and Valley Greens Drive.
- The maximum downstream extent of the downstream end of the wetted reach at Schulte Road mentioned above appears to end approximately 0.1 miles or more (depending on the year) upstream of the point on the river closest to the Pearse well. The Pearse well is the farthest of the three wells from the River, with estimated additional drawdown of only 0.10 feet.

²⁷ Based on comments received during the NOP public comment period, Balance Hydrologics, Inc. prepared an addendum to the Geomorphic and Hydrologic Context memorandum. That addendum provided additional supporting technical analysis responding to comments related to potential impacts to critical riffles monitored by the MPWMD as part of the ASR program mitigation requirements. The addendum is described in further detail in **Section 4.1, Biological Resources**; please refer to that section for more information.

²⁸ This analysis included a detailed review of aerial photographs, field reconnaissance, review of technical material previously prepared by Davids Engineering and West Yost Associates, and an evaluation of the project’s potential effects on streamflow and other resource considerations.

- The upstream end of the wetted reach near Valley Greens Drive is approximately 0.6 miles downstream of the Cypress well, and the downstream end of the reach is approximately 1.4 miles upstream of the Cañada #2 well. At the closest point on the river to those wells, it appears to undergo similar rates of drying as the USGS gage reach, so the West Yost Associates flow duration analysis is relevant to the reaches of the Carmel River near these two wells. (In fact the Cañada #2 well is less than 0.1 miles downstream of the USGS gage.)
- Even though the reaches near Schulte Road and Valley Greens Drive remain wetted longer than the USGS gage reach, the channel still dries completely at these locations in many years (8/14/2008 and 10/1/2002, for example). In 2007, for example, the reach downstream of Schulte Road remained wetted for at least a month after flow had ceased at the USGS gage, but dried completely within a month.

Streamflow Analysis. A streamflow analysis was conducted to evaluate the potential effects of the project on seasonal flows in the Carmel River. Balance’s analysis was intended to assess the potential impacts of temporal changes in pumping within the project affected reach.²⁹ That analysis relied on a comparison between existing monthly distribution of pumping from the Odello #2 well under the existing license and changes proposed as part of the project. As shown in **Table 4.2-18**, the changes in distribution of monthly pumping associated with the proposed project would result in no change or increase in flow within the project study area/project affected reach during six months of the year (May through October). Reach-wide net reductions would be minor (at most 0.05 cfs) and would occur in the winter months when river flows are normally their highest.³⁰ Based on the results of that analysis, Balance concluded that reach-wide streamflows are expected to be the same or higher during May through October and slightly less from November through April, under the proposed project.

Table 4.2-18
Comparison of Monthly Pumping
Agricultural Pumping vs. Municipal Demand

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
Existing conditions ¹	0.05	0.05	0.07	0.11	0.15	0.18	0.18	0.18	0.16	0.14	0.09	0.06
Post-project conditions ²	0.10	0.10	0.10	0.13	0.15	0.15	0.16	0.16	0.15	0.14	0.11	0.11
Estimated change	0.05	0.05	0.04	0.02	0.00	-0.03	-0.02	-0.02	-0.01	0.00	0.02	0.04

Notes:

¹ Agricultural consumption includes only that portion of the water right being transferred for municipal supply (the portion consumed by crops during irrigation); the remainder of the water right will be held on-site to be used to support riparian functions; (Davids Engineering, 2013).

² Post-project pumping at Cal-Am wells was estimated based on maximum pumping amounts from recent Cal-Am water demand patterns; see Macaulay (2013) for full discussion.

Balance used this information to evaluate the potential impacts of changes in streamflow as it relates to critical life stages for steelhead. This analysis is also relevant to the evaluation of the project’s potential hydrologic effects (i.e., identify the effects on streamflow due to changes in POD). To evaluate the

²⁹ This analysis differs from the analysis conducted by West Yost Associates which evaluated the potential impacts to streamflow due to the spatial shifts in the POD.

³⁰ Balance assumed that any net change in pumping (positive or negative) would result in corresponding change in streamflow in the river when surface flows are present.

hydrologic effects (i.e., identify the effects on streamflow due to changes in POD). To evaluate the magnitude and significance of the changes in river flow that could occur due to the proposed project, Balance applied the estimated seasonal changes in pumping rates (Table 4.2-18) to the 52-year USGS record of daily streamflow at Via Mallorca, which is located in the middle of the lowermost reach of the Carmel River. Table 4.2-19 shows pre-project, post-project and changes in numbers of days of constraints due to the proposed project. This streamflow analysis indicates that the project would have a relatively insignificant effect on streamflows, particularly during the summer period when surface flows are at their lowest. For more information concerning potential effects to fisheries, please refer to Section 4.1, Biological Resources.

**Table 4.2-19
Potential Streamflow Impacts**

Year type ⁴	Number of years in record	Days of constraint to fall/winter downstream migration ¹			Days of constraint to spring smolt outmigration ²			Days of constraint to summer juvenile rearing ³		
		Pre-project average days per year	Post-project average days per year	Change in number of days per year	Pre-project average days per year	Post-project average days per year	Change in number of days per year	Pre-project average days per year	Post-project average days per year	Change in number of days per year
Extremely Wet	7	75.7	76	0.3	0	0	0	93.7	93.7	0
Wet	6	80.2	80.7	0.5	0	0	0	142.2	142.2	0
Above Normal	8	67.9	68.1	0.2	1.3	1.3	0	97.3	97.8	0.5
Normal	11	70.5	72.9	2.4	5.1	5.1	0	144.8	144.9	0.1
Below Normal	5	80.4	80.6	0.2	12.6	12.6	0	176.8	177.4	0.6
Dry	6	80.5	81.3	0.8	25.8	25.8	0	163	163.2	0.2
Critically Dry	9	152.9	153.3	0.4	55.3	55.6	0.3	209	209.3	0.3
All years	52	88.3	89.1	0.8	15.0	15.1	0.1	146.6	146.8	0.2

Notes:

¹ Downstream migration is constrained when Carmel River flows fall below 10 cfs during the months of October through March, per Aquatic resources analysis in the ASR EIR (Jones and Stokes, 2006). This analysis includes days of zero flow early in the wet season prior to high flows that might trigger outmigration, so the actual number of constraining days would be less. The change in the number of days, however, is likely reflective of actual change in constraining days.

² Smolt outmigration is constrained when Carmel River flows fall below 10 cfs during the months of April and May, per Aquatic resources analysis in the ASR EIR (Jones and Stokes, 2006).

³ Juvenile rearing habitat is constrained when flow at the Near Carmel gage falls below one cfs during the months of June-December, per Aquatic resources analysis in the ASR EIR (Jones and Stokes, 2006), but the lower Carmel River is completely dry during much of this period.

⁴ Water year type as classified by MPWMD. A water year begins on October 1 and ends on September 30 of the named year. For example, water year 2013 (WY 2013) began on Oct. 1, 2012, and concluded on September 30, 2013.

In addition to evaluating potential impacts to streamflow due to the proposed project, Balance Hydrologics also conducted a riffle passage analysis to determine potential impacts on fish passage flows and an analysis of potential impacts to riparian vegetation due to the proposed project.³¹ In response to comments received

³¹ Riffles are habitat units in streams and rivers with relatively shallow depth and swiftly flowing turbulent water. They serve multiple functions in the ecological processes of cold water streams and rivers, and are an integral link in the life

during the NOP comment period, Balance Hydrologics prepared an addendum to the geomorphic and hydrologic context memorandum to include additional information related to critical riffles and MPWMD critical riffles that are monitored as part of the MPWMD ASR Project Mitigation Monitoring and Reporting Program (MMRP). These components of Balance Hydrologics analysis are described in **Section 4.1, Biological Resources**. Please also refer to **Appendix C-1** and **C-2** for more information.

4.2.5.2 Impact Analysis

The following CEQA impact analysis is based on the findings of the project-specific technical reports described above and technical material prepared by the MPWMD and other resource agencies.

IMPACT HYD – 1: WOULD THE PROJECT IMPAIR THE ACHIEVEMENT OF BENEFICIAL USES (BOTH SURFACE WATER AND GROUNDWATER) BY EITHER CAUSING OR CONTRIBUTING TO A VIOLATION OF WATER QUALITY STANDARDS OR WASTE DISCHARGE REQUIREMENTS?

The proposed project would split existing License 13868 into two new licenses and result in changes to the authorized POD, POU, and purposes of use of the new licenses. License 13868 would be revoked and Licenses 13868A and 13868B would be issued. License 13868A would maintain the existing PODs, POU, and purpose of use and include new authorized PODs, POU, and purposes of use. With the changes, the right holder would receive additional authorization to divert water from three existing Cal-Am wells (Cañada #2, Cypress and Pearse) in order to provide potable water for municipal purposes to existing lots of records within the parts of Cal-Am's service area that are within the Carmel River watershed or the City of Carmel-by-the-Sea. License 13868B would be dedicated to instream uses within the Carmel River. The project would not increase the maximum authorized annual diversion rate or the maximum authorized instantaneous diversion rate beyond the existing authorized rates in License 13868.

The potential changes in authorized PODs under proposed License 13868A would allow for increased pumping at three (3) existing Cal-Am wells located upstream from the existing POD. Typical water quality impacts associated with increased groundwater pumping could include increases in salinity due to potential seawater intrusion, which has been identified by MPWMD and others as a potential water quality concern along the coastal margins of the Carmel River watershed due to increased groundwater pumping. MPWMD maintains a series of monitoring wells to track changes in water quality, including potential changes due to seawater intrusion (MPWMD, 2011). According to MPWMD, the coastal area is subject to the mixing of fresh water and saline water as high tides and surf overtop the sand berm between the lagoon and the ocean. This contributes to episodic mixing within the shallower and intermediate zones of the aquifer, but is not indicative of larger-scale seawater intrusion into the aquifer (MPWMD, 2011).

The proposed project is not anticipated to significantly affect existing water quality such that the achievement of beneficial uses would be impaired. Large-scale seawater intrusion into the aquifer has not been identified as a significant water quality issue affecting groundwater resources in the basin and any potential issues associated with seawater intrusion are limited to the coastal margins of the basin. In addition, the proposed project would not substantially increase groundwater pumping beyond existing historic levels associated with the existing license (i.e., no net increase in groundwater withdrawals). The project would reduce overall

histories of salmon and trout. Changes in streamflow and associated water depth may limit the hydrologic connectivity of river habitats and impede critical life history tactics of salmon and trout (CDFW, 2013).

groundwater pumping as compared to existing conditions (a portion of the existing water-right would be dedicated to instream uses). Therefore, the proposed project would not violate any water quality standard or waste discharge requirements associated with increased pumping at the three designated Cal-Am wells under proposed new water-right License 13868A. The proposed project could indirectly affect water quality due to potential growth-inducing impacts associated with the proposed project; the proposed project's potential secondary effects are addressed within the context of growth inducement in **Chapter 5, CEQA Considerations**.

Significance: No Impact.

Mitigation: None.

IMPACT HYD – 2: WOULD THE PROJECT SUBSTANTIALLY DEplete GROUNDWATER SUPPLIES OR INTERFERE SUBSTANTIALLY WITH GROUNDWATER RECHARGE SUCH THAT THERE WOULD BE A NET DEFICIT IN AQUIFER VOLUME OR A LOWERING OF THE LOCAL GROUNDWATER TABLE LEVEL THAT WOULD CAUSE, THE PRODUCTION RATE OF PRE-EXISTING NEARBY WELLS TO DROP TO A LEVEL WHICH WOULD NOT SUPPORT EXISTING LAND USES OR PLANNED USES FOR WHICH PERMITS HAVE BEEN GRANTED OR WOULD CAUSE LOWERED LEVELS WOULD A SIGNIFICANT ADVERSE IMPACT ON THE HEALTH OF THE RIPARIAN CORRIDOR?

The proposed project would involve the pumping of up to 85.6 af/yr from the Carmel River aquifer under proposed new water-right License 13868A for municipal and irrigation purposes. License 13868A would have a maximum authorized instantaneous diversion rate of 0.37 cfs, although the actual maximum diversion rate, assuming a municipal demand pattern, is estimated to be 0.16 cfs (see **Table 4.2-15** above) (West Yost Associates, 2013; Macaulay, 2013). License 13868B would dedicate 46.2 af/yr and 0.08 cfs to instream uses. As described previously, the proposed maximum pumping of 85.6 af/yr under License 13868A is equal to the average ET of Applied Water (or consumptive use) on approximately 40 acres of irrigated farmland under existing License 13868 (Davids Engineering, 2013).^{32, 33} Based on the results of Davids Engineering analysis, the average amount of Applied Water over a period of 26 years would be equal to be 124 af/yr; the maximum amount of water use under the existing license is 131.8 af/yr.

The proposed project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge. The proposed project includes the approval of a change petition to allow water to be pumped under new License 13868A from three new PODs, which are the three furthest downstream groundwater production wells operated by Cal-Am in the lower Carmel Valley. The proposed project would also allow the municipal use of water under License 13868A, a portion of which could be used outside of the

³² Consumptive use under the existing license was estimated by Davids Engineering using a Root Zone Water Balance model that estimated the annual applied water on the former Odello Ranch using a combination of site-specific information on local soils and ranching practices on the property, available precipitation and evaporation information, and coefficients from recognized sources to model estimated annual irrigation demand, crop evapotranspiration and deep percolation for a 26-year period.

³³ While the proposed project could result in municipal use of a portion of water-right License 13838A outside of the watershed, the maximum amount of water that could be diverted under proposed License 13868A is equal to the current consumptive use. As a result, water use outside of the watershed under License 13868A would not adversely affect the Carmel River system water balance because this amount of water equals the amount of current consumptive use under the existing license.

watershed. The project would not increase groundwater withdrawals beyond levels authorized under License 13868. The proposed project would reduce the amount of pumping as compared to the existing levels permitted under the existing license by only allowing the pumping of an amount equal to the consumptive use associated with License 13868. Because the maximum authorized amount of municipal use under proposed License 13868A is equal to the amount of current consumptive use under the existing license, the proposed project would not adversely affect the existing water balance or otherwise cause a net reduction in groundwater recharge, even though a portion of municipal use could occur outside of the watershed.³⁴ The remaining unused portion of License 13868 would be dedicated to instream uses under proposed License 13868B. As a result, there would be no net increase of groundwater pumping from the aquifer. The proposed project would result in a net decrease of pumping as compared to the maximum amount permitted under the existing license.

While the proposed project would not substantially increase the amount of groundwater withdrawal from the Carmel River aquifer and the amount is less than the maximum amount allowed under the existing license, the proposed project could result in localized groundwater impacts due to the changes in POD and associated increased pumping at those locations. Localized impacts could cause an increased rate of drawdown at the proposed POD and adjacent wells. Increased drawdowns associated with the proposed project could affect the production rate of existing nearby wells. In addition, increased pumping at the proposed POD could also result in impacts to riparian habitat. This EIR evaluates potential impacts to riparian habitat in **Section 4.1, Biological Resources**; please refer to that section for more information.

West Yost Associates evaluated the potential effects of pumping at each of the three POD after 30-days and 100-days of continuous pumping, as described above. West Yost Associates relied on this approach in order to estimate the maximum extent of localized impacts at each of proposed POD. Based on the results of West Yost's analysis (shown in **Table 4.2-15**), proposed pumping under License 13868A could increase drawdown of adjacent wells by approximately 1.9 percent (Cañada #2 well) to 4.0 percent (Cypress well) based on a 100 days of continuous pumping at a rate equal to the highest pumping rate of record for that well (West Yost Associates, 2013). Drawdown of adjacent wells due to the proposed project would be on the order of inches and would never exceed 0.31 foot (**Table 4.2-20**).

Table 4.2-20
Estimated Project Drawdown

Well	Distance to Carmel River (feet)	Additional drawdown (ft.) after 30 days of sustained pumping	Additional drawdown (ft.) after 100 days of sustained pumping
Cañada #2	121	0.21	0.25
Cypress	137	0.25	0.31
Pearse	477	0.08	0.1

Source: Balance Hydrologics, Inc., 2014; West Yost Associates, 2013

The proposed project would have negligible effects on adjacent wells (West Yost Associates, 2013; personal communication Chris Petersen, October 11, 2013). Moreover, West Yost conservatively evaluated potential impacts to groundwater resources because: 1) they assumed all pumping would occur through a single well and 2) the analysis represents the results of 100 days of continuous pumping at the highest rate of record for

³⁴ While municipal use under License 13868A could occur outside of the Carmel River watershed, some portion of that water use could re-enter the watershed as return flows through the Carmel Area Wastewater District (CAWD).

that particular well. Actual pumping would likely be distributed among several or all three of the Cal-Am wells and continuous pumping at the highest rate of record is unlikely. As a result, actual drawdowns would likely be less than the estimated amounts identified in **Table 4.2-20** (West Yost Associates, 2013).

West Yost also evaluated the potential impacts of pumping under the proposed project on available aquifer storage. The proposed project would result in the pumping of up to 85.6 af/yr from the Carmel River alluvial aquifer, which represent a relatively small percentage (0.003%) of the total usable aquifer storage (ibid.). Moreover, the current average annual consumptive use associated with existing pumping under License 13868 is 85.6 af/yr (Davids Engineering, 2013). As a result, the proposed project would not result in any net reductions in total aquifer storage. Pumping under proposed new License 13868A would not exceed the average annual consumptive use (85.6 af/yr) associated with existing License 13868 and localized groundwater impacts due to increased pumping would be insignificant (ibid.).

The proposed project would not increase groundwater pumping beyond the levels associated with the existing license. The amount of water that would be pumped under License 13868A is equal to the average amount of consumptive use under License 13868, and the amount to be dedicated under License 13868B is equal to average annual return flows associated with the existing pumping regime. As a result, the proposed change petition would not adversely affect existing groundwater resources; pumping under the proposed License 13868A would be less than currently permitted under the existing license. In addition, the increased rate of drawdown associated with the proposed project would not adversely affect existing adjacent wells or otherwise cause a net deficit in aquifer storage. The proposed project would result in a less-than-significant impact to groundwater resources.

Significance: Less-than-Significant.

Mitigation: None.

IMPACT HYD – 3: WOULD THE PROJECT OTHERWISE SUBSTANTIALLY DEGRADE WATER QUALITY?

The proposed project would not otherwise substantially degrade water quality. The proposed project consists of a change petition for an existing water-right license and no physical improvements are proposed as part of the project. As a result, the project would not involve the construction of any physical improvements that could affect existing water quality. The proposed project could indirectly affect water quality due to potential growth-inducing impacts; the proposed project's potential secondary effects are addressed within the context of growth inducement in **Chapter 5, CEQA Considerations**.

Significance: No Impact.

Mitigation: None

IMPACT HYD – 4: WOULD THE PROJECT SUBSTANTIALLY DECREASE THE AMOUNT OF STREAMFLOW SUCH THAT THERE WOULD BE A POTENTIAL FOR IMPACTS TO OTHER PUBLIC TRUST RESOURCES SUCH AS RIVER FUNCTIONS, RIPARIAN VEGETATION, AND LAGOON FUNCTIONS?

The proposed project, specifically proposed License 13868A, would result in changes in authorized PODs, as well as changes to the POU and purpose of use. Changes in the proposed PODs could cause a reduction in

streamflow within the project study area/project affected reach. These changes could affect existing river and lagoon functions, as well as riparian vegetation. Potential impacts to riparian vegetation are addressed within the context of biological resources; please refer to **Section 4.1, Biological Resources** for more information. The following analysis evaluates the project's potential direct impacts to river and lagoon functions due to changes in streamflow as a result of shifting pumping further upstream.

For the purpose of this analysis, a project effect would be potentially significant if the project would substantially reduce streamflows such that geomorphic river functions (e.g., sediment transport, pool-riffle maintenance, channel erosion and deposition, etc.) or lagoon functions (e.g., stream inflows) would be affected. As described above, the project could cause localized effects within the project study area/project affected reach because streamflows between the furthest upstream POD and the existing POD would be reduced below existing pre-project levels.

The geomorphic character and hydrologic function of the Carmel River is dominated by large, episodic events (i.e., floods) (Kondolf and Curry, 1986; Balance Hydrologics, Inc., 2014a), especially those associated with watershed-scale wildfires (Hecht, 1981; Balance Hydrologics, Inc., 2014a). These large events supply and transport a large amount of sediment within the stream channel, and can cause significant reconfiguration of channel bedforms and features. These types of events typically occur during periods of higher flows when peak discharges occur (Kondolf and Curry, 1986). The project could reduce surface flows by a maximum 0.16 cfs during the summer period when surface flows are their lowest and the type of episodic events necessary to maintain the geomorphic character and hydrologic function of the Carmel River are unlikely to occur. The proposed project could reduce surface flows by 0.11 cfs during the winter peak discharge period. This reduction in surface water flows would represent approximately 0.06 percent of average monthly discharge during peak flow periods (1963 through 2012) based on available information from the Robles del Rio USGS gage. The small amount of surface flow reductions that could occur in connection with the proposed project would be relatively insignificant when compared to the type of flows necessary for sediment transport, pool-riffle maintenance, channel erosion and deposition, and other geomorphic functions of the river (Balance Hydrologics, Inc., 2014a). As a result, the proposed project would not significantly affect river functions.

The proposed project could potentially affect lagoon functions if the proposed project would result in any net reductions of instream flows to the lagoon, as compared to flows under existing, pre-project, conditions. As described elsewhere in this EIR, water is currently pumped under the existing water-right license, License 13868, to irrigate adjacent agricultural land. The existing license allows a maximum diversion of up to 131.8 af/yr from the existing Odello #2 well, which is located approximately 0.5 miles upstream of the south arm of the Carmel Lagoon. A portion of water used for irrigation purposes ("applied water") is consumed by vegetation and evapotranspiration ("consumptive use"); water use under proposed License 13868A is equal to the amount of consumptive use under existing License 13868. The remaining portion of applied water that is not consumed returns to the aquifer via groundwater infiltration or supporting flows in the Carmel River and Lagoon (Davids Engineering, 2013; Balance Hydrologics, Inc., 2014a).³⁵ License 13868B includes the dedication of 46.2 af/yr to instream uses. This amount is equal to the average amount of return flow under the existing license (Davids Engineering, 2013). Water subject to License 13868B would not be diverted and instead would be dedicated to instream uses. This dedication would ensure that there is no net loss of water

³⁵ Davids Engineering evaluated the consumptive use of applied water used in connection with the irrigation of the Odello property and estimated return flows were subsequently estimated based on that information.

from the aquifer. As a result, the proposed project would not reduce the amount instream flows to the lagoon as compared to existing conditions.

The proposed project is limited to changes in PODs, POU, and purpose of use; the project does not involve a net increase in volume of water use beyond the consumptive use associated with the existing water-right license. The proposed changes in PODs under proposed License 13868A could affect the volume of streamflows between the existing POD and farthest upstream proposed additional PODs. The potential changes in streamflows associated with the proposed project would be relatively minor in comparison with the type of flows necessary to maintain the geomorphic character and hydrologic function of the Carmel River. In addition, the proposed project would not increase the amount of diversions beyond the levels associated with the existing license, and proposed License 13868B would ensure that inflows to the Carmel Lagoon would not be affected. The net volume of water that is being pumped under existing conditions (i.e., existing license) is already accounted for in the water balance for the lagoon under existing conditions and the project would not increase the volume of water beyond existing levels. The project would have a less-than-significant effect on river and lagoon functions. No mitigation is necessary.

Significance: Less-than-Significant.

Mitigation: None

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Chapter 5 CEQA CONSIDERATIONS

CEQA Guidelines Sec. 15126 requires that all aspects of a project, including planning, acquisition, development, and operation, must be considered when evaluating the project's potential effects on the environment. As part of this analysis, an EIR must evaluate the:

- a. Significant environmental effects of the proposed project.
- b. Significant environmental effects which cannot be avoided if the proposed project is implemented.
- c. Significant irreversible environmental changes which would be involved in the proposed project should it be implemented
- d. Growth-inducing impacts of the proposed project
- e. Mitigation measures proposed to minimize the significant effects, and
- f. Alternatives to the proposed project.

Consistent with the requirements of CEQA Guidelines Sec. 15126, this chapter includes an evaluation of the proposed project's potential growth-inducing effects (CEQA Guidelines Sec. 15126.2(d)), significant and unavoidable effects (CEQA Guidelines Sec. 15126.2(a) and 15126.2(b)), and significant irreversible environmental changes (15126.2(c)). An evaluation of alternatives to the proposed project (CEQA Guidelines Sec. 15126.6) is included in **Chapter 6, Alternatives**. The proposed project would not result in any potentially significant effects warranting mitigation under CEQA; all effects would be less-than-significant. As a result, an evaluation of mitigation measures to minimize potential significant effects is not necessary. This chapter also includes an evaluation of potential cumulative effects (CEQA Guidelines Sec. 15130) and effects found not to be significant (CEQA Guidelines Sec. 15128).

5.1 GROWTH-INDUCING EFFECTS

5.1.1 INTRODUCTION

CEQA requires an EIR to discuss the ways in which the proposed project could foster economic or population growth or the construction of additional housing, either directly or indirectly, in the surrounding environment (CEQA Guidelines Sec. 15126.2(d)). Projects that could potentially induce growth include projects that would remove obstacles to population growth, such as the lack of available infrastructure or water supply. Recognizing the inherent difficulties involved in forecasting the extent and type of development that might be fostered by a particular project, CEQA calls for a general assessment of possible growth-inducing impacts rather than a detailed analysis of a project's specific impacts on growth.

The CEQA Guidelines state that "it must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment" (*ibid*). Typically, a project's growth inducing effects are significant if the project:

- Provides infrastructure or capacity to accommodate growth beyond the levels currently permitted in applicable local and regional plans and policies.

- Encourages growth or a concentration of population in excess of what is planned for in the applicable general plan or other land use plan, or in projections made by regional planning agencies, in this instance the Association of Monterey Bay Area Governments (AMBAG).
- Adversely affects the ability of agencies to provide needed public services or infrastructure.
- In some other way significantly affects the environment, such as through a substantial increase in traffic congestion or deterioration of air quality.

As described below, the environmental effects of potential induced growth are secondary or indirect effects of the proposed project. Typically, potential growth-inducing projects can result in a variety of secondary effects, such as increased demand for public services and utilities, increased traffic and noise, localized air quality impacts, conversion of agricultural land to urban uses, or similar effects. The proposed project's potential secondary impacts due to growth are described below.

5.1.2 POTENTIAL GROWTH RELATED TO THE PROJECT

Proposed License 13868A includes a change in POU and purpose of use to allow municipal use within the parts of Cal-Am's existing service area that are within the Carmel River watershed or the City of Carmel-by-the-Sea. Municipal use under proposed License 13868A could induce growth and development within the Carmel River watershed and City of Carmel-by-the-Sea. Municipal water supplies under proposed License 13868A would be used to serve existing legal lots of record, minor expansions in uses, renovations of existing uses, and existing approved projects. Water supplies under proposed License 13868A would not be used to serve potential commercial, residential, or public uses that are inconsistent with local plans and ordinances or would cause a change in zoning. In addition, water supplies under proposed License 13868A would not be used to serve new commercial or residential subdivisions, such as the proposed Rancho Cañada Village project in Carmel Valley.

Water supplies under proposed License 13868A could be used to serve a combination of commercial, residential, and public facility-related uses within the watershed and the City of Carmel-by-the-Sea. The precise combinations and types of growth that could occur in connection with the project are unknown, and the identification of potential growth due to the project is inherently speculative. Nevertheless, this EIR includes an evaluation of potential growth associated with the proposed project based on currently available information and describes the underlying growth assumptions used for the basis of this analysis. These assumptions are based on information derived from the City of Carmel-by-the-Sea and the County of Monterey, as more thoroughly described below.

The proposed project would provide a supplemental source of water supply that would allow some growth to occur within the unincorporated area of Monterey County located within the Carmel River watershed and within the City of Carmel-by-the-Sea. Both the County of Monterey and the City of Carmel-by-the-Sea previously identified vacant and/or undeveloped lots within their jurisdictional boundaries and previously evaluated the potential effects of new growth. In 2010, the County of Monterey adopted a General Plan and certified the General Plan EIR, which analyzed new growth and identified vacant/undeveloped properties, including properties within the Carmel River watershed.^{1, 2} The City of Carmel-by-the-Sea previously

¹ The County's General Plan EIR estimated that as of January 2006, there were 4,629 undeveloped residential parcels in the inland portion of unincorporated Monterey County, including many large agricultural land holdings. Given the limitations on development in the North county, Greater Salinas, and Toro Area Plans, and the cap on new units in the

identified vacant and underutilized parcels in the 2007-2014 Housing Element (**Figure 5-1**). **Table 5-1** identifies the total number of vacant residential lots and undeveloped commercial properties that could be served under proposed License 13868A.

Table 5-1
Vacant/Undeveloped Parcels
Unincorporated Monterey County & City of Carmel-by-the-Sea

Jurisdiction	Place of Use (acres)	Vacant Residential Lots	Vacant Commercial (unit)	Public Facility	Industrial	Other
Monterey County	16,595	492	239 acres	N/A	0	N/A
Carmel-by-the-Sea	526	58*	78 residential dwelling units; commercial unknown	Public Restroom(s)	0	N/A

Notes:

*Single-family residential. Total number of potential units is estimated to be 74 dwelling units. This assumes minor subdivisions of seven (7) existing lots of record. As described elsewhere in this EIR, License 13868A would not be used for the purposes of any new commercial or residential subdivision. It is estimated that the project could serve up to 53 dwelling units on existing vacant residential lots in the City of Carmel-by-the-Sea. Twenty-seven of these lots are located outside of the watershed.

Source: County of Monterey, 2008 General Plan EIR; Table 3-8, pg. 3-16

City of Carmel-by-the-Sea, 2007-2014 Housing Element; Table 2-5, pg. 2-8

Based on the information presented in **Table 5-1**, the proposed project could potentially accommodate approximately 171 to 342.4 new residential units on existing lots of record depending on the type of residential use (i.e., large lot vs. small lot residential).³ This scenario assumes only residential use, but provides a reasonable indication of the maximum range of residential growth that could potentially occur under the proposed project. In 2013, the City of Carmel-by-the-Sea conducted an analysis of its water demand needs to accommodate existing growth under the General Plan based on the pending availability of water under proposed License 13868A. The City estimates that up to 18.5 af/yr (assuming a residential demand of 0.25 af/yr) would be necessary to serve its existing 58 residential lots of record (Marc Wiener, May 2014). According to the 2007-2014 Housing Element, development on existing vacant residential lots could accommodate up to 74 dwelling units assuming minor subdivisions of seven (7) of the 58 existing vacant residential lots. Proposed License 13868A would not include water use to support the development of new subdivisions. Therefore, the projected residential demand could be less than 18.5 af/yr. The estimated water demand excludes potential commercial or public facility demands as well as additional demands in connection with the development of mixed use or other opportunity sites in the City of Carmel-by-the-Sea. According to the City of Carmel-by-the-Sea's 2007-2014 Housing Element, there are opportunities for an additional 78 dwelling units within existing commercial areas and an additional 12 dwelling units in the R-4 zone.

Carmel Valley Master Plan, the County estimated that up to 10,015 new residential units could be built within the unincorporated area between 2006 and the end of the 2030 planning horizon. Up to 37,081 residential units could be built in the unincorporated areas by 2092 (full buildout) if sufficient water supply and other services are available.

² The County's General Plan EIR identifies the regulatory restrictions on Cal-Am's diversions from the Carmel River, and identifies the various projects being considered to meet the water demands of the Monterey Peninsula. The County projected additional water supplies would occur to meet the water demand for growth under the County General Plan. However, alternatives water supplies will not occur within the projected timelines.

³ Estimated water use for large lot residential is typically approximately 0.5 af/yr. Small lot residential uses typically have a demand of approximately 0.25 af/yr.

0 0.25 0.5 1 Kilometer




0 0.25 0.5 1 Mile



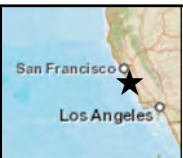
Carmel-by-the-Sea City Limits

Carmel River Watershed Boundary

Vacant/Underutilized Land Categories

-  Opportunity Site Parcels
-  Mixed Use Capacity Parcels
-  Vacant Land Parcels

Service Layer Credits: Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap,



Title: **City of Carmel-by-the-Sea
Vacant/Underutilized Land Inventory**

Date: 10/24/2014

Scale: 1 inch = 0.3 miles

Project: 2013-24



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Denise Duffy and Associates, Inc.
 Environmental Consultants Resource Planners
 947 Cass Street, Suite 5
 Monterey, CA 93940
 (831) 373-4341

Figure
5-1

The proposed project could also facilitate commercial growth and development. This includes the expansion of existing uses (e.g., restaurants), establishment of new commercial uses (e.g., retail, restaurant, etc.), and the conversion of existing uses (e.g., retail to restaurant). According to the County of Monterey, there are approximately 239 acres of undeveloped commercial property in the unincorporated Monterey County (Monterey County General Plan, 2010); the City of Carmel-by-the-Sea has also determined that water made available under proposed License 13868A could serve commercial purposes, including expanding existing restaurants (i.e., increased seating) and construction or expansion of non-restaurant based uses.⁴ Commercial growth (and associated environmental impacts) is largely the function of a variety of factors, including market conditions, the type of the use (i.e., retail vs. restaurant), square footage, applicable zoning and other land use considerations. All of these factors would influence the extent of potential commercial growth that could occur in connection with the project. For these reasons, identifying potential commercial growth projections associated with the proposed project would be speculative in nature.

Due to the wide dispersal of the vacant lots of record within the Carmel River watershed and City of Carmel-by-the-Sea, it is too speculative to attempt to analyze whether or not the growth that could be accommodated by proposed License 13868A would occur in any particular area within the watershed or the City. All diversions in connection with the project would occur through existing Cal-Am wells and all conveyances would be through existing Cal-Am facilities. Consequently, the project does not include the construction of any new water distribution system improvements or other physical elements that would facilitate growth in any particular area. In addition, it would be speculative at this time to try to determine the extent of water use that would be associated with vacant lots of record, residential remodels on developed lots, or expansions of existing commercial uses (e.g., increased seating for restaurants). The assumptions contained in this analysis represent a good-faith effort to identify potential growth based on currently available information. Ultimately, the extent and type of growth that could be facilitated under proposed License 13868A will largely depend on market conditions and other land use and planning factors. Moreover, the proposed project would not facilitate any additional growth or development beyond existing planned levels and it would not directly, in and of itself, cause new development to occur.

5.1.3 POTENTIAL GROWTH-INDUCING EFFECTS

The proposed project, if adopted, would provide a supplemental source of municipal water supply to accommodate the development of existing legal lots of record within the portions of Cal-Am's existing service area in the Carmel River watershed and the City of Carmel-by-the-Sea. Proposed municipal use under proposed License 13868A could indirectly accommodate growth, as described above. As a result, the proposed project could result in potential secondary (or indirect) effects to the environment due to the growth accommodating nature of the proposed project.⁵

⁴ Water under proposed License 13868A would not be used to support any new large-scale commercial project. For the purposes of proposed License 13868A and the analysis contained in this EIR, a "large-scale commercial project" would consist of any new project of 25,000 gross square feet or more.

⁵ Indirect or secondary effects are "caused by the project and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water and other natural systems, including ecosystems" (CEQA Guidelines Sec. 15358(a)(2)). An indirect physical change in the environment is "not immediately related to the project, but which is caused indirectly by the project" (ibid.). An EIR only need to evaluate indirect effects that are reasonably foreseeable (CEQA Guidelines Sec. 15358(a)(3)).

As described in **Chapter 3, Project Description**, development on the Monterey Peninsula, including the portions of Cal-Am's service area within the Carmel River watershed and City of Carmel-by-the-Sea, currently is constrained by a lack of available water supply because only limited MPWMD water allocations are available to serve existing approved projects, legal lots of records, minor expansions of use, residential and commercial remodels, bathroom additions, and similar types of development. The proposed project would provide a supplemental water supply of up to 85.6 af/yr under proposed License 13868A, which could be used for residential and commercial uses, as well as new public facilities (e.g., public restrooms). While the extent of water available for municipal use under proposed License 13868A would be limited, the proposed project would nevertheless remove an existing obstacle to growth. As a result, municipal use under proposed License 13868A could potentially induce growth and development, which could indirectly affect the environment.

The proposed project could indirectly foster additional growth and development within Cal-Am's existing service area in the Carmel River watershed and the City of Carmel-by-the-Sea. While the proposed project would remove a constraint to existing development, municipal use under proposed License 13868A would be limited to existing legal lots of record, residential remodels or expansions, or renovations or expansions of existing commercial uses, all of which would have to be consistent with local plans and ordinances, or existing approved projects. Water diverted under proposed License 13868A would not be used for new commercial or residential subdivisions or projects involving changes in existing zoning. Municipal use under proposed License 13868A would not facilitate new growth and development beyond previously planned levels and would not exceed the growth assumptions contained in the City's or County's General Plan or the growth projections developed by the Association of Monterey Bay Area Governments (AMBAG).

Municipal use would be restricted to limited types of development, as described in **Chapter 3, Project Description**, and summarized above. Due to the restricted nature of municipal use under proposed License 13868A and the limited amount of water that could be made available under proposed License 13868A, the proposed project would not induce population growth beyond existing planned levels. Rather, the proposed project would accommodate development on existing legal lots of record, including remodels or expansions of use, renovation of existing uses, and similar activities. For the purposes of this analysis, the proposed project would not significantly induce growth such that a significant effect would occur under CEQA. Overall, because the proposed project would accommodate growth that has already been contemplated in the City's and County's general plan and general plan EIR, the proposed project would not substantially induce population growth. The proposed project would result in potential secondary (or indirect) effects due to the project's growth-accommodating nature, in the areas analyzed below.

Based upon the above discussion, the proposed project would not result in significant growth-inducing effects.

5.1.4 POTENTIAL ENVIRONMENTAL EFFECTS ASSOCIATED WITH GROWTH

The proposed project would accommodate potential growth and development within Cal-Am's service area that includes the Carmel River watershed and the City of Carmel-by-the-Sea. While the proposed project would remove an obstacle to development (lack of available water supply), thereby accommodating growth and development, the project would not, in and of itself, directly cause new unplanned growth or development. As a result, the environmental effects of growth would be secondary or indirect effects of the proposed project. Indirect effects associated with growth could result in a variety of environmental effects,

such as increased demands for public services, increased traffic and noise, and potential impacts to air quality, among other potential impacts. While the extent of potential indirect effects are contingent upon the type and location of development that would ultimately be served under proposed License 13868A, the following section includes a general evaluation of the potential effects that could occur based on the assumptions outlined in the preceding sections.⁶

The following represents a good faith effort to disclose the potential secondary effects of the proposed project, based on currently available information. While this analysis is inherently speculative because actual development or projects that would use water made available by the license are unknown, it is based on reasonable assumptions concerning the nature and type of development that could be served under proposed License 13868A. In addition, it is important to recognize that the specific individual effects of future development served under proposed License 13868A would be addressed at the time each specific use is proposed. The potential effects of individual uses (or projects) served under proposed License 13868A would be addressed as part of the standard development review process. This process would include project-level analysis of site-specific development proposals, which would include an evaluation of consistency with local plans and policies, an evaluation of potential environmental impacts under CEQA, and identification of project-specific conditions of approval, if necessary. As a result, more detailed analysis would be conducted at the time a specific intended use is identified as part of the standard development review process.

The proposed project may also accommodate the development of existing, previously approved projects, including projects that are waiting for water allocations from MPWMD. Impacts associated with existing approved projects were previously subject to the standard development review process, including a project-level CEQA evaluation. As a result, the environmental effects associated with those projects have already been evaluated and the proposed project would not result in any new impacts beyond those previously identified in the project-level environmental analysis. The proposed project is not anticipated to result in any potential secondary effects associated with the facilitation of existing, previously approved development beyond those effects identified at the time of project-level review. For this reason, the following analysis does not evaluate potential secondary effects associated with the facilitation of existing, approved, development.

The following consists of an evaluation of the type of effects that could occur in connection with the growth accommodating elements of the project.

AESTHETICS

The proposed project could result in potential indirect aesthetic-related effects by accommodating growth and development within the proposed POU. The extent of potential indirect impacts would be contingent upon site-specific and project-specific factors, but could include potential impacts to scenic vistas, scenic resources within view of a designated state scenic highway (i.e., State Route 1), and existing visual quality/character of the area due to the construction of new structures and uses. In addition, indirect impacts

⁶ While the following analysis presents an evaluation of potential indirect effects associated with the proposed project based on the assumptions outlined above, the range and type of projects that ultimately would be served by the proposed project is unknown. This analysis represents a reasoned, good-faith effort to disclose the type of potential secondary effects that could occur in connection with municipal use under proposed License 13868A. Actual impacts may vary depending on the ultimate mixture of subscriber uses that would be served with water diverted under this proposed license. An evaluation of the specific impacts associated with future developments served under this license would be considered speculative under CEQA because the precise composition of uses that would be served under the proposed project is currently unknown.

could also include increased lighting and glare. The extent of potential indirect effects would be contingent upon the type of proposed use and site-specific factors.

Potential visual impacts due to potential growth-inducement would be addressed through a site-specific evaluation and the standard development review process. All development activities proposed on existing lots of record would be subject to existing City and/or County requirements (i.e., General Plan and Zoning Ordinances) and project-specific environmental review; in addition, these projects would also be required to comply with project-specific conditions of approval, as well as any mitigation measures identified during project-level CEQA review. As a result, potential indirect effects would be less-than-significant.

AGRICULTURAL RESOURCES

The proposed project could result in potential impacts to agricultural resources. The extent of potential indirect impacts would be contingent upon site-specific and project-specific factors, but could include: 1) the conversion of prime farmland, unique farmland, or farmland of statewide importance to non-agricultural use; 2) conflicts with existing zoning for agricultural use, or a Williamson Act contract; 3) conflicts with existing zoning for forest land, timberland, or timberland zoned for Timberland production; 4) the loss of forest land; or 5) the conversion of farmland to non-agricultural use or the conversion of forest land to non-forest use.

While the proposed project could result in potential indirect effects to agricultural resources, the extent of potential effects would be limited. Agricultural uses within the project area are primarily located within the unincorporated area of Monterey County and water provided under proposed License 13868A would only be used to serve existing lots of record. Water used under the proposed new license would not be used to support new subdivisions or cause a change in existing zoning and/or general plan designation. As a result, future projects served under proposed License 13868A would need to be consistent with the site's existing zoning and general plan designations and potential impacts to agricultural resources would primarily occur in connection with the rezoning of existing agricultural parcels and/or the subdivision of existing agricultural land. As a result, the proposed project would not result in significant indirect impacts to agricultural resources.

Potential indirect impacts associated with the development would also be addressed through site-specific evaluation and the standard development review process. All development activities would be subject to existing City and/or County requirements (i.e., General Plan and Zoning Ordinances) and project-specific environmental review; in addition, projects would be required to comply with conditions of approval, as well as any mitigation measures identified during the project-level CEQA review process. As a result, potential secondary impacts would be less-than-significant.

AIR QUALITY

The project could indirectly affect air quality due to the growth accommodating nature of the proposed project. The extent of potential indirect effects would be contingent upon project-specific factors, but could include increased vehicular emissions and construction-related PM₁₀ and diesel emissions. Indirect effects would be potentially significant if they would exceed applicable Monterey Bay Unified Air Pollution Control District (MBUAPCD) CEQA thresholds of significance. According to MBUAPCD, a project would result in a potentially significant air quality effect if it would:

- Emit 137 or more of volatile organic compounds (VOC) or oxides of nitrogen (NO_x);
- Directly emit 550 lbs/day of Carbon Monoxide (CO);
- Generate traffic that significantly affects levels of service;
- Directly emit 82 lb/day or more of PM₁₀ on site during operation of construction;
- Generate traffic on unpaved roads of 82 lb/day or more of PM₁₀; or
- Directly emit 150 lb/day or more of Oxides of Sulfur (SO_x).

The proposed project would provide a supplemental water supply that would allow the development of existing lots of record, expansion of existing uses, residential and commercial remodels, and similar purposes. Water diverted under proposed License 13868A would not be used for new residential or commercial subdivisions, new large-scale commercial development, or projects that are inconsistent with existing site zoning and general plan designations.

As a result, the project could result in indirect impacts associated with the development that could cause temporary increases in air quality emissions during construction in connection with ground-disturbing activities and the operation of heavy equipment. These effects would be temporary in nature and would not exceed applicable MBUAPCD thresholds. Moreover, potential indirect effects would be addressed on a project-specific basis through standard construction best management practices, applicable conditions of approval, and project-specific mitigation (if applicable) identified during the development review process. As a result, potential secondary effects would be less-than-significant.

BIOLOGICAL RESOURCES

The project could indirectly affect biological resources due to growth-inducement. The extent of potential effects would, however, be contingent upon site-specific and project-specific features. Potential biological effects could include impacts to sensitive species, riparian habitat, wetlands, migratory fish or wildlife or result in potential conflicts with local ordinances protecting biological resources. No impacts would occur due to potential conflicts with a Habitat Conservation Plan or Natural Community Conservation Plan since there are no adopted plans within the project area.

Potential biological impacts would be addressed on a project-by-project basis through the standard development review process, which would include site-specific environmental review under CEQA. This process would entail the evaluation of potential effects to biological resources under CEQA and the imposition of project-level mitigation measures to address potential effects, if necessary. While the proposed project would indirectly foster growth by allowing municipal use under proposed License 13868A, the extent of potential effects would be dependent on site-specific factors and would be addressed through future project-level review at the time a specific intended use is proposed. As a result, the proposed project would have less-than-significant indirect impacts on biological resources.

CULTURAL RESOURCES

The project could result in indirect effects to cultural resources. The extent of potential indirect effects would be contingent upon site-specific and project-specific features, but could include impacts to historical resources, archaeological resources, paleontological resources, or result in the disturbance of human remains.

Development activities could also affect previously unknown or buried cultural resources. Grading and excavation related activities during construction could result in potential adverse effects to archaeological resources or result in the disturbance of human remains. Remodels or expansions may also affect existing structures, which could be historically significant.

While the proposed project could indirectly effect cultural resources by accommodating development, those effects would be addressed at the time a specific project or use is identified and would be evaluated on a project-by-project basis as part of the standard development review process. As a result, potential indirect effects would be less-than-significant.

GEOLOGY AND SOILS

The proposed project could result in potential indirect impacts to geology and soil resources. The extent of potential indirect impacts would be contingent upon site-specific and project-specific features, but could include the exposure of persons and/or structures to geological hazards (i.e., liquefaction, lateral spreading, soil constraints, landslides, etc.). In addition, the proposed project could also result in indirect construction-effects, including increased erosion due to ground disturbing activities. Potential indirect effects associated would be addressed through a site-specific evaluation and standard development review process. Moreover, all future uses served under proposed License 13868A would also be required to comply with all applicable building code requirements intended to address potential geologic hazards and any project-specific conditions of approval. As a result, potential indirect effects would be less-than-significant.

HAZARDS AND HAZARDOUS MATERIALS

The proposed project could result in potential indirect effects due to hazards and hazardous materials. While the extent of potential indirect impacts would be contingent upon site-specific and project-specific features, the proposed project could result in potential indirect effects due to potential hazardous material use, accidental release of a hazardous material, hazardous emissions, and other similar impacts. Potential secondary impacts would be primarily associated with the temporary use of potentially hazardous materials (e.g. oils, solvents, etc.) during construction related activities. These activities could involve the use and/or storage of a hazardous material. Potential indirect effects associated with the proposed project would be addressed at the time a specific use is identified and would be addressed through the standard development review process and associated environmental review, including the implementation of standard conditions of approval and site-specific mitigation. Potential secondary effects would also be addressed through the implementation of standard construction Best Management Practices (BMPs). These would be less-than-significant effects.

HYDROLOGY AND WATER QUALITY

The proposed project could result in potential hydrology and water quality impacts due to the introduction of impervious surfaces, increased stormwater runoff, temporary increases in erosion and sedimentation during construction, and potential impacts to water quality due to the use of hazardous materials during construction. Potential indirect impacts to hydrology and water quality would be addressed through the standard development review process, including compliance with all applicable conditions of approval and any additional project-specific mitigation measures, including requirements to implement standard construction-phase BMPs. These would be less-than-significant effects.

LAND USE AND PLANNING

The proposed project would not result in any secondary land use or planning effects. As described in **Chapter 3, Project Description**, the proposed project would not result in any zoning or general plan changes because only projects consistent with applicable plans and ordinances would qualify for water diverted under proposed License 13868A. Accordingly, the secondary effects associated with the proposed project would not result in any conflicts with applicable General Plan policies adopted for the purposes of avoiding or mitigating adverse environmental effects. In addition, the potential growth accommodated by the proposed project would not cause the physical division of an existing community or result in a conflict with an adopted Habitat Conservation Plan (HCP). Moreover, all future uses served under proposed License 13868A would be subject to the standard development review process, which would ensure consistency with local plans and policies.

MINERAL RESOURCES

No known mineral resources are located within Cal-Am's existing service area in the City of Carmel-by-the-Sea or the Carmel River watershed. As a result, the proposed project would not result in any secondary effects to mineral resources.

NOISE

The proposed project could result in potential noise-related effects due to growth inducement. The extent of potential effects would be contingent upon the nature of development and site-specific/project-specific factors, but could include localized increases in noise in connection with the construction and operation of new, expanded, or modified uses. Short-term, construction-related noise effects could be significant, depending on timing of construction and proximity to other receptors. The potential indirect noise-related effects associated with growth would be addressed on a project-by-project basis through the standard development review process. Potential secondary noise-related effects due to growth would, therefore, be less-than-significant.

POPULATION AND HOUSING

While the proposed project would facilitate growth and development by removing an existing obstacle to growth that would allow the development of existing lots of record, minor expansion of uses, commercial and residential remodels, and similar development, the secondary effects of the proposed project would not induce population growth beyond previously planned levels. The proposed project would not directly or indirectly displace a substantial number of housing or a substantial number of people necessitating the construction of replacement housing elsewhere. The proposed project would potentially induce potential growth by removing an obstacle to growth, but the proposed project would not, in and of itself, cause new development to occur. In addition, any future uses served under proposed License 13868A would be subject to project-level analysis by the County of Monterey or the City of Carmel-by-the-Sea.

PUBLIC SERVICES

The proposed project could result in potential effects to public services by accommodating growth. While the extent of potential effects would be contingent upon the nature of development and site-specific/project-specific factors, the development of existing lots of record could increase demands for police and fire

protection services, schools, and other public facilities. Potential indirect effects would be addressed on a project-by-project basis through a site-specific evaluation and the standard development review process and associated environmental review. The proposed project would have less-than-significant secondary impacts.

RECREATION

The project could result in potential impacts to recreation by accommodating development. The extent of potential effects would be contingent upon the nature of development, but could include the physical deterioration of existing facilities due to increased demand and subsequent use of existing recreational facilities. As a result, the proposed project could indirectly require the expansion of existing facilities (which could affect the environment) to accommodate the increase demand for recreational uses. Potential secondary effects would be addressed on a project-by-project basis through the standard development review process, including the payment of applicable development impact fees to mitigate impacts. The proposed project would have less-than-significant secondary impacts.

TRANSPORTATION/TRAFFIC

The proposed project could result in potential secondary effects by removing an existing obstacle to growth. Potential growth induced by the proposed project could cause localized traffic-related effects. The extent of potential impacts would be contingent upon the nature of development and site-specific/project-specific factors. Potential indirect impacts to traffic associated with the development of existing lots of record would be addressed through the standard development review process, including the payment of applicable Transportation Agency of Monterey County (“TAMC”) regional impact fees and other applicable impact fees.

UTILITY AND SERVICE SYSTEMS

The proposed project could potentially indirectly affect existing utilities and service system by removing an existing obstacle to growth. The extent of potential impacts would be contingent upon the nature of development and site-specific/project-specific factors, but could include an increase in the demand for utilities (e.g., wastewater, solid waste, landfills, etc.). Potential indirect impacts to utilities would be addressed through the standard development review process, payment of applicable development impact fees, implementation of standard conditions of approval, and project-specific mitigation (if necessary) identified during the project-level CEQA review process.

5.2 CUMULATIVE EFFECTS

5.2.1 INTRODUCTION

The purpose of the cumulative effects analysis is to identify and summarize the environmental effects of the proposed project in conjunction with effects of existing, approved, and anticipated developments in the project area. CEQA Guidelines Sec. 15130 requires that an EIR evaluate the cumulative effects of a proposed project when the project’s incremental effect is “cumulatively considerable.” A “cumulatively considerable” effect means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects (CEQA Guidelines Sec. 15065(a)(3)). A cumulative effect is defined as an impact which is created as a result of the contribution of the project evaluated in the EIR together with other projects causing related

impacts (CEQA Guidelines Sec. 15355). When the combined cumulative effect associated with the project's incremental effects and the effects of other projects is not significant, the EIR shall briefly indicate why the cumulative effect is not significant (CEQA Guidelines Sec. 15130(a)(2)).

An EIR need only evaluate the cumulative effects that would result from the project (CEQA Guidelines Sec. 15130(a)(1)). CEQA further provides that the discussion of cumulative effects shall reflect the severity of the impacts and their likelihood of occurrence. The discussion need not provide the same level of detail as provided for the effects directly attributable to the project (CEQA Guidelines Sec. 15130(b)). The cumulative analysis is guided by the standards of practicality and reasonableness.

5.2.2 APPROACH

The analysis of cumulative effects can rely on either of two approaches: the list approach (CEQA Guidelines Sec. 15130(b)(1)(A)) or the plan approach (CEQA Guidelines Sec. 15130(b)(1)(B)). The list approach may take into consideration such factors as the nature of environmental resource being evaluated, the location of the cumulative projects, and the type of projects (CEQA Guidelines 15130(b)(2)). This EIR relies on the list approach to evaluate cumulative effects.

The proposed project would split existing License 13868 into two new licenses and result in changes to the authorized POD, POU, and purposes of use of the new licenses. License 13868 would be revoked and Licenses 13868A and 13868B would be issued. License 13868A would maintain the existing PODs, POU, and purpose of use and include new authorized PODs, POU, and purposes of use. With the changes, the right holder would receive additional authorization to divert water from three existing Cal-Am wells (Cañada #2, Cypress and Pearce) in order to provide potable water for municipal purposes to existing lots of records within the parts of Cal-Am's service area that are within the Carmel River watershed or the City of Carmel-by-the-Sea. License 13868B would be dedicated to instream uses within the Carmel River. The project would not increase the maximum authorized annual diversion rate or the maximum authorized instantaneous diversion rate beyond the existing authorized rates in License 13868. The proposed project would not require the construction of new improvements and no modifications to existing facilities would be necessary.

Due to the nature of the proposed project, potential cumulative effects are limited to biological resources and hydrology and water quality. The past, present, and probable future projects are identified below. Specifically, the assessment considers whether or not, under a cumulative scenario, there would be cumulatively considerable effects to biological resources and hydrology and water quality downstream of the proposed PODs identified in proposed License 13868A. Proposed License 13868B would be dedicated to instream beneficial uses and would not result in any adverse environmental effects.

5.2.3 PAST AND PRESENT PROJECTS LOCATED IN THE WATERSHED

The hydrologic and ecological function of the Carmel River has been extensively modified by various projects implemented by federal, state, local and private entities over the course of the past century (PCLF, 2007). These projects have reduced streamflow in the mainstem of the river and have resulted in corresponding adverse effects to biological and hydrologic resources. The following is an overview of past and present projects within the Carmel River watershed that have the potential to affect biological resources and hydrology and water quality.

Los Padres & San Clemente Dams

The construction of the Los Padres and San Clemente Dams have significantly altered the hydrologic and ecological function of the Carmel River by reducing the hydrologic connectivity with the upper and lower portions of the watershed, reducing natural sediment transport, and the amount of streamflow in the mainstem Carmel River downstream of the dams, and have resulted in corresponding adverse effects to biological resources due to reductions in surface water flows. Due to decreasing storage capacity associated with the existing dams, the Monterey Peninsula has increased its reliance on the Carmel River aquifer as its primary source of water supply by increasing the extent of groundwater pumping along the Carmel River for municipal purposes.

MPWMD Water Allocation Program

In November 1990, the MPWMD certified the Water Allocation Program Final EIR, for a project that set a water allocation limit of 16,744 af/yr for Cal-Am production. In so doing, the MPWMD adopted a Mitigation Program to address the environmental effects that community water use has upon the Carmel River. The MPWMD continues to operate under its Mitigation Program, and has achieved remarkable improvements to the Carmel River environment.

State Water Board Orders

The State Water Board has issued several orders and decisions affecting diversions from the Carmel River. These decisions have played an important role in defining the extent of existing water-rights and identifying future actions necessary to reduce the extent of unlawful diversions. The following is an overview of previous State Water Board orders and decisions relating to the Carmel River; please refer to **Chapter 3, Project Description**, for a more detailed discussion of applicable State Water Board orders.

In 1995, the State Water Board concluded that Cal-Am did not have sufficient water rights for its existing water diversions from the Carmel River, and ordered Cal-Am to cease its unpermitted diversions (State Water Board WR Order 95-10). The State Water Board determined that Cal-Am had legal rights to only 3,376 af/yr of water diverted from the Carmel River. The State Water Board ordered Cal-Am to find an alternative source of water, to obtain appropriate permits for its diversions to obtain water from other sources to make reductions in unlawful diversions or to contract with holders of appropriate rights to divert and use water from the Carmel River.

In 1998, the State Water Board concluded that the Carmel River is a fully appropriated stream from the mouth of the river upstream to the Sleepy Hollow gage (RM 17.2) between May 1 through December 31. Certain identified diverters that had established water uses were allowed to apply for permits to allow diversions between May and December, and were therefore exempt from the State Water Board's fully appropriated stream determination. Other applicants seeking to divert water from the Carmel River must limit their diversions from the Carmel River to between January and April.

In 2009, the State Water Board issued Cease and Desist Order No. 2009-0060 (CDO), which requires a series of cutbacks to Cal-Am production from the Carmel River. This order prohibited Cal-Am from producing more than 10,187 af of water from the Carmel River in WY 2013. In WY 2014, Cal-Am's diversion must cut back its diversions to no more than 10,066 af, in 2015 to 9,945 af, in 2016 to 9,703 af, and in 2017 to 4,813 af.

In 2012, Cal-Am's production from Carmel River source wells totaled 7,515 af, with its production from AQ3 and AQ4 in WY 2012 totaling 7,093.7 af (MPWMD, 2013).⁷ In 2012, the annual water use in subunit AQ3 was an estimated 6,506.4 af/yr, and in subunit AQ4 an estimated 2,224.9 af/yr. Thus, of Cal-Ams 2012 production, approximately 81.2 percent of the total was from AQ3 and AQ4. No water was diverted at San Clemente Dam in WY 2012. In addition, Cal-Am diverted a total of 295 af during this period for ASR injection under Permit 20808 rights.⁸

New Water Rights (Cal-Am)

On October 4, 2013, Cal-Am obtained an appropriative permit from the State Water Board authorizing the diversion of 1,488 af/yr from the Carmel River at a maximum instantaneous rate of diversion of 4.1 cfs. The diversion season is specified as December 1 to May 31 of each year (See Permit 21330 issued on Application 30125A). Diversions under this permit are not allowed when streamflows in the Carmel River drop below certain specified levels. This permit requires Cal-Am to submit a compliance plan within six months of issuance of the permit to demonstrate compliance with the flow bypass terms specified in the permit. Cal-Am must curtail or cease diversion if diversions under the permit cause cumulative maximum average daily diversions downstream of RM 17.6 to exceed 80 cfs. Cal-Am must also implement the Riparian Corridor Management Program outlined in the MPWMD November 1990 Allocation Mitigation Program on its land, implement or fund fisheries mitigation measures as set forth in the MPWMD 1990 allocation mitigation program for rescue of juveniles downstream of Robles del Rio, and cooperate in implementing the lagoon mitigation program proportionate to the impact of Cal-Am's diversion on fisheries.

Non-Cal-Am Water Production

Diversions of water from the Carmel River and its underflow are reported to both the MPWMD and the State Water Board. According to MPWMD, total non-Cal-Am water production in WY 2012 was 2,659 af, of which approximately 1,637.5 af was diverted from AQ3 and AQ4 (MPWMD, 2013). In addition to the reporting information available from MPWMD, the SWRCB also maintains its electronic Water Rights Information Management System (eWRIMS) database, which lists Statements of Water Diversion and Use, Permits and Licenses involving water diverted in the Carmel River watershed. The Statements of Water Diversion and Use report water use under riparian, pre-1914 or other water rights. Water use under permits and licenses are also reported through permittee progress reports and licensee reports. The eWRIMS database also identifies pending applications for diversions from the Carmel River. All of these applications are Table 13 applications and are being processed by the State Water Board for the permitting of established water uses pursuant to Condition 10 of State Water Board Decision 1632. These uses are part of the existing baseline and do not represent new water uses for the purposes of this EIR.

⁷ The AQ3 subunit has a capacity of approximately 16,927 af and the AQ4 subunit has a capacity of approximately 5,000 af (State Water Board, Decision 1632, T.10., p.31).

⁸ Permit 20808A rights refer to water rights that are held jointly by MPWMD and Cal-Am for the Phase 1 ASR project. Permit 20808A was issued by the State Water Board in November 2007 for a maximum annual diversion of 2,426 af. Permit 20808C was issued in November 2011 for a maximum annual diversion of 2,900 af as part of the MPWMD and Cal-Am Phase 2 ASR. The MPWMD currently holds Permit 20808B, which is an unused approved water right associated with the New Los Padres Reservoir, 18,674 af. The MPWMD is currently exploring alternative ways to perfect this entitlement, which would involve amendments to Permit 20808B depending on which long-term water supply alternative is chosen by the MPWMD. To date, such alternative project has not yet been identified. (See Los Padres Dam and Reservoir Long-Term Strategic and Short-Term Tactical Plan, June 2014)

It is important to recognize that water use under existing License 13868 already is part of the cumulative condition. As a result, use under License 13868 represents an existing approved project for the purposes of CEQA.

5.2.4 WATER RELATED PROJECTS LOCATED IN THE WATERSHED

To address the unlawful diversions of Carmel River water, as required by the applicable State Water Board Orders discussed above, Cal-Am is currently in the process of pursuing alternative water supplies, including a proposed desalination project, enhanced aquifer storage and recovery, groundwater replenishment, increased conservation, and other projects described below. Many of the projects described below represent the results of long-term planning efforts to reduce groundwater pumping from the Carmel River and associated subterranean stream. These projects would potentially affect hydrology and biological resources, and are therefore included in this cumulative assessment.

Monterey Peninsula Water Supply Project

In 2012, Cal-Am submitted an application for a proposed desalination facility comprising of a source water intake system consisting of: slant wells; 9.6 mgd desalination plant; a brine discharge system; product water conveyance pipelines and storage facilities; and an aquifer storage and recovery (ASR) system. The desalination facility could produce as much as 9,750 af/yr.⁹ The desalination plant is intended to provide additional supply so that Cal-Am can meet State Water Board ordered cutbacks in Cal-Am's diversions from the Carmel River. Cal-Am's application for this project is currently being processed by the California Public Utilities Commission. Completion of the project is planned to occur by the end of 2017. However, delays in processing may extend the completion date. Potential reductions in Cal-Am groundwater pumping from the Carmel River subterranean stream due to this project are anticipated to have net beneficial effects on groundwater and surface water resources within the Carmel River watershed, as well as associated biological resources.

Aquifer Storage and Recovery

Aquifer Storage and Recovery (ASR) entails diverting excess winter flows (typically in winter and spring) from the Carmel River through Cal-Am facilities and injecting the water into the Seaside Groundwater basin for later recovery in dry periods. The primary goal of the ASR projects is to improve the management of existing water resources and reduce the extent of groundwater pumping from the Carmel River, especially during the dry season. Cal-Am and MPWMD's Aquifer Storage and Recovery Phases 1 and 2 are in progress. The ASR projects are complementary to the other larger, long-term water augmentations projects that are currently being explored by various entities. The enhanced operations of the Phase 1 and 2 ASR Projects would reduce the amounts of Cal-Am's unauthorized pumping from the Carmel River in summer and fall and increase storage in the Seaside Basin. The ASR Phase 1 and 2 entail a maximum diversion of 2,426 and 2,900 af/yr. The combined average yield for both projects is estimated at 2,000 af/yr, although the extent of diversions is contingent upon sufficient winter flows being present. During dry years, when low or zero river flows are present, diversions would not occur. Overall, the ASR projects are anticipated to reduce the extent of groundwater pumping during the dry season and thereby improve hydrologic and ecological conditions within the Carmel River during sensitive periods when lower flows are typically present.

⁹ This amount would be reduced to 6,250 af/yr if the GWR Project described below is approved and proceeds on schedule.

Monterey Peninsula Groundwater Replenishment Project

The Monterey Regional Water Pollution Control Agency (MRWPCA) is currently planning a Groundwater Replenishment Project (GWR Project) that would use reclaimed water from a variety of sources to recharge the Seaside Groundwater Basin. Source water for the project would be from reclaimed and treated produce wash-water, agricultural tile-drain water, stormwater runoff, and treated municipal effluent. The facility is planned to be operational by the end of 2016, to help Cal-Am comply with State Water Board Order 2009-0060. The primary goal of the project is to:

“provide 3,500 acre-feet per year of high quality replacement water to California American Water Company (or Cal-Am) for delivery to its customers in the Monterey District service area; thereby enabling Cal-Am to reduce its diversions from the Carmel River system by this same amount.”¹⁰

This planned reduction in Cal-Am’s pumping from the Carmel River is forty times the amount of water use associated with the proposed project and is anticipated to have a net beneficial effect on the Carmel River and associated resources.¹¹

San Clemente Dam Removal and Carmel River Reroute

San Clemente Dam, constructed on the Carmel River in 1921 approximately 20 miles upstream of the river mouth, has lost nearly all of its usable capacity due to sedimentation in the reservoir. To alleviate seismic safety concerns, to restore habitat, and to improve anadromous fish access to the upper portions of the watershed, Cal-Am, the California Coastal Conservancy (CCC), and the National Marine Fisheries Services (NOAA Fisheries) have proposed to remove the existing dam, re-route a segment of the Carmel River into the lowermost San Clemente Creek, and sequester reservoir sediment within the abandoned arm of the Carmel River (DWR, 2012). This project is currently in the process of being implemented and is anticipated to improve existing habitat, restore the hydrologic connectivity between the upper and lower portions of the watershed, and improve downstream sediment transport. While this project represents a major milestone for restoring the hydrologic and ecologic function of the Carmel River, the extent of potential beneficial environmental effects are not clearly understood at this time. The project EIR concludes that the project would result in temporary downstream impacts during construction and could result in potential impacts due to downstream sedimentation and increased turbidity within the lower reaches of the river (CA DWR, 2012). The proposed project would not involve the construction of any new facilities, and therefore would not result in any impacts relating to sedimentation or increase in turbidity. Moreover, significant impacts to the lower Carmel River watershed were not identified in connection with the San Clemente Removal and Carmel River Reroute Project. Thus, cumulative effects due to this project relative to the proposed project are not expected. This project is anticipated to have a long-term beneficial impact on the Carmel River and associated environment.

Sleepy Hollow Steelhead Rearing Facility Sediment Control and Intake Retrofit Project

The Sleepy Hollow Steelhead Rearing Facility Sediment Control and Intake Retrofit Project (SHSRF) started operations in 1997 with the purpose of rescuing and rearing steelhead that were stranded in the Lower

¹⁰ Monterey Peninsula Groundwater Replenishment Project Environmental Impact Report, Notice of Preparation, pg. 1; available at <http://www.mpwaterreplenishment.org/index.php>

¹¹ Again, it is important to reiterate that the proposed project would be a change of an existing water right and would not result in any net increase in pumping from the Carmel River aquifer on an annual basis.

Carmel River. In 2003, the MPWMD completed significant improvements to ensure that the facility could continue to operate under increasing sediment loads. MPWMD upgraded the facility in years following, but further improvements are expected to be necessary to address increases in sediment loads after the removal of the San Clemente Dam (MPWMD 2011c; MPWMD Staff report for MPWMD January 29, 2014 Agenda). The SHSRF Project is funded by a grant from the Cal-Am/NMFS settlement funds held by the CDFW. The MPWMD is also considering an agreement with the CCC to receive funding, and a corresponding modification of settlement agreement between Cal-Am, NMFS and CDFW (MPWMD Staff report for MPWMD January 29, 2014 Agenda). This project is not anticipated to significantly affect existing biologic or hydrological resources. Overall, this project would have a net beneficial impact on special-status species (i.e., steelhead).

Los Padres Dam

The Los Padres Reservoir had an original capacity of 3,030 af, but high sediment loads due to high annual rains, steep slopes, fractured granite rock, and powerful streams have contributed to the accumulation of sediment in the Los Padres reservoir. Currently, the dam has approximately 1,626 af of usable storage capacity (MPWMD, 2012). Cal-Am is currently studying the feasibility of dredging sediment out of the reservoir, although other options such as removing the dam have been considered.¹² In December 2013, the Final Recovery Plan for the South-Central California Coast Steelhead Recovery Plan was released. It identified the development and implementation of a water management plan (or a review and modification thereof) for dam operations as a potential recovery action to address the threats to steelhead stemming from dams and surface water diversions in the Carmel River basin (NOAA, 2013). Cal-Am's current efforts to release water from the Los Padres Dam to help maintain flows is consistent with the Final Recovery Plan, and has positive effects on streamflows of the Carmel River and its biological resources.

Lower Carmel River Floodplain Restoration And Environmental Enhancement Project

The Lower Carmel River Floodplain Restoration and Environmental Enhancement Project is a multi-objective, comprehensive project that incorporates elements of habitat restoration, land protection, and protection of special-status species. The purpose of this project is to reduce flood flows in urban areas, increase riparian and wetland habitat, recharge groundwater and base flows to the Carmel River, provide habitat connectivity across the floodplain, protect agricultural land from flooding, and improve water quality. The primary components of the project include the construction of a new elevated causeway along State Route 1, removal of existing agricultural berms and levees located south of the Carmel River, the restoration of existing portions of the property to natural floodplains, and the creation of an agricultural preserve to allow on-going agricultural use on a portion of the property. This project would restore and enhance the ecological and hydrologic functions of a portion of the historic floodplain, reduce flooding hazards to existing developed areas north of the Carmel River, and reduce existing flooding hazards to State Route 1. Approximately 90 acres of historic riparian and wetland habitat would be restored as part of this project, which would increase the quality and quantity of important habitat for special-status species (e.g., steelhead, red legged frogs, etc.). Additional benefits include the protection of over 30 acres of existing farmland,

¹² The Los Padres Dam constitutes a physical barrier that impairs steelhead migration. However, the dam also is an effective tool for managing steelhead and streamflow in the Carmel River, particularly during dry periods. According to the MOU between the CDFW, Cal-Am, and the MPWMD, releases the Los Padres Dam play a critical role in ensuring that the Carmel River does not dry up in the lower reaches during very dry periods.

increased groundwater recharge, and improved water quality.¹³ This project is anticipated to have net beneficial effects on surface water and groundwater resources, including associated biological resources.

CSA 50

In 2002, Philip Williams and Associates, Ltd. (PWA) prepared *The Lower Carmel River Flood Control Project Final Report* for Monterey County (MCWRA 2008). This report used flood modeling to predict responses to flooding in the CSA 50 area. The goal of this project was to identify sources of flooding and to recommend structural and operational improvements to reduce flood risk in CSA 50. Since this time, CSA 50 prepared a document entitled Pre-Final County Service Area 50 Lower Carmel River Stormwater Management and Flood Control Project, which includes recommendations that include improvements to levees, construction of flood walls, improvements in pumping, and other actions to remove CSA 50 from the 100-year flood plain. The work completed as part of this program identifies a number of priorities that would maximize stormwater and flood control benefits in an incremental manner. The CSA 50 Committee approved the Pre-Final Report on October 13, 2014, and it is anticipated that any flood control improvements proposed by CSA 50 will undergo CEQA review at such time as CSA 50 is prepared to move forward with any project.

Carmel Lagoon – Ecosystem Protective Barrier

The County of Monterey and Carmel River Watershed Conservancy are pursuing the construction of a protective barrier (the Ecosystem Protective Barrier or EPB), the armoring of the adjacent bluffs and the State beach parking area, and plans for protection and preservation of Scenic Road. The EPB will provide a long-term solution to the annual mechanical breaching of the Carmel Lagoon, and is part of a large, multi-stakeholder effort to improve both flood control and natural habitat conditions in the lower Carmel River. The goals of the EPB are to allow the levels in the lagoon to rise and breach the sand bar naturally without threatening adjacent low-lying structures. The resulting increase in water quantity and quality in the lagoon is expected to improve rearing habitat for steelhead and habitat for the California red legged frog. Any impacts to the Carmel Lagoon resulting from the EPB and the proposed project would be positive, and therefore there is no adverse cumulative impact to the Carmel Lagoon.

Carmel River Lagoon Water Augmentation

The Carmel River Lagoon provides important rearing habitat for the steelhead trout. For several years, the Carmel Area Wastewater District (CAWD) has been discharging advance treated wastewater near the lagoon to filter through the soil and replenish the water level in the lagoon during the dry season, effectively increasing habitat for the steelhead. Treated wastewater, regardless of the level of treatment achieved, may not be discharged directly into the lagoon due to environmental regulations, and for this reason, augmentation efforts are focused on recharging the groundwater system, which ultimately affects water levels in the lagoon. In 2007, CAWD and regional stakeholders began studying the feasibility of creating a wetland or a similar recharge structure near the lagoon for discharges of highly treated wastewater year-round. The proposed project, as currently envisioned, would consist of the discharge of approximately 1.2 mgd of tertiary

¹³ The Final Recovery Plan for the South-Central California Coast Steelhead Recovery Plan identified the development and implementation of a plan to restore natural channel features, to restore stream bank, and to restore the natural corridor (or a review and update thereof), as potential recovery actions to address the threat sources to steelhead stemming from levees and channelization (See December 2013 South-Central California Coast Steelhead Recovery Plan, Table 10-4). The Lower Carmel River Floodplain Restoration and Environmental Enhancement Project is consistent with these features of the Final Recovery Plan, and would have a positive impact on the steelhead resources.

wastewater into a wetland or recharge structure near the lagoon located on adjacent property owner by State Parks. This project is currently in the feasibility stage and is anticipated to have net beneficial effects to lagoon functions and associated habitat for special-status species.

5.2.5 FUTURE LAND DEVELOPMENT PROJECTS LOCATED IN THE WATERSHED

There are several potential future land development projects (i.e., residential and commercial) that would be located in the Carmel River watershed and that have the potential to affect groundwater and surface water resources and associated biological resources. Land development within unincorporated Monterey County within the Carmel River watershed is governed by the Carmel Valley Master Plan, which specifies applicable land use policies and standards related to the development in Carmel Valley. The active projects within the Carmel Valley Master Plan that have the potential to affect hydrology or biological resources are listed below. Additional information about these projects is available from the County of Monterey, Resource Management Agency – Planning Department.

Rancho Cañada Village

The Rancho Cañada project is a residential development proposed within the lower Carmel River valley, adjacent to the Carmel River. The project would replace a portion of an existing golf course with residential units and a restored riparian open-space corridor. The original proposal includes 281 residential units, and the anticipated water use would be less than the amount currently used to operate and irrigate the existing golf course at the site (Jones and Stokes, 2008). Since the time of the original proposal analysis, an alternative to the project has been submitted to the County of Monterey that would reduce the density of the project to 130 units. Consequently, the project would result in considerably less water use than originally anticipated. Thus, there would not be any negative cumulative impact because anticipated future water use associated with this project would be less than current use associated with the existing golf course.

Delfino

The Delfino project consists of a residential development proposed in the upper Carmel River valley, in proximity to the Carmel River. The original project included 24 residential units. The project applicant has informed County staff that the property owner does not intend to pursue this residential development, and is currently exploring alternative uses for the property that could occur without subdividing the property. The County has responded to the property owner's request regarding the possibility of reinstating an airstrip on the property. However, no application for such use has been submitted to the County. Although the residential development has not been pursued by the property owner, the property owner has not formally withdrawn the current project application (personal communication, Bob Schubert and David Mack, County of Monterey, March 2013).

Canine Sports Complex

This project consists of the development of a canine training and sports facility and event center on property located on Valley Greens Drive. The project includes modular structures, accommodations for up to 70 recreational vehicles on a short-term basis during events, fenced pastures, and an irrigation system and reservoir. The project site has historically been used for row crop production, and the property owner currently has a pending D-1632 Table 13 water right application with the State Water Board for its established

water use. The water demand for the proposed canine facility is anticipated to be less than the historical water use demand associated with agricultural use of the property.

Heritage Development

The Heritage Development includes the minor subdivision of three lots into a 4 lot subdivision located on Rancho San Carlos Road in Carmel Valley. The project water demand is approximately 10 af/yr, or less than half of the 26 af/yr pre-project water use on the site.

Hilltop Ranch & Vineyard LLC

This project is located in upper Carmel Valley and consists of a use permit to allow for assemblages of people for weddings, business and other events and an administrative permit for transient occupancy for an existing unit in conjunction with such events. The event use includes an existing 2,400 square foot barn and 3,600 square foot outdoor area adjacent to the barn. The project application was deemed incomplete; County staff anticipates that the project applicant will provide further documents to the County for the project to be deemed complete, which may also involve some amendments to the initially proposed project. At the time of this EIR, no documents have been submitted to ascertain project water demand or historical water use on the project site.

Georis Walter N Tr.

This project located along Pilot Road in Carmel Valley and involves an amendment to a previously approved Administrative Permit (PLN010176) to allow wine tasting and a use permit to allow the serving of alcohol (wine tasting) within 200 feet of a residential area. The proposed water demand for this conversion of use will result in a minor reduction in water use as compared to the existing approved use (Monterey County, Staff Report, January, 2013; Draft Initial Study/Mitigated Negative Declaration, August 2002).

Dow

The project located along Val Verde Drive in Carmel Valley has been deemed incomplete since 2004. At the time of application submittal the project was proposed to include an 89-unit affordable housing project. Since this project application was deemed incomplete, the property owner has not indicated any intention to pursue this project. This project is not considered in this cumulative assessment.

5.2.6 CUMULATIVE ANALYSIS

The potential cumulative effects of the proposed project in the areas of biological resources and hydrology and water quality are discussed below. In sum, the proposed project would not result in any cumulatively considerable effects relating to hydrology and water quality or biological resources (e.g., riparian habitat, special-status species, etc.). Overall, the incremental effects of the proposed project on the hydrologic function of the Carmel River and its biological resources, when considering the past, present and future projects, would represent a net beneficial effect, when compared to baseline conditions.

Biological Resources

As summarized above, cumulative development would have an overall net positive effect on the hydrologic and ecologic functions of Carmel River and associated watershed. These projects would restore hydrologic connectivity with the upper and lower reaches of the Carmel River, improve surface water flow by reducing the amounts of Cal-Am's unauthorized diversions from the Carmel River subterranean flow, and improve existing habitat for special-status species (including habitat within the project affected reach).

For example, the removal of San Clemente Dam will help restore the hydrologic connectivity of the Carmel River, create new rearing and spawning habitat for steelhead, and improve surface water flows downstream of the dam. In addition, the reduction of Cal-Am pumping, as required by the State Water Board orders, will improve the hydrologic connectivity of the river by increasing the amount of streamflow downstream of existing municipal wells in the lower reaches of the river, and improve the extent of habitat in the lower reaches of the river. These projects when combined with the identified restoration projects will improve the quality and quantity of suitable habitat for special-status species along the Carmel River. Accordingly, the cumulative projects considered for the purposes of this analysis would have positive effects on special-status species.

The following evaluates the potential cumulative effects of the proposed project when combined with other past, present and reasonable foreseeable future projects. This analysis specifically evaluates potential cumulative effects in regards special-status species, riparian habitat, and wetlands as these resources would potentially be affected by the proposed project.

Special-Status Species

As discussed in **Section 4.1, Biological Resources**, this EIR states that the proposed project could potentially adversely affect special-status species (i.e., Monterey dusky-footed woodrats, California legless lizards, California red-legged frogs, western pond turtles, two-striped garter snake, and steelhead). The potential direct physical changes to the environment associated with the proposed project are limited to changes in surface water flows and groundwater pumping between the existing authorized POD and the proposed new POD. The proposed project would have less-than-significant direct effects on special-status species. As described above, cumulative development, which includes historic water use under the existing license, does not constitute a cumulatively considerable adverse effect for the purposes of this analysis. Overall, development under the cumulative scenario would improve the quantity and quality of suitable habitat for special-status species, improve the amount of surface water flows present in the mainstem of the Carmel River, remove existing impediments to special-status species, and restore portions of the watershed. As a result, the proposed project, when considered with past, present, and reasonably foreseeable future projects, would have net beneficial effects on special-status species. Therefore, the proposed project would not have any cumulatively considerable adverse effects on special-status species.

Riparian Habitat

The proposed project would potentially affect riparian habitat due to the changes in authorized PODs and associated increased pumping from three existing Cal-Am wells. As described in **Section 4.1, Biological Resources**, groundwater pumping can adversely affect riparian habitat by increasing vegetative moisture stress. In the lower reaches of the Carmel River, where groundwater pumping is primarily concentrated, irrigation is the primary means of maintaining plant diversity. MPWMD implements supplemental irrigation

as part of MPWMD's Mitigation Program to mitigate riparian impacts due to municipal pumping in the lower reaches of the Carmel River. Plant stress in the late summer and fall is evident in the non-irrigated portions of the riparian zone (MPWMD, 2012).

The potential effects associated with the proposed project would, however, be insignificant in relation to the total present and future extractions of existing private and public wells within the project study area. The incremental increase in pumping at the proposed PODs would be indiscernible in comparison to existing baseline conditions, which include groundwater pumping under existing License 13868 (West Yost, 2013). In addition to the relatively negligible impacts to riparian vegetation, the proposed project would reduce the extent of groundwater pumping as compared to existing pumping under License 13868, thereby reducing potential effects to riparian vegetation downstream of the existing PODs. The proposed project would also have potential beneficial effects on habitat downstream of the existing authorized PODs by dedicating a portion of the existing license to instream beneficial uses under proposed License 13868B.

As described above, the extent of groundwater pumping from the Carmel River subterranean stream and associated alluvial aquifer is anticipated to significantly decrease under cumulative project conditions. The reduction of groundwater pumping would minimize the extent of potential adverse impacts to riparian habitat by reducing potential vegetation plant stress. In addition, cumulative development would also result in the restoration of riparian habitat within the Carmel River watershed, including portions of the existing POU identified in License 13868. While the proposed project could result in localized impacts to riparian vegetation due to vegetation plant stress due to groundwater pumping, the proposed project would not result in cumulatively considerable adverse effects for the purposes of CEQA. Overall, potential impacts to riparian habitat due to vegetation plant stress would be reduced under cumulative conditions due to the reduction of groundwater pumping and associated improved streamflow in the mainstem of the Carmel River. The reduction in groundwater pumping, coupled with other planned water-related projects, would have a net positive effect on riparian habitat.

Wetland Habitat

As with riparian habitat, the proposed project could result in localized effects due to changes in the authorized PODs under proposed License 13868A. The potential effects due to the proposed project would be limited. More specifically, the amount of water proposed for extraction for the proposed project is insignificant in relation to the combined extraction of the existing private and public wells within the project study area, including existing pumping under License 13868. In addition, the extent of potential effects would be indiscernible in comparison to existing baseline conditions. The proposed project, when combined with past, present, and reasonably foreseeable future projects would not cause cumulatively considerable adverse environmental effects. The other projects described above, which include pumping and use under the existing license, will improve the hydrologic and ecologic functions of the Carmel River. As a result, potential cumulative effects will be beneficial as compared to existing conditions. There would be no cumulative adverse effects associated with the proposed project.

Hydrology and Water Quality

The proposed project, when considered with past, present and reasonably foreseeable future projects, would not result in cumulatively considerable adverse environmental effects to hydrology or water quality. As detailed above, other projects within the Carmel River watershed are anticipated to reduce the extent of

groundwater pumping from the Carmel River subterranean stream and associated alluvial aquifer and thereby improve the hydrologic function of the Carmel River. The other projects described above are anticipated to improve hydrologic connectivity between the lower and upper portions of the river, the amount of downstream surface flows due to reduced groundwater pumping in the lower reaches of the Carmel River, sediment transport, and other natural river functions. The cumulative project scenario would substantially improve existing hydrology and water quality within the Carmel River, as compared to current conditions.

As described in **Section 4.2, Hydrology and Water Quality**, the proposed project would not result in any significant adverse environmental effects related to groundwater or surface water resources. The project would potentially effect existing streamflows, albeit insignificantly, by reducing the extent of streamflow between the proposed POD and existing POD. Based on the analysis contained in this EIR, these effects are less-than-significant because the reduction in streamflow would not substantially affect existing river or lagoon function (Balance Hydrologics, Inc., 2014a). In addition, Balance Hydrologics, Inc. also noted that peak municipal demand would occur during the summer when streamflow is at its lowest and the project affected reach is typically dry. Under the cumulative project scenario, it is anticipated that streamflows may be higher during typical low flow periods due to the reductions in groundwater pumping and the related effects to surface water resources. Furthermore, the incremental effects of the proposed project would not be cumulatively considerable because the types of events necessary to maintain geomorphic character and river function are unlikely to occur during the dry season (even when flows may be present) (*ibid.*). While streamflow could be present in the mainstem of the Carmel River, the extent of the project's cumulative effects would be limited because the amount by which groundwater pumping would be reduced under the cumulative scenario is substantially greater than the relatively small amount of pumping under the proposed project.

Additionally, water use under the existing License is already part of the cumulative condition. As a result, use under License 13868 is part of an existing approved project for the purposes of CEQA. As described in this EIR and supporting technical analyses, the proposed project would reduce the extent of groundwater pumping as compared to existing levels under License 13868. The proposed project would also have a net beneficial impact on the Carmel River lagoon by dedicating 46.2 af/yr to instream beneficial use under proposed License 13868B. The proposed project would also reduce the amount of groundwater pumping during low flow periods as compared to agricultural use under the existing license. As shown in **Table 4.2-18**, estimated peak demand under existing conditions (*i.e.*, agricultural use) is 0.18 cfs, whereas estimated peak demand under proposed License 13868A is estimated to be 0.16 cfs during the same period. As a result, the proposed project would reduce peak pumping during low flow periods within the project affected reach, as compared to existing conditions (and cumulative conditions without the proposed project). Also, the proposed project could result in a net beneficial effect to the lagoon by moving the pumping cone of depression a few miles upstream.

The proposed project would not result in any cumulatively considerable adverse environmental effects. The proposed project would reduce the extent of pumping, compared to existing pumping under License 13868; the proposed project would not result in a net increase of groundwater withdrawals beyond historical levels. The proposed project, when combined with past, present, and reasonably foreseeable future projects, would result in reduced groundwater pumping from the Carmel River subterranean stream and associated alluvial aquifer. Due to the net beneficial nature of cumulative effects in terms of hydrology and water quality, the proposed project would not have any cumulatively considerable environmental effects.

5.3 EFFECTS NOT FOUND TO BE SIGNIFICANT

CEQA Guidelines Sec. 15128 states that an EIR shall contain a statement to briefly indicate the reasons that various possible significant effects of a project were determined not to be significant and were therefore not discussed in detail. The CEQA Guidelines indicate that such information may be included as part of the EIR in an attached copy of an Initial Study, although such a statement is not required to be attached in a copy of an Initial Study. Consistent with the requirements of CEQA Guidelines Sec. 15128, this section provides a brief explanation why certain effects were determined not to be significant.

Based upon Appendix G of the CEQA Guidelines, the State Water Board determined that the proposed project would not result in any significant adverse environmental effects to the topical CEQA resources areas identified below. Because the proposed project would not involve any physical construction or expansions of existing water distribution system improvements, and because the only direct physical effects to the environment would occur in connection with the proposed changes in authorized POD, the extent of potential direct effects associated with the project are limited. As described previously, secondary (or indirect) effects associated with growth-inducement are evaluated separately (see above).

The following briefly evaluates the proposed project's potential direct effects and explains why these effects would not be significant.

5.3.1 AESTHETICS

The proposed project would not directly result in any potentially significant visual or aesthetic related effects. The proposed project would not result in the construction of any physical improvements. Water pumped under proposed License 13868A would use existing Cal-Am wells and the associated conveyance system. Proposed License 13868B would be dedicated to instream uses. As a result, the proposed project would not substantially affect any scenic vista, damage any scenic resource within a state scenic highway, degrade the existing visual quality of the site, or create any new source of substantial light or glare. There would be no impacts from the proposed project.

5.3.2 AGRICULTURAL RESOURCES

The project would not directly affect existing agricultural resources such that Prime Farmland, Unique Farmland, or Farmland of Statewide Importance would be converted to a non-agricultural use. While the proposed project would reduce the amount of water available for the irrigation of farmland, the reduction in the amount of available water for irrigation would not cause the permanent loss of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. Moreover, no physical improvements or ground-disturbing activities would occur in connection with the proposed project; the proposed project would use existing Cal-Am wells and associated conveyance facilities. No new infrastructure would be necessary under proposed License 13868A and proposed License 13868B would be dedicated for instream uses. As a result, the proposed project would not affect Prime, Unique, or Farmland of Statewide Importance as defined under the Farmland Mapping and Monitoring Program (FMMP). In addition, the project would not conflict with existing agricultural zoning and would not cause conflicts with Williamson Act properties. No forest land would be affected by the proposed project.

5.3.3 AIR QUALITY

The proposed project would not directly affect existing air quality. Proposed License 13868A would use existing Cal-Am wells and associated conveyance infrastructure; no new or expanded infrastructure would be necessary under proposed License 13868A. Proposed License 13868B would not require the construction of any improvements. This license would be dedicated to instream uses. As a result, the proposed project would not result in any temporary air quality emissions associated with construction-related activities or operational effects associated with the operation of new wells or other water distribution facilities (e.g., booster stations, water treatment facilities, etc.). The proposed project would not result in any direct air quality emissions that would exceed applicable MBUAPCD thresholds of significance contained in the 2008 MBUAPCD CEQA Guidelines (personal communication, Amy Clymo, MBUAPCD, Supervising Air Quality Planner, October 15, 2013). Therefore, the proposed project would not directly result in any air quality emissions that could conflict with or obstruct the implementation of the 2008 MBUAPCD Air Quality Management Plan, violate any air quality standards or contribute substantially to an existing or projected air quality violation, result in a cumulatively considerable net increase of any criteria pollutant, expose sensitive receptors to substantial pollutant concentrations, or create objectionable odors affecting a substantial number of people. The proposed project would not result in any significant air quality effects.

5.3.4 CULTURAL RESOURCES

The project would not directly result in any physical development or construction of infrastructure improvements that would directly effect the environment. Since the proposed project would not entail the construction of physical improvements or otherwise result in ground-disturbing activities, the proposed project would not directly affect cultural resources. The proposed project would not cause any substantial adverse change in the significance of a historical resource or archaeological resource, adversely affect a unique paleontological resource or geologic feature, or disturb human remains. The proposed project would not directly effect any cultural resources.

5.3.5 GEOLOGY AND SOILS

The project would not directly result in any physical development or construction of infrastructure improvements that would directly affect geology or soils. As a result, the proposed project would not expose people or structures to potential seismically induced hazards (i.e., fault ruptures, ground failure, liquefactions, landslides, etc.), result in substantial soil erosion or the loss of topsoil, be located on a geologic unit that is unstable, or be located on expansive soils. The proposed project would not result in any potential adverse effects due to soils being incapable of supporting septic disposal since the proposed project would not involved the construction of any septic systems. The proposed project would not affect geology or soil resources.

5.3.6 HAZARDS AND HAZARDOUS MATERIALS

The proposed project would not result in any direct effects due to hazards or hazardous materials. The proposed project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials, would not cause the accidental release of a hazardous material, emit hazardous emissions within one-quarter mile of an existing or proposed school, be located on a hazardous material site, create a safety hazard for people residing or working within the vicinity of a public or

private airport, impair the implementation of an emergency response plan, or expose people or structures to a significant hazards due to wildland fires. The proposed project would rely on existing Cal-Am facilities and would not require the construction of any new or expanded facilities. The proposed project consists of a change petition to an existing water right license and would not entail the use of a hazardous material. Therefore, there would be no potential adverse effects due to hazards and hazardous materials.

5.3.7 HYDROLOGY AND WATER QUALITY

The proposed project would result in localized hydrology and water quality effects, as described in **Section 4.2, Hydrology and Water Quality**. Potential localized effects associated with the proposed project are limited to potential impacts due to increased groundwater pumping, changes in the amount and duration of surface water flows between the proposed three additional POD and the existing POD, and potential effects to river and lagoon function. No additional hydrology and water quality related impacts would occur in connection with the proposed project because no physical improvements would occur. The proposed project would rely on existing Cal-Am facilities to divert water under proposed License 13868A. As a result, the proposed project would not substantially alter the existing drainage pattern of the site or area in a manner that would result in substantial increases in erosion or siltation on- or off-site, cause increases in the rate and amount of surface runoff in a manner which would result in flooding on- or off-site, create or contribute runoff which could exceed the capacity of existing (or planned) stormwater drainage systems, place housing in a 100-year flood hazard area, place structures within a 100-year flood hazard area, or expose people or structures to a significant risk of loss due to flooding or failure of a levee or a dam.

5.3.8 LAND USE AND PLANNING

The proposed project would not result in any land use or planning effects. The project would not physically divide an established community, conflict with any adopted plans or policies intended to avoid or minimize an adverse environmental effect, or result in any inconsistency with an adopted Habitat Conservation Plan or Natural Community Conservation Plan. There would be no land use and planning effects associated with the proposed project.

5.3.9 MINERAL RESOURCES

The proposed project would not result in any loss of availability of known mineral resources. The proposed project would not involve the construction of any infrastructure improvements or other physical improvements; the proposed project would rely entirely on existing Cal-Am facilities. As a result, the proposed project would not cause any direct effects to mineral resources.

5.3.10 NOISE

The proposed project would not directly result in any physical development or construction of infrastructure improvements that would result in any noise-related impacts. Because the proposed project would not entail the construction of physical improvements or otherwise result in any new sources of operational noise (limited noise would occur in connection with the operation of existing wells), the proposed project would not cause any significant noise effects. The proposed project would not result in the exposure of persons to or generation of noise levels in excess of local standards, create excessive groundborne vibration, create a substantial permanent increase in ambient noise levels, create a substantial temporary increase in noise levels,

or create excess noise within two miles of a public or private airport. The proposed project consists of a change petition to an existing water right license and would not involve the generation of any new sources of noise. Therefore, there would be no adverse environmental effects in connection with the implementation of the proposed project.

5.3.11 POPULATION AND HOUSING

The project would enhance the reliability of the water supply within the Carmel River watershed and City of Carmel-by-the-Sea. The proposed project, specifically proposed License 13868A, would provide a supplemental water supply that would accommodate growth and development within Cal-Am's existing service area within the Carmel River watershed and City of Carmel-by-the-Sea. As a result, the proposed project, by means of providing a supplemental source of water supply, could potentially induce population growth. An evaluation of the proposed project's potential to induce growth, as well as the corresponding environmental effects associated with growth, is included above. The proposed project would not, however, displace a substantial number of existing housing or cause the displacement of a substantial number of persons.

5.3.12 PUBLIC SERVICES

The proposed project would not affect public services. The proposed project consists of a change petition to an existing water right license and would not cause an increase demand for police or fire protection services, cause an increased demand for schools or parks, or otherwise increase demand for public services. The proposed project would potentially increase demand for public services indirectly; these effects are evaluated within the context of the growth-inducement analysis identified above. There would be no direct impact to public services in connection with the implementation of the proposed project.

5.3.13 RECREATION

The project would not affect recreation. The proposed project consists of a change petition to an existing water right license and would not cause an increase demand for recreational facilities. The proposed project would potentially increase demand indirectly; these effects are evaluated within the context of the project's potential growth inducing effects. There would be no direct effects in connection with the implementation of the proposed project.

5.3.14 TRANSPORTATION AND TRAFFIC

The project would not result in any significant transportation/traffic related impacts. The project does not involve the construction of any new facilities and no new uses would be associated with the implementation of the proposed project. The proposed project consists of a change petition to an existing water right license and would not directly cause any traffic-related effects. The project would utilize existing Cal-Am facilities and no new facilities would be constructed as part of the proposed project. As a result, the proposed project would not conflict with applicable County of Monterey or City of Carmel-by-the-Sea traffic standards, conflict with applicable congestion management requirements, cause a change in air traffic patterns, substantially increase potential hazards due to a design feature (e.g., dangerous intersections), result in inadequate emergency access, result in an unacceptable level of service (LOS), or otherwise result in a traffic-related impact. The proposed project would result in indirect traffic-related impacts; these effects are

evaluated within the context of the project's potential growth inducing effects. There would be no direct traffic-related effects in connection with the implementation of the proposed project.

5.3.15 UTILITY AND SERVICE SYSTEMS

The project would not directly affect existing utilities or service systems. The proposed project would utilize existing Cal-Am wells and associated conveyance facilities under proposed License 13868A. The proposed project consists of a change petition to an existing water right license and would not generate an increased demand for existing utilities. The proposed project would not generate any wastewater, require the construction of new or expanded wastewater treatment facilities, require the construction of new or expanded stormwater facilities, result in insufficient water supplies to serve the project, result in the determination by the wastewater treatment provider that there is inadequate capacity to accommodate the project, generate solid waste in excess of existing capacity, or result in conflicts with applicable federal, state, and local regulations pertaining to solid waste disposal. The project would not generate an increased demand for existing utilities. The proposed project could, however, indirectly affect existing utilities; these potential effects are evaluated separately above.

5.4 SIGNIFICANT UNAVOIDABLE IMPACTS

The proposed project would not result in any significant and unavoidable impacts. All potential project-related impacts would be less-than-significant.

5.5 IRREVERSIBLE ENVIRONMENTAL CHANGES

CEQA Guidelines Sec. 15126(c) requires that an EIR include a discussion of significant, irreversible environmental changes that would result from the implementation of a project. CEQA Guidelines Sec. 15126.2(c) identifies irreversible environmental changes as those involving a large commitment of nonrenewable resources or irreversible damage resulting from environmental accidents. Public Resources Code Sec. 21100.1 provides further guidance identifying when the evaluation of potential irreversible environmental changes must be included in an EIR. An EIR must evaluate the significant irreversible impacts associated with the following types of projects:

- The adoption, amendment, or enactment of a plan, policy, or ordinance of a public agency.
- The adoption by local agency formation commission of a resolution making a determination.
- A project which will be subject to the requirement for preparing an environmental impact statement pursuant to the requirements of the National Environmental Policy Act of 1969.

The proposed project includes the adoption of a new rule by the MPWMD to allow the MPWMD to issue water permits to future subscribers under proposed License 13868A. As a result, this EIR includes an evaluation of potential irreversible environmental effects (Public Resources Code Sec. 21100.1(a)).

The proposed project would split existing License 13868 into two new licenses and result in changes to the authorized POD, POU, and purposes of use of the new licenses. License 13868 would be revoked and Licenses 13868A and 13868B would be issued. License 13868A would maintain the existing PODs, POU,

and purpose of use and include new authorized PODs, POU, and purposes of use. The project does not include the construction of any new facilities and would not commit any non-renewable natural resources such as oil, gas, and iron ore to such activities. The proposed project could result in a limited increase in localized energy use due to increased pumping at the proposed PODs, but the level of potential energy use would be less than historically associated with the operation of the existing PODs in connection with agricultural pumping. The project would not involve any significant irreversible effects.

Chapter 6 ALTERNATIVES

6.1 INTRODUCTION

CEQA Guidelines Sec. 15126.6 requires the consideration of a range of reasonable alternatives to the proposed project that could feasibly attain most of the basic project objectives and would avoid or substantially lessen the significant effects of the project. The discussion of alternatives should focus on alternatives capable of eliminating the significant adverse impacts of the project or reducing them to a less-than-significant level, even if the alternative would not fully attain most of the basic project objectives or would be more costly (CEQA Guidelines Sec. 15126.6(b)). The purpose of the alternative analysis is to describe a range of reasonable alternative projects that could feasibly attain most of the objectives of the proposed project and to evaluate the comparative merits of the alternatives (CEQA Guidelines Sec. 15126.6(a)).

An EIR must consider a reasonable range of potentially feasible alternatives that will foster informed decision-making. The range of potential alternatives is governed by the “rule of reason,” which requires the evaluation of alternatives “necessary to permit a reasoned choice” (CEQA Guidelines Sec. 15126.6(f)). The range of alternatives should include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects (CEQA Guidelines Sec. 15126.6(c)). An EIR need not evaluate every conceivable alternative to the project and is not required to consider alternatives that are infeasible. Factors that may influence the feasibility of an alternative include “site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries, and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site” (CEQA Guidelines Sec. 15126.6(f)(1)). The evaluation of project alternatives shall include sufficient information about each alternative to allow a meaningful analysis and comparison with the proposed project (CEQA Guidelines Sec. 15126.6(d)). An EIR must include, at a minimum, the evaluation of a “no project” alternative (CEQA Guidelines Sec. 15126.6(e)). An EIR need not consider alternatives that have effects that cannot be reasonably ascertained and/or are remote and speculative.

6.2 SUMMARY OF PROJECT OBJECTIVES AND ENVIRONMENTAL IMPACTS

6.2.1 Proposed Project

The proposed project would result in changes to License 13868 to include changes to PODs, POU, and purposes of use. The proposed project, if approved, would split existing License 13868 into two new licenses: License 13868A and 13868B.¹ License 13868A would include new authorized POD, POU, and purposes of use, so that water diverted under License 13868A could be used for municipal purposes within the parts of Cal-Am’s service area that are within the Carmel River watershed or the City of Carmel-by-the-Sea. License 13868B would be dedicated to instream uses. The project would not increase the maximum authorized annual

¹ The new licenses would supersede the existing license upon issuance by the State Water Board.

diversion rate or the maximum authorized instantaneous diversion rate beyond the existing authorized rates in License 13868.²

In addition to the changes to the existing license, the project also would involve the adoption of a new rule by the MPWMD. The new rule, which would be similar to District Rule 23.5, would allow MPWMD to issue water use permits to owners of existing lots of record within the parts of Cal-Am's service area that are within the Carmel River watershed or the City of Carmel-by-the-Sea, and that have entered into subscription agreements with the licensee. For more information concerning the project, including specifics for each of the proposed new licenses, please refer to **Chapter 3, Project Description**.

6.2.2 Objectives

The primary objectives of the proposed project are to obtain the necessary agency approvals so that the petitioner:

- 1) may divert 85.6 af/yr of the 131.8 af/yr authorized by License 13868 to provide water services through Cal-Am for new connections on existing lots of record, or for additional water uses on existing lots of record, with all such lots being located within the parts of Cal-Am's existing service area that are within the Carmel River watershed or the City of Carmel-by-the-Sea, and with all such connections and uses being consistent with all applicable general plan and zoning provisions;³ and
- 2) may dedicate the remaining 46.2 af/yr authorized by License 13868 to instream beneficial uses in the Carmel River and associated aquifer.

The secondary objective of the proposed project is to allow the petitioner to give Cal-Am, on an interim basis until such time that the entire 85.6 af/yr is being used by licensee's subscribers, the ability to use the unused portion of this right to supply water to Cal-Am's existing customers in the Carmel River watershed or the City of Carmel-by-the-Sea to assist Cal-Am in its compliance with SWRCB Order WR 95-10.

6.2.3 Significant Impacts

The proposed project would not result in any significant and unavoidable impacts. All potential project-related impacts would be less-than-significant.

6.3 ANALYSIS OF EXCLUDED ALTERNATIVES

6.3.1 Alternatives Not Analyzed in Detail

The following discussion addresses alternatives that were considered but not selected for detailed analysis. These alternatives were considered preliminarily, but eventually excluded from full comparative analysis in

² Upon issuance of the new licenses, the applicant would assign License 13868A to a limited liability company (LLC) for the purposes of holding and administering the license. This company would enter into subscription agreements with owners of parcels in the part of Cal-Am's service area that is within the Carmel River watershed or the City of Carmel-by-the-Sea for water provided under License 13868A.

³ The 85.6 af/yr amount equals the current average annual consumptive use under License 13868.

this EIR because they: 1) are not feasible, 2) would not meet the objectives of the proposed project, 3) would not reduce the environmental effects of the proposed project, or 4) would result in additional environmental effects beyond those associated with the proposed project.

Additional Points of Diversion Alternative

Consistent with the proposed project, this alternative would consist of a change petition to split existing water-right License 13868 into two new licenses: 13868A and 13868B. This alternative would include a change in authorized PODs, POU, and purpose of use consistent with the proposed project. This alternative would, however, include additional authorized POD. This alternative would consist of seven (7) new authorized PODs along the Carmel River at existing Cal-Am operated wells, located upstream from the existing authorized PODs. The proposed PODs would be the Rancho Cañada #2, Cypress No. 2, Pearse, Schulte No. 2, Begonia No. 2, Berwick No. 8, and Berwick No. 9 wells. This alternative was originally proposed by Eastwood as the proposed project. Based on discussion with NMFS representatives, the petitioners subsequently revised their petition to limit the POD to the three existing Cal-Am wells located along the lower Carmel River, Cañada #2, Cypress and Pearse.

All other aspects of this alternative would be the same as the proposed project. This alternative could result in additional biological and hydrology-related environmental effects beyond those associated with the proposed project due to increased pumping upstream of the proposed POD. This alternative would increase pumping further upstream from the three proposed POD identified as part of the proposed project. Because this alternative would result in additional environmental effects further upstream, and is inconsistent with NMFS's request to concentrate groundwater pumping in the lower reaches of the Carmel River, this alternative was excluded from further consideration.

Schulte Well Alternative

This alternative would consist of using the existing Schulte #2 well (RM 6.5) as the authorized POD for License 13868A. Schulte #2 is an existing Cal-Am production well; no improvements to the well would occur in connection with this alternative. This well is located further upstream from the three additional POD identified for the proposed project, and therefore this alternative could result in additional hydrological effects further upstream. This alternative would reduce the duration of surface flows in the mainstem of the Carmel River, which would result in potential biological effects similar to the proposed project (Snider, 2014). In addition, this alternative is also inconsistent with prior discussions with NMFS related to the concentration of groundwater pumping further downstream. As a result, this alternative was excluded from further analysis.

6.4 ANALYSIS OF ALTERNATIVES SELECTED FOR FURTHER REVIEW

The following section discusses the alternatives evaluated in this EIR and the comparative environmental effects of each. The alternatives considered in this analysis are as follows:

- No Project
- Individual Well Alternative
- Existing POD Alternative
- Alternative Place of Use

The alternatives evaluated in this EIR, beyond those mandated by CEQA, were developed to avoid or substantially reduce the potential environmental effects associated with the proposed project. As described above, the proposed project would not result in any significant adverse impacts. As a result, these alternatives were developed because they would lessen the extent of some of the potential direct effects associated with the proposed project. **Table 6-1** includes a comparison of the impacts for each alternative. For those areas where the impacts are not reduced or changed from those of the proposed project, the analysis is abbreviated.

Table 6-1
Comparison of Impacts – Project Alternatives¹

Impact	No Project Alternative	Individual Well Alternative*	Existing POD Alternative	Alternative Place of Use
Aesthetics	<	>	>	=
Agricultural/Forest Resources	=	=	=	=
Air Quality	<	>	>	=
Biological Resources	<	</>	>	=
Cultural Resources	<	>	>	=
Geotechnical	<	>	>	=
Hazards & Hazardous Materials	<	>	>	=
Hydrology & Water Quality	>	</>	<	=
Land Use & Planning	<	=	=	=
Noise	<	>	>	=
Public Services & Utilities	<	>	>	=
Traffic	<	>	>	=

Note:

1. The No Project Alternative would avoid all of the proposed project's potential secondary effects due to growth inducement. This table indicates that this alternative would result in fewer impacts than the proposed project in terms of the project's secondary effects. All other alternatives evaluated in this EIR would result in similar secondary effects; however, direct effects would vary according to the nature of proposed infrastructure improvements proposed as part of each alternative. As a result, the comparison of impacts for each of the other alternatives is specific to the direct effects of the alternative.

* The Individual Well Alternative would result in the construction of a new well (or rehabilitation of an existing well) and would therefore result in additional, albeit temporary, construction related impacts that could potentially affect biological resources and hydrology. As a result, potential impacts would be greater in regards to specific resource considerations. However, this alternative would also reduce the extent of direct impacts associated with the proposed project by locating the proposed POD further downstream from the proposed PODs, which would minimize the extent of direct impacts associated with the proposed project, although it is important to note that these differences would be nominal and would not change the overall significance determination (i.e., less-than-significant) contained in this EIR.

> Impact greater than proposed project

= Impact comparable to proposed project

< Impact less than proposed project

6.4.1 No Project Alternative

Description

CEQA requires the discussion of the No Project Alternative “to allow decision makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project” (CEQA Guidelines Sec. 15126.6(e)). The discussion of the “no project” alternative typically proceeds along one of two lines: 1) when the project includes the revision of an existing land use or regulatory plan, or 2) when the

project includes the development of identifiable property. In the instance where the project includes a revision to an existing land use or regulatory plan, the “no project” alternative would consist of the continuation of the existing plan (CEQA Guidelines Sec. 15126.6(e)(3)(a)). When the project includes the development of property, the “no project alternative” is the circumstance under which the project does not proceed. In this instance, the property would remain in its existing state (CEQA Guidelines Sec. 15126.6(e)(3)(b)).

According to the CEQA Guidelines Sec. 15126.6(e)(2), the No Project Alternative shall discuss what would reasonably be expected to occur in the foreseeable future if the project were not approved (CEQA Guidelines Sec. 15126.6(e)(2) and 15126.6(e)(3)(C)). For the purposes of this EIR, the No Project Alternative would result in the continued diversion of Carmel River subterranean flow under the existing license, License 13868, at the existing authorized PODs for irrigation purposes. No changes in PODs, POU, or purposes of use would occur under this alternative. Water would continue to be used under License 13868 to irrigate agricultural land. No municipal use would occur.

Impact Analysis

This alternative would result in the continued pumping of Carmel River subterranean flow from the existing authorized PODs identified in License 13868 for the purposes of irrigating agricultural land. This alternative could result in the pumping of a maximum of 131.8 af/yr of Carmel River subterranean flow as allowed under the existing license. No water would be dedicated for instream use and no pumping upstream of the authorized PODs would occur under this alternative. The No Project Alternative would avoid potential localized biological and hydrologic effects associated with the proposed project that would occur due to the changes in authorized PODs. This alternative would result in pumping (up to 131.8 af/yr) consistent with the current agricultural pumping that occurs under License 13868. This would represent an increase in groundwater pumping as compared to the proposed project and could result in reduced surface flows downstream of the existing authorized PODs consistent with existing conditions. While impacts would be comparable to the existing agricultural pumping regime, this alternative would result in potentially greater impacts to the Carmel River lagoon and other areas downstream of the existing authorized PODs as compared to the proposed project (because the cone of depression from existing pumping is closer to the lagoon and other downstream areas and this alternative would result in greater groundwater pumping). This alternative would, however, avoid potential secondary effects associated with municipal use, including potential indirect effects associated with growth-inducement. While this alternative would avoid the specific localized biological and hydrologic effects due to the proposed changes in authorized PODs associated with the proposed project, this alternative would result in comparable or greater impacts to biological resources downstream of the current PODs.

Summary

This alternative would avoid potential direct effects to biological resources and hydrology and water quality associated with the proposed project. In addition, this alternative would avoid potential indirect impacts associated with the proposed project’s growth accommodating nature. Under this alternative, water would continue to be pumped from the existing authorized POD under License 13868 and used for irrigation purposes. Up to 131.8 af/yr would be withdrawn from the Carmel River aquifer under this alternative. The No Project Alternative would fail to meet the project objectives to divert 85.6 af/yr to provide water services through Cal-Am for new connections on existing lots of record or for additional water uses on existing lots of

record. In addition, this alternative would not dedicate approximately 46.2 af/yr of the existing water right to instream beneficial uses in the Carmel River and associated aquifer.

6.4.2 Individual Well Alternative

Description

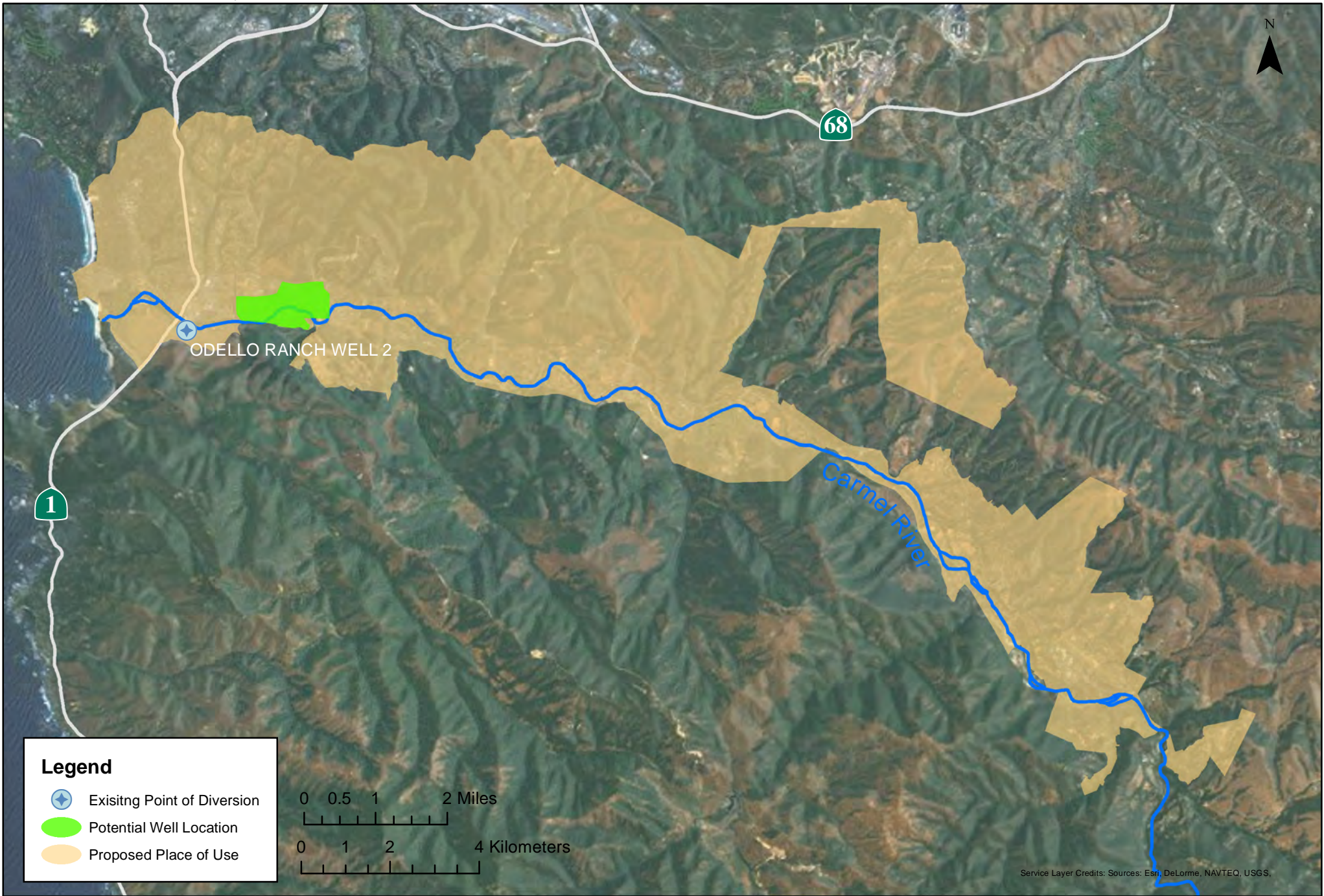
This alternative would result in changes to License 13868 to include changes to the authorized POU, and purposes of use consistent with the proposed project. This alternative would split existing License 13868 into two new licenses: License 13868A and 13868B. Unlike the proposed project, this alternative would involve the construction of an individual well (or rehabilitation of an existing well) as the new authorized PODs. This well would be located in the general vicinity of the existing Cañada #2 well. It is anticipated that this well could be located in the general areas shown in **Figure 6-1**, although the final location of the well would depend on site-specific factors (e.g., site suitability, proximity to existing wells, etc.). This would have an estimated production capacity of approximately 200 gpm (**Figure 6-1**). This well would be the new POD for proposed License 13868A. All diversions for municipal use would occur from this POD; no other additional PODs are proposed as part of this alternative (except as a back-up POD during times when the new well may need to be serviced). This alternative would require the construction of an individual well (or rehabilitation of an existing well) located approximately one-mile upstream from the existing PODs. This location would represent the furthest downstream POD for municipal diversion.

This alternative would result in temporary ground-disturbance in connection with the construction of the individual well and associated infrastructure improvements necessary to connect to the existing Cal-Am conveyance system. Because this alternative includes municipal use consistent with the proposed project, this alternative would result in comparable indirect (secondary) effects associated with the growth-accommodating aspect of the proposed project. All other aspects of this alternative would be the same as the proposed project. Proposed License 13868A would be used for municipal purposes with a maximum amount of diversion of 85.6 af/yr; proposed License 13868B would consist of approximately 46.2 af/yr dedicated to instream beneficial use. The following consists of an evaluation of potential direct effects associated with this alternative.




Impacts

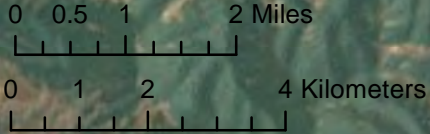
Aesthetics

This alternative would result in temporary aesthetic-related effects due to the construction of a new well and associated infrastructure. Temporary effects associated with construction-related activities are not considered a significant impact under CEQA. As a result, all temporary ground-disturbing activities would represent a less-than-significant temporary effect for the purposes of this analysis. The installation of new aboveground infrastructure (i.e., well) would, however, permanently alter the physical environment by introducing new vertical elements that could be visible from adjacent public viewing areas. These features could adversely affect the existing visual character and quality of the area if the proposed well would be visible from a common public viewing location (as defined in Title 21 of the Monterey County Code). The extent of visual effects associated with a new well would be relatively minor; no improvements would be visible from a common public viewing location or visually sensitive area. As a result, the proposed project would not have a substantial adverse effect on a scenic vista, damage a scenic resource within view of a State designated scenic





Legend

-  Existing Point of Diversion
-  Potential Well Location
-  Proposed Place of Use



Service Layer Credits: Sources: Esri, DeLorme, NAVTEQ, USGS,

	<p>Title: Individual Well Alternative*</p> <p><small>*Individual well would be located within the boundaries of the area depicted on this map.</small></p>	<p>Date: <u>10/24/2014</u></p> <p>Scale: <u>1 inch = 2 miles</u></p> <p>Project: <u>2013-24</u></p>	 <p>Denise Duffy and Associates, Inc. Environmental Consultants Resource Planners 947 Cass Street, Suite 5 Monterey, CA 93940 (831) 373-4341</p>	<p>Monterey Truckee San Jose</p> <p>Figure 6-1</p>
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highway, or otherwise degrade the existing visual character of the area. In addition, this alternative would not create a new source of substantial light or glare. Potential visual effects associated with the construction and operation of this alternative would be less-than-significant.

Air Quality

This alternative would result in temporary air quality effects due to the construction of the new well and associated infrastructure. Temporary air quality impacts would occur in connection with the operation of construction vehicles and ground-disturbing activities. For instance, potential temporary air quality effects could include diesel emissions and PM₁₀ emissions associated with ground-disturbing activities and the operation of construction vehicles. Temporary construction effects would not, however, exceed applicable MBUAPCD thresholds of significance. Ground-disturbing activities would be limited. Temporary air quality effects would be less-than-significant.

Biological Resources

The construction and operation of an individual well and associated conveyance infrastructure would result in potential biological effects. This alternative would result in ground-disturbing activities, which could potentially affect special-status species known to occur or that have the potential to occur within proximity of the proposed well location. While the extent of potential effects would be contingent upon project-specific detail and site-specific surveys, a variety of special-status species are known to occur within the vicinity of the proposed project and this alternative (please refer to **Section 4.1, Biological Resources**, for more information). As a result, this alternative could potentially affect existing biological resources and thereby warrant site-specific mitigation to ensure that temporary construction impacts would be avoided. Although construction activities would result in additional environmental effects beyond those associated with the proposed project, potential biological effects would be addressed through the implementation of site-specific mitigation measures. As a result, potential construction-related impacts would be less-than-significant.

In addition to the direct physical effects associated with construction of an individual well and associated infrastructure, this alternative would also result in additional biological effects associated with the operation of the proposed well. The type of impacts would be similar to those of the proposed project. Specifically, this alternative could result in localized impacts to biological resources including riparian vegetation and special status-species due to pumping at the proposed new POD. Pumping under this alternative could reduce surface flows in the mainstem of the Carmel River, which could affect fisheries and other special-status species. This alternative would slightly increase the duration of surface flows as compared to the proposed project by moving the proposed POD further downstream from the three additional POD proposed as part of the proposed project. Nevertheless, operational effects associated with this alternative would be comparable, albeit slightly less, than the proposed project.

Cultural Resources

This alternative could potentially affect cultural resources due to the construction of a new well and associated infrastructure. Ground-disturbing activities could potentially affect buried or previously unknown archaeological resources, destroy a unique paleontological resource, disturb human remains, and/or otherwise affect existing cultural resources. This alternative would be located in an area of high archaeological sensitivity according to the County of Monterey (Monterey County, 2010). As a result, this alternative could potentially adversely affect cultural resources. The extent of these effects would, however, depend on site-specific and

project-specific circumstances, including the results of a cultural resource survey. Due to the archaeological sensitivity of the area, it is anticipated that some construction-phase mitigation would be required, including standard mitigation measures related to the discovery of previously unknown or buried archaeological resources. While this alternative could potentially affect cultural resources, it is anticipated that any potential construction-related effects could be reduced to a less-than-significant level through careful site design, standard construction-phase mitigation measures, and site-specific mitigation as necessary (e.g., construction monitoring).

Geology/Soils

The new well (and associated infrastructure) for this alternative would be located in a seismically active region. Therefore, proposed infrastructure could be exposed to seismically-induced hazards due to fault rupture, strong seismic ground shaking, and similar effects. Any new infrastructure constructed as part of this alternative would be required to comply with all applicable Monterey County requirements related to grading and construction of new wells. Applicable requirements would include construction of project improvements and associated grading/trenching to be conducted in accordance with the recommendations of a design-level geotechnical analysis. Compliance with existing Monterey County requirements would ensure that potential seismically induced hazards would be less-than-significant. Ground-disturbing activities associated with the construction of infrastructure as part of this alternative could result in temporary effects due localized erosion effects. Any potential construction related effects could be reduced to a less-than-significant level through the implementation of standard construction-phase Best Management Practices (BMP). As a result, this alternative would result in a less-than-significant effect in terms of geology and soils.

Hazards and Hazardous Materials

This alternative could result in potential temporary effects in connection with construction-related activities. The use of construction equipment could entail the transport and use of small amounts of potentially hazardous materials, such as diesel fuel, paint, and other material. The accidental release of potentially hazardous materials during construction could result in potential adverse environmental effects. The extent and nature of potential effects would ultimately depend on the nature of construction activities. It is anticipated that additional measures would be necessary during construction to ensure that all construction-related effects would be less-than-significant. This alternative would require construction phase mitigation consisting of a Hazardous Materials Response Plan to ensure that potential impacts are minimized to a less-than-significant level. This mitigation measure would be in addition to standard construction-phase BMP that would be implemented during construction.

Hydrology/Water Quality

This alternative could result in potential hydrology and water quality effects due to the construction and operation of a new well and associated infrastructure. Temporary construction-related effects could include temporary water quality effects due to erosion and use of construction equipment. Depending on the nature of construction activities and project-specific factors, mitigation measures may be necessary to ensure that temporary impacts are reduced to a less-than-significant level. This alternative would be located in a 100-year flood hazard area and all site improvements would be required to comply with applicable requirements contained in the Monterey County Code related to the construction of improvements in areas located within the 100-year flood hazard area.

The operation of this alternative would result in potential environmental effects that are comparable to those associated with the proposed project, although impacts would be slightly different: 1) all groundwater pumping would occur from a single POD, whereas the proposed project would use three potential POD; 2) the location of the proposed well could potentially affect adjacent wells depending on the final location of the well (i.e., the well could affect drawdown of adjacent wells), although Cal-Am has indicated that the size of the well necessary to serve municipal use under this alternative would be relatively small and would not significantly affect existing Cal-Am operated facilities in the vicinity; and, 3) potential effects to streamflow in the mainstem of the Carmel River would be slightly reduced because this alternative would locate the authorized POD farther downstream than the POD for the proposed project. This alternative would still, however, result in potential impacts similar to the proposed project in regards to surface water and groundwater resources. Please refer to **Section 4.2, Hydrology and Water Quality** for a detailed discussion of potential hydrology and water quality effects.

Land Use

This alternative would not conflict with the Monterey County General Plan, Carmel Area Land Use Plan, and the Carmel Valley Master Plan. In addition, the alternative would not conflict with any applicable habitat conservation plan, nor would it physically divide an established community. Therefore, land use impacts would be negligible and comparable with the proposed project. This alternative would require approval of the well and associated pipelines from the County of Monterey (e.g., well construction permit, grading permit, etc.), and potentially an amendment to Cal-Am's existing Water Distribution System permit from the MPWMD.

Noise

This alternative would result in temporary noise related impacts associated with construction of the proposed well and associated infrastructure. Temporary construction noise effects would be limited in duration and no noise sensitive uses are located in close proximity to the conceptual well location (**Figure 6-1**). As a result, noise related impacts would be less-than-significant. Once construction activities are complete, potential noise associated with the operation of this alternative would be insignificant. Project operation would not generate noise levels exceeding local standards, generate excessive ground-borne vibration or noise levels, or cause an increase in ambient noise levels in the vicinity. Potential impacts would be less-than-significant.

Public Services & Utilities

This alternative could result in temporary increases for police or fire protection services during construction. Potential increased demand for public services during construction would be limited to responding to medical emergencies at the site and responding to issues associated with theft or vandalism. The alternative would not directly increase demand for public services. Construction would be limited in duration and all construction impacts would be temporary in nature. As a result, this alternative would not result in a significant increased demand for public services and utilities such that an adverse environmental effect would occur. Temporary effects during construction would be less-than-significant. In addition, any increased demand due to operation of the proposed well would be negligible in comparison to existing demand for public services. Operational impacts would also be less-than-significant.

Transportation/Traffic

Construction of a new well and associated infrastructure would result in temporary increases in construction traffic. Temporary increases in construction traffic would be insignificant, and would not conflict with an applicable traffic plan or congestion management program, increase design hazards, or result in inadequate emergency access. There could also be a minor increase in traffic during project operation as part of routine maintenance activities. Potential traffic generated during project operation is not anticipated to be significant and would occur on an as-needed basis.

Summary


This alternative would result in additional environmental effects beyond those associated with the proposed project. As described above, the construction of a new well and associated infrastructure would result in physical impacts to the environment, including temporary construction-related effects due to ground-disturbing activities, operation of construction equipment, etc. While this alternative would increase the extent of physical impacts on the environment as compared to the proposed project, this alternative could slightly reduce the potential environmental effects associated with the proposed project by locating the proposed POD downstream of the Canada #2 well. This alternative would, however, result in potential impacts comparable to the proposed project due to changes in surface flows and localized impacts due to potential groundwater drawdown (i.e., impacts to riparian vegetation) because the new well for this alternative would be located upstream from the existing authorized POD. As described in this EIR, the change in authorized POD has the potential to result in localized biological and hydrologic effects. Overall, this alternative would increase the amount of physical impacts on the environment due to the construction of proposed improvements, while slightly reducing the extent of direct impacts to biology and hydrology due to proposed change in POD. Specifically, this alternative would lessen the extent of potential impacts to fisheries by maintaining streamflows in the mainstem of the Carmel River over a longer distance. This alternative would, however, result in temporary biological impacts due to ground-disturbing activities associated with the construction of new infrastructure. While these effects would be temporary in duration, ground-disturbing activities during construction could affect existing biological resources and require project-specific mitigation.

6.4.3 Existing POD Alternative

Description

This alternative would result in changes to License 13868 through changes in POU and purposes of use consistent with the proposed project. This alternative would not, however, include a change in authorized POD. This alternative would use the existing Odello Well #2 as the authorized POD for proposed License 13868A (**Figure 6-2**). The existing well is currently used for agricultural purposes and it is anticipated that the well would need to be upgraded or retrofitted for municipal use. In addition, this alternative would also require the construction of new distribution infrastructure in order to connect Odello Well #2 with Cal-Am's existing distribution system. This would entail approximately 8,500 feet of new pipeline to connect the existing POD to the Cal-Am pipeline located near Rancho Cañada. In addition, this alternative would also require that project infrastructure (i.e., pipeline) cross the riparian corridor, including the Carmel River, to connect with the existing Cal-Am pipeline on the north side of the river. All other aspects of this alternative would be the same as for the proposed project. Proposed License 13868A would be used for municipal



	<p>Title: Existing Point of Diversion Alternative</p>	<p>Date: <u>10/24/2014</u></p> <p>Scale: <u>1 inch = 2 miles</u></p> <p>Project: <u>2013-24</u></p>	 <p>Denise Duffy and Associates, Inc. Environmental Consultants Resource Planners 947 Cass Street, Suite 5 Monterey, CA 93940 (831) 373-4341</p>	<p>Monterey Truckee San Jose</p> <p>Figure 6-2</p>
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purposes with a maximum amount of diversion of 85.6 af/yr; proposed License 13868B would consist of approximately 46.2 af/yr that would be dedicated to instream beneficial use. This alternative would include changes in authorized POU and purpose of use to allow municipal use. Because this alternative includes municipal use, this alternative would result in indirect (secondary) effects comparable to those for the growth-accommodating aspects of the proposed project.

Impacts

Aesthetics

This alternative consists of using the existing Odello #2 well as the authorized POD for proposed License 13868A. Some minor improvements to the well would be necessary to allow municipal use. In addition, this alternative would result in the construction of approximately 8,500 feet of new conveyance infrastructure to connect with Cal-Am's existing system. This alternative could result in temporary ground-disturbing impacts during construction. Temporary construction-related effects are not considered significant. The construction of new infrastructure as part of this alternative would not have a substantial adverse effect on a scenic vista, damage scenic resources, degrade the existing visual character of the site or surrounding area, or create a new source of substantial light or glare. Potential temporary construction-related effects would be less-than-significant.

Air Quality

This alternative would result in temporary air quality effects in connection with construction-related activities. The construction of potential well improvements and associated distribution infrastructure could result in temporary air quality emissions associated with the operation of construction equipment and ground-disturbing activities. Potential temporary air quality effects could include diesel emissions from construction equipment and PM₁₀ emissions associated with ground-disturbing activities. Temporary construction effects would not exceed applicable MBUAPCD thresholds of significance. Ground-disturbing activities would be limited. Temporary air quality effects would be less-than-significant.

Biological Resources

This alternative would avoid all of the potential biological effects associated with the proposed project due to the reduction in streamflow in the mainstem of the Carmel River between the existing PODs and the PODs proposed as part of the project. This alternative would continue to use the existing, albeit upgraded, well as the authorized POD for proposed License 13868A. As a result, this alternative would not result in any potential localized biological effects associated with a change in POD. Groundwater pumping would continue to occur at the existing well consistent with the current agricultural use under proposed License 13868, although the extent of groundwater pumping would be less than currently pumped.

While this alternative would avoid the potential adverse environmental effects associated with the proposed project (i.e., reduced surface streamflow due to proposed changes in POD), this alternative would result in additional biological effects beyond those associated with the proposed project because this alternative would require the construction of infrastructure improvements (8,500 feet of pipeline). Ground-disturbing activities

during construction could adversely affect special-status species known to occur or that have the potential to occur within vicinity of this alternative. Depending on the final alignment of proposed distribution infrastructure, this alternative could affect riparian habitat, cause the removal of existing native vegetation (i.e., tree removal), or otherwise adversely affect existing biological resources. More specifically, this alternative would require the construction of improvements across the riparian corridor, including the Carmel River. At this time, the nature of potential crossing is unknown and further design would be necessary in order to determine the extent of potential environmental effects, although it is reasonable to assume that this alternative would result in the removal of existing riparian vegetation and temporary construction-related effects within the riparian corridor. Therefore, this alternative could potentially affect existing biological resources and thereby warrant site-specific mitigation to ensure that temporary construction impacts would be minimized to a less-than-significant level. Additional technical analysis, including a project-level biological evaluation would be required to determine the extent of potential impacts associated with construction-related activities.

Cultural Resources

This alternative could potentially affect cultural resources due to ground-disturbing activities, which could potentially affect buried or previously unknown archaeological resources. This alternative is located in an area of high archaeological sensitivity according to the County of Monterey (Monterey County, 2010). As a result, this alternative could adversely affect a cultural resource. The extent of these effects would, however, depend on site-specific and project-specific circumstances, including the results of a cultural resource survey. Due to the archaeological sensitivity of the area, it is anticipated that construction-phase mitigation may be required, including standard mitigation measures related to the discovery of previously unknown or buried archaeological resources. Given the archaeological sensitivity of the area, a site-specific cultural resource evaluation could be required. While this alternative could potentially affect cultural resources, it is anticipated that any potential construction-related effects could be reduced to a less-than-significant level through careful site design, standard construction-phase mitigation measures, and site-specific mitigation (e.g., construction monitoring).

Geology/Soils

This alternative would be located in a seismically active region. Therefore, proposed infrastructure could be exposed to seismically-induced hazards due to fault rupture, strong seismic ground shaking, and similar effects. Any new infrastructure constructed as part of this alternative would be required to comply with all applicable Monterey County requirements related to grading and construction of new wells. Applicable requirements would include construction of project improvements and associated grading and trenching to be conducted in accordance with the recommendations of a design-level geotechnical analysis. Compliance with existing Monterey County requirements would ensure that potential seismically induced hazards would be less-than-significant. Ground-disturbing activities associated with the construction of infrastructure as part of this alternative could result in temporary effects due localized erosion effects. Any potential construction related effects could be reduced to a less-than-significant level through the implementation of standard construction-phase BMP. As a result, this alternative would result in a less-than-significant effect in terms of geology and soils.

Hazards and Hazardous Materials

This alternative could result in potential temporary effects in connection with construction-related activities. The use of construction equipment could entail the transport and use of small amounts of potentially hazardous materials, such as diesel fuel, paint, and other material. The accidental release of potentially hazardous materials during construction could result in potential adverse environmental effects. The extent and nature of potential effects would ultimately depend on the nature of construction activities. It is anticipated that additional measures would be necessary during construction to ensure that all construction-related effects would be less-than-significant. This alternative would require construction phase mitigation to ensure that potential impacts are minimized to a less-than-significant level. This mitigation measure would be in addition to standard construction-phase BMPs that would be implemented during construction.

Hydrology/Water Quality

This alternative would avoid the potential localized hydrology and water quality effects associated with the proposed project. As described in **Section 4.2, Hydrology and Water Quality**, the proposed project would result in localized effects due to the proposed change in authorized PODs. The changes in PODs proposed as part of the proposed project would cause minor reductions in streamflow within the mainstem of the Carmel River between the existing PODs and proposed PODs for proposed License 13868A. The reduction in streamflow would not constitute a significant effect for the purposes of CEQA (Balance Hydrologics, 2014a). While the potential localized effects of the proposed project would be insignificant, this alternative would avoid the project's potential localized hydrologic effects due to the changes in POD because this alternative would use the existing authorized PODs for municipal pumping under proposed License 13868A.

This alternative would, however, result in a number of additional environmental effects beyond those associated with the proposed project. More specifically, this alternative could result in temporary hydrology and water quality effects due to construction-related activities, including temporary increases in erosion and localized water quality effects. Depending on the nature of construction activities and site-specific factors, mitigation measures may be necessary to ensure that temporary impacts are reduced to a less-than-significant level. The existing well is located in a 100-year flood hazard area and could be exposed to flooding related hazards, which could affect the operational efficiency of the existing well. Due to the location of the well relative to existing roads it may be inaccessible during periods of flooding.

Land Use

This alternative would not conflict with the Monterey County General Plan, Carmel Area Land Use Plan, and the Carmel Valley Master Plan. In addition, this alternative would not conflict with any applicable habitat conservation plan, nor would it physically divide an established community. Therefore, this alternative would not result in any potential significant land use effects. This alternative would require approval of the conversion of the agricultural well to a domestic well from the County of Monterey, as well as potential building and grading permits associated with the construction of project infrastructure. In addition, this alternative would also require an amendment to Cal-Am's existing WDS from the MPWMD to connect with well into Cal-Am's WDS.

Noise

This alternative would result in temporary noise related impacts associated with construction. Temporary construction noise would be limited in duration. Depending on the final routing of proposed infrastructure improvements, some noise sensitive uses (e.g., residences) could be exposed to temporary construction noise. While some noise sensitive uses could be exposed to temporary construction noise, these impacts are not anticipated to be significant. All noise would be temporary in nature and would not result in the prolonged exposure or persons to substantial increases in ambient noise levels. This would be a less-than-significant effect.

Public Services & Utilities

This alternative could temporarily increase demand for public services during construction. Construction activities could cause an increased demand for responders to medical emergencies or issues of theft or vandalism. Construction would be limited in duration and all construction impacts would be temporary in nature. As a result, this alternative would not result in a significant increased demand for public services or utilities such that an adverse environmental effect would occur. Temporary effects during construction would be less-than-significant.

Traffic

This alternative would result in temporary increases in traffic associated with construction-related activities. Temporary increases in construction traffic would be insignificant, and would not conflict with an applicable traffic plan or congestion management program, increase design hazards, or result in inadequate emergency access. There could also be a minor increase in traffic during project operation as part of routine maintenance. Potential traffic generated during project operation is not anticipated to be significant and would occur on an as-needed basis.

Summary

This alternative would avoid potential impacts associated with the proposed project due to the proposed changes in authorized POD, but would result in additional physical impacts to the environment due to the construction of infrastructure improvements necessary to upgrade the existing well and connect with Cal-Am's existing conveyance system. This alternative would result in physical impacts to the environment, including temporary construction-related environmental effects (e.g., ground-disturbance, temporary erosion, vegetation removal, temporary construction air quality effects, etc.). While this alternative would increase the extent of physical impacts on the environment, this alternative would avoid the potential environmental effects along the affected reach of the Carmel River downstream of the PODs associated with the proposed project.

6.4.4 Alternative Place of Use

Description

Consistent with the proposed project, this alternative consists of a change petition to split existing License 13868 into two new licenses: License 13868A and 13868B. In addition, this alternative would also include changes to the authorized PODs and purposes of use consistent with the proposed project. This alternative

would include a change in the POU to include the area within the Carmel River watershed, as shown in **Figure 6-3**. Unlike the proposed project, this alternative would not include the part of the jurisdictional boundaries of the City of Carmel-by-the-Sea that is outside of the Carmel River watershed. Portions of the City could be served under proposed License 13868A, although other areas that are outside of the watershed boundary would not be served under this alternative. All other aspects of this alternative would be the same as the proposed project.

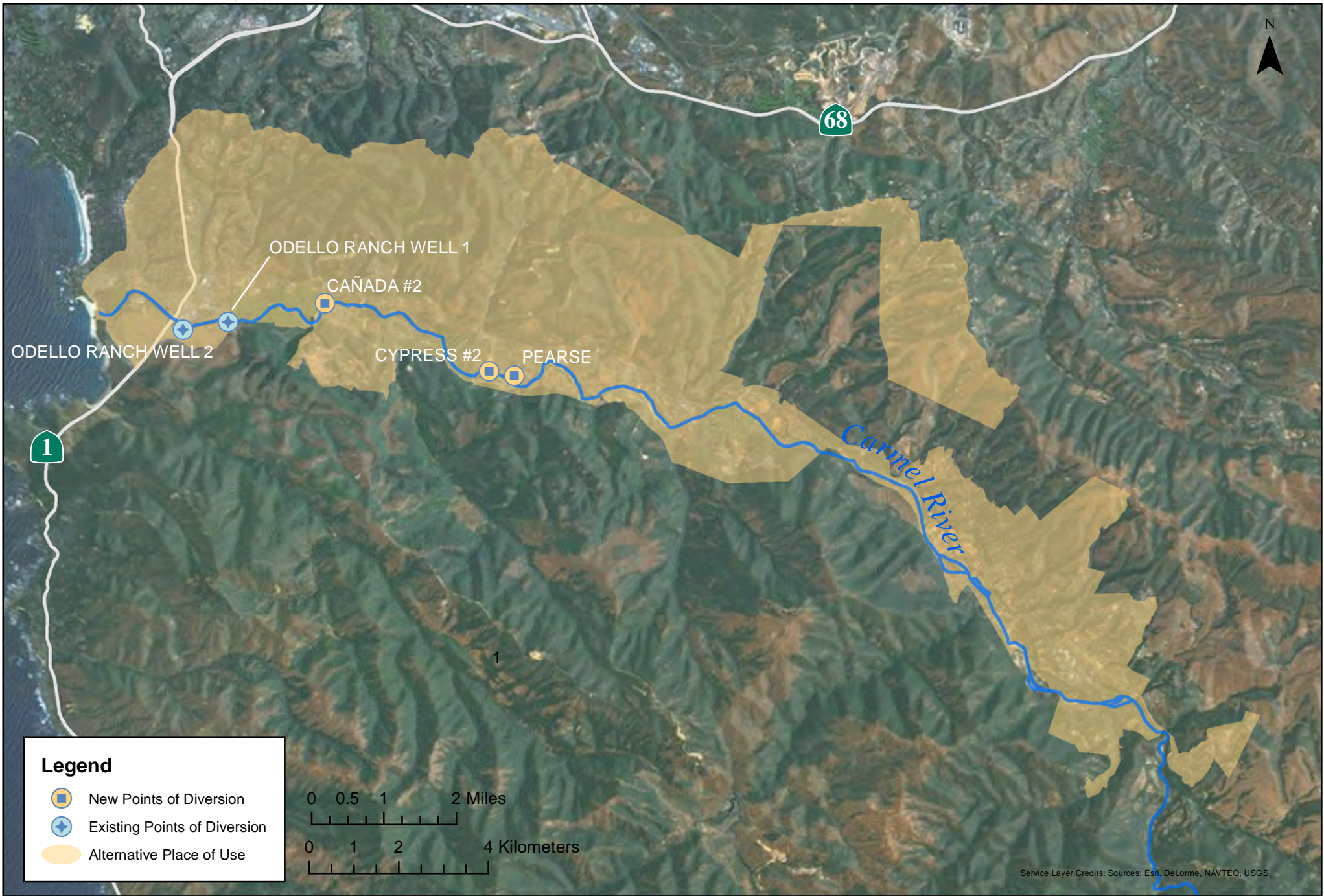
Impacts

This alternative would result in substantially the same impacts as the proposed project. This alternative would result in localized effects to biological resources and hydrology and water quality due to the changes in proposed PODs. As described in **Section 4.1, Biological Resources**, the potential biological effects associated with the proposed project are limited to those effects resulting from the changes in groundwater and streamflow between the three proposed PODs and existing authorized PODs. In addition, this alternative would also result in potential impacts similar to the proposed project, as described in **Section 4.2, Hydrology and Water Quality**. This alternative would reduce the amount of streamflow in the mainstem of the Carmel River channel between the new PODs and the existing PODs, but in substantially the same amounts as for the proposed project. As discussed in Sections 4.1 and 4.2, such effects would be less-than-significant. The proposed project would also result in substantially the same types of indirect effects as the proposed project with the exception that all potential secondary effects would be located within the boundaries of the Carmel River watershed, which includes portions of the City of Carmel-by-the-Sea. All other impacts would be the same.




This alternative could result in slightly higher return flows to the Carmel River because the designated POU would be restricted to the watershed. However, as described in this EIR, pumping under proposed License 13868A would equal the amount of consumptive use under existing License 13868. As a result, the proposed project would not result in any additional impacts to groundwater resources, including groundwater recharge, beyond those associated with the existing license. The proposed project would maintain the existing groundwater balance by restricting pumping to the current consumptive use. This alternative could have slightly higher amounts of return flows, but the difference in amounts of return flows between this alternative and the proposed project would be relatively minor.

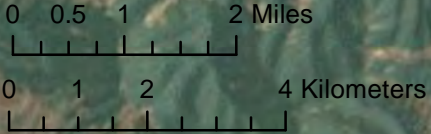
Summary

This alternative would not avoid or lessen any of the potential environmental effects associated with the proposed project. As described above, this alternative would result in substantially the same impacts as the proposed project in regards to biological resources and hydrology and water quality due to changes in the proposed authorized POD. This alternative would also result in substantially the same type of impacts as the proposed project in terms of accommodating growth and other CEQA considerations.



Legend

-  New Points of Diversion
-  Existing Points of Diversion
-  Alternative Place of Use



Service Layer Credits: Sources: Esri, DeLorme, NAVTEQ, USGS,



Title: **Alternative Place of Use**

Date: 10/27/2014

Scale: 1 inch = 2 miles

Project: 2013-24



Monterey | Truckee | San Jose
Denise Duffy and Associates, Inc.
 Environmental Consultants Resource Planners
 947 Cass Street, Suite 5
 Monterey, CA 93940
 (831) 373-4341

Figure
6-3

The locations of potential indirect effects would, however, be restricted to the watershed, which includes portions of the City of Carmel-by-the-Sea, but not the entire incorporated area. As a result, this alternative would slightly reduce the extent of potential secondary effects associated within the accommodation of growth on existing lots of record within the City of Carmel-by-the-Sea. The direct effects of this alternative would be similar to the proposed project. This alternative would result in localized biological and hydrologic effects due to proposed changes in authorized POD. This alternative could result in a minor increase in return flows because water use would be restricted to the watershed; however, given the relatively small demand for existing lots of record located outside of the watershed, the magnitude of any increases in return flows from this alternative would be nominal. Overall, this alternative would result in substantially the same level of impacts as the proposed project.

6.4.5 Environmentally Superior Alternative

CEQA requires that an environmentally superior alternative to the proposed project be specified, if one is identified. In general, the environmentally superior alternative is supposed to minimize adverse effects of the proposed project while achieving the basic project objectives. The No Project Alternative would be environmentally superior to the alternatives evaluated in this EIR since this alternative would not involve the construction of either a new well, or other infrastructure that would result in potential direct effects on the environment. This alternative would not, however, achieve the basic project objectives. In addition, CEQA Guidelines Sec. 15126.6(e)(2) states: “If the environmentally superior alternative is the “no project” alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives.

This EIR evaluated a range of alternatives to the proposed project that would achieve most of the basic objectives of the proposed project and would avoid and/or lessen the extent of potential effects associated with the proposed project. All potential environmental effects associated with the proposed project would be less-than-significant, as described in **Section 4.1, Biological Resources** and **Section 4.2, Hydrology and Water Quality**. The alternatives selected for further evaluation in this EIR, while minimizing the potential effects of the proposed project, would result in a variety of additional environmental effects beyond those associated with the proposed project. The alternatives described above would require the construction of potential infrastructure improvements (e.g., wells, pipelines, etc.) which would physically impact the environment and could affect existing biological resources within the Carmel River corridor.

As described above, the various alternatives evaluated in this EIR would result in the construction of physical improvements and related infrastructure, which would result in additional direct environmental effects beyond those associated with the proposed project. As a result, the Alternative Place of Use alternative could be environmentally superior to the other alternatives analyzed in this EIR. This alternative would not result in the physical construction of infrastructure improvements and therefore would not result in any additional environmental impacts beyond those associated with the project. Whereas, the Individual Well Alternative and Existing POD alternative would both result in the construction of physical improvements and related infrastructure, which could result in greater direct effects than the proposed project. While the Alternative Place of Use alternative would be superior in the sense that it would result in less adverse effects than the other alternatives, it would not lessen or otherwise avoid the adverse, albeit less-than-significant, impacts associated with the project.

The Existing POD Alternative could also be considered environmentally superior to other alternatives evaluated in this EIR since it would avoid impacts to biological resources and hydrology and water quality

associated with the proposed project due to the change in POD, which were identified as less-than-significant in this EIR. However, this alternative would require the construction of physical improvements to upgrade the existing well for municipal purposes, in addition to the construction of approximately 8,500 feet of pipeline to connect with Cal-Am's existing water distribution improvements located on the north side of the Carmel River near Rancho Cañada. Therefore, this alternative, while superior in the sense that it would avoid the project's direct effects, would result in comparatively greater impacts than the other project alternatives (and the proposed project) due to the construction of infrastructure improvements, which would have to cross the Carmel River and could potentially adversely affect the riparian corridor.

While both the Alternative Place of Use alternative and Existing POD Alternative would be considered superior in some regards, the Individual Well Alternative is herein identified as the environmentally superior alternative. This alternative is identified as the environmentally superior alternative on the basis that this alternative would involve limited (less-than-significant) construction related effects (i.e., construction of new well or rehabilitation of existing well) as compared to the other alternatives evaluated above. Moreover, as described above, this alternative would result in the construction (or rehabilitation) of a well that is located further downstream from the proposed PODs. As a result, this alternative would lessen the extent of potential impacts associated with the proposed project related to biological resources and hydrology by reducing the size of the project affected reach, although it would still result in limited impacts during construction.

As described above, the proposed project would not result in any significant adverse environmental effects. The proposed project would not directly result in the construction of any physical improvements and all potential localized environmental effects associated with the change in PODs under proposed License 13868A are less than significant. Thus, it should be noted that the relative difference between the effects of the Individual Well Alternative and the proposed project would be nominal and would be considered less-than-significant under each of the topical CEQA resource areas. Nonetheless, the environmentally superior alternative would be the Individual Well Alternative.

Chapter 7 REFERENCES

7.1 REPORT PREPARATION

7.1.1 STATE WATER RESOURCES CONTROL BOARD

Lead Agency

Matthew McCarthy, Senior Environmental Scientist – Coastal Streams Unit
Mitchell Moody, Water Rights – Coastal Streams Unit

7.1.2 DENISE DUFFY & ASSOCIATES, INC.

EIR Preparers

Denise Duffy, Principal
Tyler Potter, AICP, Senior Planner/Project Manager
Josh Harwayne, Senior Environmental Scientist
Julia Simmons, Associate Planner
Matt Johnson, Associate Environmental Scientist
Jami Davis, Assistant Environmental Scientist
Matthew Kawashima, Assistant Planner
Rayanne Bathke, Administrative Assistant

7.2 PERSONS AND AGENCIES CONTACTED

Larry Hampson, Planning and Engineering Manager, MPWMD
Henrietta Stern, Project Manager, MPWMD
Joe Oliver, Senior Hydrogeologist, MPWMD
Kean Urquhart, Senior Fisheries Biologist, MPWMD
Cory Hamilton, Associate Fisheries Biologist, MPWMD
Amy Clymo, Supervising Air Quality Planner, MBUAPCD
Marc Wiener, Senior Planner, City of Carmel-by-the-Sea
John H. Ford, Planning Services Manager, Monterey County – RMA, Planning Department

7.3 LITERATURE CITED

- Allen, R.G. (1996). Assessing Integrity of Weather Data for Reference Evapotranspiration Estimation. *Journal of Irrigation and Drainage Engineering*. 122(2), 97-106
- Allen, R.G., Pereira, L.S., Raes, D., and Smith, M. 1998. Crop Evapotranspiration. Irrigation and Drainage Paper No. 56. Food and Agriculture Organization of the United Nations. Rome, Italy.
- Allen, R.G., Walter, I.A., Elliot R., Howell, T., Itenfisu, D., and Jensen M. 2005. The ASCE Standardized Reference Evapotranspiration Equation. American Society of Civil Engineers. Reston, Virginia.

- Alperyn, M. 2004. Factors affecting the community ecology of predaceous diving beetles in boreal and prairie ponds across southern Manitoba. A thesis/practicum submitted to the faculty of Graduate Studies of the University of Manitoba. Pp. 144.
- Arnold, R.A., 1983. Ecological studies of six endangered butterflies (Lepidoptera: Lycaenidae): Island biogeography, patch dynamics, and design of habitat preserves. University of California Publications in Entomology, Vol. 99. Pp. 1-161.
- Association of Monterey Bay Area Governments (AMBAG) (2008) Regional Population and Employment Forecasts, Available at www.ambag.org/publications/reports/Transportation/2008Forecast.pdf.
- Balance Hydrologics, Inc. (2014a). Geomorphic and hydrologic context for Eastwood/Odello water rights change petition, Monterey County, California. Dated January 2014.
- _____. (2014b). Addendum to 'Geomorphic and hydromorphic context' memorandum for Eastwood/Odello water rights changes petition, Monterey County, California. Dated April 2014.
- _____. 2013, Technical Review of Hydrology Reports Supporting the Eastwood/Odello Water Rights Change Petition. Technical memorandum dated November 28, 2013
- Baldwin, B. G, et. al. 2012. The Jepson Manual – Vascular Plants of California, Second Edition, Thoroughly Revised and Expanded. University of California Press. Berkeley, CA. 1600 pp.
- Barnhart, R.A. 1986. Species profiles: life histories and environmental requirements of coastal fishes and invertebrates (Pacific Southwest -- steelhead. U.S. Fish Wildl. Serv. Biol. Rep. 82(11.60). U.S. Army Corps of Engineers, TR EL-82-4. 21 pp.
- Bobzien, S. and J. E. DiDonato. 2007. The Status of the California Tiger Salamander (*Ambystoma californiense*), California Red-Legged Frog (*Rana draytonii*), Foothill Yellow-Legged Frog (*Rana boylei*), and Other Aquatic Herpetofauna in the East Bay Regional Park District, California. Technical Document: East Bay Regional Park District.
- Bond, M.H. 2006. Importance of estuarine rearing to central California steelhead (*Oncorhynchus mykiss*) growth and marine survival. Thesis submitted in support of a Master of Science degree, University of California, Santa Cruz
- Bond, M.H., S.A. Hayes, C.V. Hanson, and R.B. MacFarlane. 2008. Marine survival of steelhead (*Oncorhynchus mykiss*) enhanced by a seasonally closed estuary. *Can. J. Fish. Aquat. Sci.* 65: 2242-2252

- Bulger, J.B., N.J. Scott Jr., and R.B. Seymour. 2003. Terrestrial activity and conservation of adult California red-legged frog *Rana aurora draytonii* in coastal forests and grasslands. *Biological Conservation*, Vol. 110. Pp. 85-95.
- Bury, R.B. and J.H. Wolfheim. 1973. Aggression in free-living pond turtles (*Clemmys marmorata*). *Bio-Science*, Vol. 23. Pp. 659-662.
- California Air Resources Board. 2005. *Air Quality and Land Use Handbook: A Community Health Perspective*. April 2005. Available at <http://www.arb.ca.gov/ch/handbook.pdf>.
- California American Water Company (Cal-Am), 2013. Cal-Am well information provided to West Yost Associates staff by Cal-Am Monterey staff in April and May 2013.
- California Department of Fish and Wildlife (CDFW), 2013, Standard operating procedure for critical riffle analysis for fish passage in California. DFG-IFP-001, October 2012, updated February 2013.
- _____. 2013a. California Natural Diversity Database Rare Find Report.
- _____. California Department of Fish and Wildlife. 2010. List of California terrestrial natural communities recognized by the Natural Diversity Database.
- _____. 2008b. Water Branch, Instream Flow Program. Flow Recommendations to the State Water Resources Control Board. May 2008.
- _____. 2008a. California Wildlife Relationships System: Life History Accounts. Database Version 8.2.
- California Department of Water Resources (DWR), 2012, Final supplement to the environmental impact report, San Clemente Dam Seismic Safety Project. California State Clearinghouse No. 2005091148.
- _____. 2003. California's Groundwater: Department of Water Resources Bulletin 118 – Update 2003 Report.
<http://www.water.ca.gov/groundwater/bulletin118/bulletin118update2003.cfm>. Accessed February 12, 2014.
- _____. 2004. California Groundwater Bulletin 118, Carmel Valley Groundwater Basin. February 2004
- _____. 2009. California Water Plan, Central Coast, Bulletin 160-09, Volume 3, 2009
- California Native Plant Society (CNPS). 2010. Inventory of Rare and Endangered Plants (online inventory, 8th edition). California Native Plant Society. Sacramento, CA. Available online at: <http://www.rareplants.cnps.org/>

- _____. 2010. Inventory of Rare and Endangered Plants (online inventory, 8th edition). California Native Plant Society. Sacramento, CA. Available online at: <http://www.rareplants.cnps.org/>
- Canessa, P., Green, S., and Zoldoske, D. 2011. Agricultural Water Use in California: A 2011 Update. Staff Report. Center for Irrigation Technology. California State University, Fresno.
- Carmel River Watershed Conservancy (CRWC), 2004. Carmel River Watershed Assessment and Action Plan. 2004
- Casagrande, J., 2006, Wetland Habitat Types of the Carmel River Lagoon. The Watershed Institute, California State University Monterey Bay, Report No. WI-2006-05,
- Christensen, T. 2013. Monterey Peninsula Water Management District. Personal Communication February 28, 2013.
- Central Coast Regional Water Quality Control Board, 2011. Water Quality Control Plan for the Central Coast Basin. June 2011
- Cook, T.D. 1978. Soil Survey of Monterey County California. Soil Conservation Service. United States Department of Agriculture.
- County of Monterey, Resource Management Agency. 2010. Monterey County General Plan. October, 26, 2010.
- _____. 2008. 2007 Monterey County General Plan, Draft Environmental Impact Report, Volume 1. September 2008.
- _____. 2008. 2007 Monterey County General Plan, Draft Environmental Impact Report, Volume 2. September 2008.
- _____. 2010. Monterey County General Plan. Final Environmental Impact Report. March 2010.
- County of Monterey, Water Resources Agency. 2011. Final Initial Study/Mitigated Negative Declaration for the Big Sur Land Trust, Carmel River Floodplain and Environmental Enhancement Project. April 15, 2011.
- _____. 2011. Draft Initial Study/Mitigated Negative Declaration for the Big Sur Land Trust, Carmel River Floodplain and Environmental Enhancement Project. February 2011.
- CRWC/Planning and Conservation League Foundation, 2007. Supplemental Carmel River Watershed Action Plan. March 2007

- Davids Engineering, Inc., 2013. Technical Memorandum, Odello Ranch Crop ET and ET of Applied Water Estimates. April 2013
- Dettman, D. H. and D. W. Kelley. 1986. Assessment of the Carmel River Steelhead Resource: Volume I Biological Investigations. Report prepared for the Monterey Peninsula Water Management District. 113 p
- DWR/Army Corps of Engineers (ACOE), 2007. San Clemente Dam Seismic Safety Project, Draft Environmental Impact Report/Environmental Impact Statement. July 2007
- _____. 2008. San Clemente Dam Seismic Safety Project, Final Environmental Impact Report/Environmental Impact Statement, Volume 2. January 2008
- Eching, S.O. and Snyder, R.L. 2004. Statistical Control Charts for Quality Control of Weather Data for Reference Evapotranspiration Estimation. *Acta Hort.* (ISHS) 664:189-196.
- EcoSystems West Consulting Group. 2001. Interim Draft of the Biological Assessment of CRLF for the Carmel River Dam and Reservoir Project. Prepared for Monterey Peninsula Water Management District, U.S. Army Corps of Engineers, California American Water Company, prepared by Ecosystems West Consulting Group, Dawn Reis, Principal Investigator.
- Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Department of the Army, Waterways Experiment Station, Vicksburg, Mississippi.
- Ernst, C.H. and R.W. Barbour. 1972. *Turtles of the United States*. University Kentucky Press, Lexington, KY. 347 pp.
- Galyon, B. 2013. California Department of Water Resources. Personal Communication. February 26, 2013.
- Grinnell, J and A.H. Miller. 1944. *The Distribution of Birds of California*. Pacific Coast Avifauna No. 27.
- Harrison, C. 1978. *A field guide to the nests, eggs and nestlings of North American birds*. W. Collins Sons and Co., Cleveland, OH. 416 pp.
- Hecht, B., 1981, Sequential changes in bed habitat conditions in the upper Carmel River following the Marble-Cone fire of August 1977, in Warner, R.E. and Hendrix, K.M., eds., *California Riparian Systems: Ecology, Conservation and Productive Management*, University of California Press.
- Hickman, J.C. (ed.). 1993. *The Jepson manual: higher plants of California*. University of California Press, Berkeley, CA. 1400 pp.

- Holomuzki, R. J. 1986. Predator avoidance and Diel patterns of microhabitat use by larval tiger salamanders. *JSTOR Ecology*, Vol. 67, No. 3, Pp. 737-748.
- Holland, D. C. 1994. The Western Pond Turtle: Habitat and History. Final Report. Portland, OR: U.S. Department of Energy, Bonneville Power Administration. Available online at: <http://www.efw.bpa.gov/Environment/EW/EWP/DOCS/REPORTS/WILDLIFE/W62137-1.pdf>
- Holland, R.F. 1986. Preliminary descriptions of the terrestrial natural communities of California. Nongame-Heritage Program, California Department of Fish and Game, Sacramento, CA. 156 pp.
- Howitt, B.F. and J.T. Howell. 1964. The vascular plants of Monterey County, California.
- Howitt, B.F. and J.T. Howell. 1973. Supplement to the vascular plants of Monterey County, California. Pacific Grove Museum of Natural History Association, Pacific Grove, CA. 60 pp.
- HDR, Inc., 2014, Assessment of potential effects of Eastwood/Odello Water Rights Change in point of diversion on Carmel River steelhead (*Oncorhynchus mykiss*). Technical memorandum dated January 2014.
- Irrigation Training and Research Center (ITRC). 2003. Irrigation Evaluation Data for Sprinklers. MS Excel Database. Available at www.itrc.org/irrevaldata/isedata.htm. Accessed April 11, 2013.
- Jennings, M.R. and M.P. Hayes. 1994. Amphibian and reptile species of special concern in California. Final report to the California Department of Fish and Game, Inland Fisheries Division. 255 pp.
- Jennings, M.R. and M.P. Hayes, and D.C. Holland. 1993. A petition to the US fish and wildlife service to place the California red-legged frog and the Western pond turtle (*Clemmys marmorata*) on the list of endangered and threatened wildlife and plants.
- Jennings, M.R. and M.P. Hayes. 1988. Habitat correlates of distribution of the California red-legged frog (*Rana draytonii*) and the foothill yellow-legged frog (*Rana boylei*): implications for management. Proceedings from Management of Amphibians, Reptiles and Small Mammals in North America Symposium 1988.
- Jennings, M.R. and M.P. Hayes. 1986. Decline of ranid frog species in western North America: are bullfrogs (*Rana catesbeiana*) responsible? *Journal of Herpetology* Vol. 20 (4). Pp. 490-509.
- Jepson Flora Project. 2010. Jepson Online Interchange for California floristics. Available online at: <http://ucjeps.berkeley.edu/interchange.html>

- Jones and Stokes. 2006. Final Environmental Impact Report/Environmental Assessment for the Monterey Peninsula Water Management District Phase 1 Aquifer Storage and Recovery Project.
- Kapple, Glenn W., Hugh T. Mitten, Timothy J. Durbin, and Michael J. Johnson. 1984. Analysis of the Carmel Valley Alluvial Ground-Water Basin, Monterey County, California. Sacramento: Monterey Peninsula Water Management District. Report 83-4280. 45p
- Kondolf, M.G. and Curry, R.R., 1986. Channel Erosion Along the Carmel River, Monterey County, California. *Earth Surface Processes and Landforms* v.11, p.307-319. 1986
- _____. 1984. The Role of Riparian Vegetation in Channel Bank Stability. 1984
- _____. 1982. Seepage Investigations Carmel River 1982 Water Year. Report to the Monterey Peninsula Water Management District.
- Loredo, I., D. Van Vuren, and M. L. Morrison. 1996. Habitat use and migration behavior of the California tiger salamander. *Journal of Herpetology*, Vol. 30(2). Pp. 282-285.
- Lichvar, R.w. 2012. Arid West 2012 Final Regional Wetland Plant List. ERDC/CRREL TR-12-11. Hanover, New Hampshire: U.S. Army Corps of Engineers, Cold Regions Research and Engineering Laboratory. Available online at: [http://acwc.sdp.sirsi.net/client/search/asset:asste?ac=\\$N/1012381](http://acwc.sdp.sirsi.net/client/search/asset:asste?ac=$N/1012381)
- Luetzow, T.C. 1994. An Economic Analysis of Two Groundwater Allocation Programs for the Salinas Valley. Master's Thesis. Naval Postgraduate School. Monterey, California.
- Maloney, L.M., 1984. Aquifer-stream interaction in the Lower Carmel Valley, July 1983 – January 1984. Unpublished report to Monterey Peninsula Water Management District.
- Macaulay, S., 2013, Estimated Ranges of Monthly Pumping Amounts Under Proposed Eastwood Water Right License 13868A. Technical memorandum prepared by Macaulay Water Resources, dated October 9, 2013.
- Mahoney and Rood. 1992.
- Matthews, M.A. 1997. An Illustrated Field Key to the Flowering Plants of Monterey County. California Native Plant Society, Sacramento, California. 401 pp.
- Matthews, M.A. 2006. An Illustrated Field Key to the Flowering Plants of Monterey County. California Native Plant Society, Sacramento, California. 394 pp.
- McBride and Strahan. 1984. Establishment and survival of wood riparian species on gravel bars of an intermittent stream. *American Midland Naturalist*. Vol 112(2). Pp. 235-245.

- McNiesh, C.M., 1986, Effects of production well pumping on plant water stress in the riparian corridor of the lower Carmel River -- volume 1, presentation of findings and conclusions, and volume 2, figures: Charles M. McNiesh, Consulting Agronomist, report to the Monterey Peninsula Water Management District.
- _____. 1988. The Effects of Groundwater Pumping on Riparian Vegetation: Carmel Valley-Draft.
- Moench, A.F., 1997. Flow to a well of finite diameter in a homogeneous, anisotropic water table aquifer, *Water Resources Research*, vol. 33, no. 6, pp. 1397-1407.
- Monterey Bay Unified Air Pollution Control District (MBUAPCD). 2008. CEQA Air Quality Guidelines. February 2008. Available at <http://www.mbuapcd.org/index.cfm/Cat/66.htm>.
- _____. 2008. Air Quality Management Plan. August 2008. Available at: <http://www.mbuapcd.org/index.cfm/Cat/3.htm>.
- _____. 2007 Federal Maintenance Plan for Maintaining the National Ozone Standard in the Monterey Bay Region. March 2007. Available at <http://www.mbuapcd.org/index.cfm?Doc=451>.
- Monterey Peninsula Water Management District (MPWMD). 2014b. 2012-2013 Annual Report (July 1, 2012 – June 30, 2013), for the MPWMD Mitigation Program. May 2014
- _____. 2014a. Draft Los Padres Dam and Reservoir, Long-term Strategic and Short-term Tactical Plan. January 2014
- _____. 2013c. 2011-2012 Annual Report (July 1, 2011 – June 30, 2012) for the MPWMD Mitigation Program. April 2013
- _____. 2013b. River flow monitoring for Phase 1 and 2, Aquifer Storage and Recovery Project: Results of mitigation measure AR-1, water year 2013 season. MPWMD technical memorandum 2013-01.
- _____. 2013a. Well, aquifer and stream flow information provided by MPWMD staff during meeting with West Yost Associates staff at the MPWMD office on March 29, 2013.
- _____. 2012c. White Paper: The MPWMD Mitigation Program. April 2012.
- _____. 2012b. 2010-2011 Annual Report (July 1, 2010 – June 30 2011) for the MPWMD Mitigation Program. March 2012
- _____. 2012a. River flow monitoring for Phase 1 and 2, Aquifer Storage and Recovery Project: Results of mitigation measure AR-1, water year 2012 season. MPWMD technical memorandum 2012-01.

- _____. 2011b. 2009-2010 Annual Report (July 1, 2009 – June 30 2010) for the MPWMD Mitigation Program. June 2011
- _____. 2011a. River flow monitoring for Phase 1 and 2, Aquifer Storage and Recovery Project: Results of mitigation measure AR-1, water year 2011 season. MPWMD technical memorandum 2011-01.
- _____. 2010a. 2008-2009 Annual Report (July 1, 2008 – June 30 2009) for the MPWMD Mitigation Program. September 2010
- _____. 2010b. River flow monitoring for Phase 1 and 2, Aquifer Storage and Recovery Project: Results of mitigation measure AR-1, water year 2010 season. MPWMD technical memorandum 2010-01.
- _____. 2009c. Riparian Corridor Monitoring Report: Carmel River. Available online at: http://www.mpwmd.dst.ca.us/programs/river/riparian_reports/RiparianReport_2009_Final.pdf
- _____. 2009b. 2007-2008 Annual Report (July 1, 2007 – June 30 2008) for the MPWMD Mitigation Program. September 2009
- _____. 2009a. 2006-2007 Annual Report (July 1, 2006 – June 30 2007) for the MPWMD Mitigation Program. August 2009
- _____. 2008b. Riparian Corridor Monitoring Report: Carmel River. Available online at: http://www.mpwmd.dst.ca.us/programs/river/riparian_reports/RiparianReport_2008_FINAL.pdf
- _____. 2008a. 2005-2006 Annual Report (July 1, 2005 – June 30 2006) for the MPWMD Mitigation Program. March 2008
- _____. 2006. 2004-2005 Annual Report (July 1, 2004 – June 30 2005) for the MPWMD Mitigation Program. March 2006
- _____. 2005. 2003-2004 Annual Report (July 1, 2003 – June 30 2004) for the MPWMD Mitigation Program. April 2005
- _____. 2004c. Riparian Corridor Monitoring Report: Carmel River. Available online at: http://www.mpwmd.dst.ca.us/programs/river/riparian_reports/riparianreport2004.pdf
- _____. 2004b. Environmental and Biological Assessment of Portions of the Carmel River Watershed, Monterey County, California. December 2004.
- _____. 2004a. 2005-2006 Annual Report (July 1, 2002 – June 30 2003) for the MPWMD Mitigation Program. March 2004

- _____. 2003. 2001-2002 Annual Report (July 1, 2001 – June 30 2002) for the MPWMD Mitigation Program. January 2003
- _____. 2001. 2000-2001 Annual Report (July 1, 2000 – June 30 2001) for the MPWMD Mitigation Program. December 2001
- _____. 2001-2013. Annual Report for MPWMD Mitigation Program Water Allocation Program Environmental Impact Report. Available online at: http://www.mpwmd.dst.ca.us/programs/mitigation_program/annual_report/annual_reportrev1.htm
- _____. 1998. Carmel River Dam and Reservoir Project Draft Supplemental EIR, Appendix C Hydrology and Water Quality, November 13, 1995.
- _____. 1996. Carmel River Basin: Surface Water Resources Data Report Water Years 1992-1995. October 1996.
- _____. 1990. Final Environmental Impact Report for MPWMD Water Allocation Program. Prepared for MPWMD by Laurence Mintier & Associates.
- Mount, J. Russell, 1983. Draft Report – Pumping Tests of Four Wells in Lower Carmel Valley, California for the California American Water Company, 1983
- Moyle, P.B. 1973. Effects of introduced bullfrogs, *Rana catesbeiana*, on the native frogs of the San Joaquin Valley, California. *Copeia* 1973. Pp. 18-22.
- Munz, P.A. and D.D. Keck. 1973. A California flora and supplement. University of California Press, Berkeley, CA. 1681 pp., + 224 pp. supplement.
- National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS). 2006. Endangered and Threatened Species; Final Listing Determinations for 10 Distinct Population Segments of West Coast Steelhead; Final Rule. *Federal Register*, Vol. 71(3). Pp. 833-862.
- _____. 2005. Endangered and Threatened Species; Designation of Critical Habitat for Seven Evolutionarily Significant Units of Pacific Salmon and Steelhead in California; Final Rule. *Federal Register*, Vol. 70(170). Pp. 52488-52627.
- _____. 2002. Instream flow needs for steelhead in the Carmel River: Bypass flow recommendations for water supply project using Carmel River waters. Technical report by the Southwest Region – Santa Rosa Field Office, dated June 3, 2002

- Natural Resources Conservation Service (NRCS). 1993. Chapter 2: Irrigation water Requirements. Part 623: Irrigation. National Engineering Handbook.
- _____. 2004. Chapter 9: Hydrologic Soil-Cover Complexes and Chapter 10: Estimation of Direct Runoff from Storm Rainfall. Part 630: Hydrology. National Engineering Handbook.
- Oliver, Joseph, 2009. Carmel River Watershed: Water Supply Perspective: Presentation to the Western States Source Water and Ground Water Protection Forum. May 2009.
- Parham, J.F. and T.J. Papenfuss. 2008. High genetic diversity among fossorial lizard populations (*Anniella pulchra*) in a rapidly developing landscape (Central California). *Conservation Genetics*, Vol 10. Pp. 169-176.
- Peterson, R.T. 1990. *Western Birds* (Third Edition). Houghton Mifflin Company, New York, N.Y. 431 pp.
- Philip Williams & Associates, Ltd., 2007. Supplemental Carmel River Watershed Action Plan. March 2007
- Rathbun, G.B., M.R. Jennings, T.G. Murphey, and N.R. Siepel. 1993. Status and ecology of sensitive aquatic vertebrates in lower San Simeon and Pico Creeks, San Luis Obispo County, California. Unpublished report, National Ecology Research Center, Piedras Blancas Research Station, San Simeon, California. 103 pp.
- Reed, P.B., Jr. 1988. National list of plant species that occur in wetlands: California (Region 0). U.S. Fish and Wildlife Service Biological Report 88 (26.10).
- Reis, D. 2002. CRLF (*Rana aurora draytonii*) Monitoring Report for the Carmel River In-stream Habitat Restoration Project at DeDampierre Park, Monterey, California.
- _____. 2003. California red-legged frog tadpole surveys and translocations during the California-American Water Company 2003 Water Withdrawal in the Carmel River. A report to the United States Fish and Wildlife Service Biological Opinion (1-8-99-FW-7).
- Remsen, J.V. Jr. 1978. Bird species of special concern in California. California Dept. of Fish and Game, Nongame Wildlife Investigations, Wildlife Management Branch Administrative Report No. 78-1.
- Roberson, D., and C. Tenney, eds. 1993. *Atlas of the Breeding Birds of Monterey County*. Monterey Peninsula Audubon Society, Carmel, CA.
- Roberson, Don. 2002. *Monterey Birds*. Monterey Peninsula Audubon Society, Monterey, CA. 536 pp.
- Rumbaugh, D and Rumbaugh, J. 2011. *AquiferWin32 Version 4.02*. Copyright 1997-2011 Environmental Simulations, Inc.

- Saxton, K.E. and Rawls, W.J. 2006. Soil Water Characteristic Estimates by Texture and Organic Matter for Hydrologic Solutions. *Soil Science Society of America Journal*. 70(5) 1569-1578.
- Schroeder, P.R., Dozier T.S., Zappi, P.A., McEnroe, B.M., Sjoström, J.W., and Peton, R.L. 1994. The Hydrologic Evaluation of Landfill Performance (HELP) Model: Engineering Documentation for Version 3, EPA/600/R-94/168b. U.S. Environmental Protection Agency Office of Research and Development, Washington, DC.
- Segelquist, C.A., M.L. Scott, and G.T. Auble. 1993. Establishment of *Populus deltoides* under simulated alluvial groundwater declines. *American Midland Naturalist*. Vol. 130. Pp. 274-285
- Sibley, David. 2000. *The Sibley Guide to Birds*. National Audubon Society. Borzoi Books, New York, N.Y. 544pp.
- Smith, D.P., Newman, W.B., Watson, F.G.R., and Hameister, J., 2004, Physical and Hydrologic Assessment of the Carmel River Watershed, California. The Watershed Institute, California State University Monterey Bay, Publication No. WI-2004-05/2, pp. 88
- Smith, J. and D. Reis. 1996. Pescadero Marsh Natural Preserve salinity, tidewater goby, and red-legged frog monitoring 1995-1996. Report prepared for California Department of Parks and Recreation, No. 3790-301-722(7).
- Stebbins, R.C. 2003. *Western reptiles and amphibians*, 3rd edition. Houghton Mifflin Company, New York, NY. 533 pp.
- Smith, D.P., Newman, W.B., Watson, F.G. R., and Hameister, J., 2004. Physical and Hydrologic Assessment of the Carmel River Watershed, California. The Watershed Institute, California State University Monterey Bay, Publication No. WI-2004-05/2, 88 pp.
- _____. 1985. *Western reptiles and amphibians*. Houghton Mifflin Company, Boston, MA. 336 pp.
- _____. 1972. *California amphibians and reptiles*. University of California Press, Berkeley, CA. 152 pp.
- _____. 1951. *Amphibians of western North America*. Univ. California Press, Berkeley. 538 pp.
- Snider, W.M., 1983. *Reconnaissance of the Steelhead Resources of the Carmel River Drainage, Monterey County*. September 1983
- State Water Resources Control Board (SWRCB). 2002. *Review of the Laws Establishing the SWRCB's Permitting Authority Over Appropriations of Groundwater Classified as Subterranean Streams and the SWRCB's Implementation of those Laws*. January 19, 2002. (SWRCB No. 0-076-300-0)
- _____. 2009. Order WR 2009-0060. Cease and Desist Order

- _____. 1998. Order WR 98-04. Order Amending Decision 1632 and Order WR 95-10 Pursuant to Settlement of Litigation.
- _____. 1997. Order WR 97-03.
- _____. 1997. Order Approving Revisions to Table 13 of Decision 1632. March 21, 1997.
- _____. 1995. New Los Padres Project of Monterey Peninsula Water Management District. SWRCB Decision 1632. July 6, 1995.
- _____. 1995. Order WR 95-10. Order on Four Complaints Filed Against the California-American Water Company. July 6, 1995.
- Stromberg, J.C., R. Tiller, and B. Richter. 1996. Effects of groundwater decline on riparian vegetation of semiarid regions: The San Pedro, Arizona. *Ecological Applications*. Vol. 6. Pp. 113-131.
- Thelander, C. (ed.). 1994. *Life on the edge: A guide to California's endangered natural resources: wildlife*. BioSystems Books, Santa Cruz, CA.
- Trenham, P.C., and H.B. Shaffer. 2005. Amphibian upland habitat use and its consequences for population viability. *Ecological Applications* Vol. 15. Pp. 1158-1168.
- Trenham et al., 2000. Life History and Demographic Variation in California tiger salamander (*Ambystoma californiense*). *Copeia*, Vol. 200(2). Pp. 365-377.
- U.S. Army Corps of Engineers. 2008. Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region. Ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-08-13. Vicksburg, MS: U.S. Army Engineer Research and Development Center. 141 pp.
- _____. 2008. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0). Ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-08-28. Vicksburg, MS: U.S. Army Engineer Research and Development Center. 123 pp.
- _____. 2007. Jurisdictional Determination Form Instructional Guidebook. Available online at: http://www.usace.army.mil/cw/cecwo/reg/cwa_guide/cwa_guide.htm
- _____. 1982. Title 33: Navigation and Navigable Waters; Chapter II, Regulatory Programs of the Corps of Engineers, Federal Register Vol. 47(138). Pp. 31810.
- United States Geological Survey (USGS), 1984. Analysis of the Carmel Valley Alluvial Ground-Water Basin, Monterey County, California. Water Resources Investigations Report 83-4280, June 1984.

- _____. 2013. Carmel River flow data downloaded from USGS National Water System Web Interface (<http://waterdata.usgs.gov/nwis/gw>) for stations 11143200 (Robles del Rio) and 11143250 (Carmel).
- United States Fish and Wildlife Service (Service). 2013b. National Wetlands Inventory Wetland Mapper. Available online at: <http://www.fws.gov/wetlands/Data/Mapper.html>
- _____. 2013a. Listed, Proposed, and Candidate Species Which May Occur in Monterey County. Available online at: http://www.fws.gov/sacramento/es_species/Lists/es_species_lists-form.cfm
- _____. 2010. Endangered and Threatened Wildlife and Plants; Revised Designation of Critical Habitat for the California Red-legged Frog; Final rule. Federal Register, Vol. 75(51). Pp. 12816-12959.
- _____. 2006. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the California Red-legged Frog and Special Rule Exemption Associated with Final Listing for Existing Routine Ranching Activities; Final rule. Federal Register, Vol. 71(71). Pp. 19244-19292.
- _____. 2005c. Revised guidance on site assessments and field surveys for the California red-legged frog. Available online at: http://www.fws.gov/sacramento/es/Survey-Protocols-Guidelines/Documents/crf_survey_guidance_aug2005.pdf
- _____. 2005b. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the California Tiger Salamander; Central Population; Final Rule. Federal Register, Vol. 70(162). Pp 49379-49458.
- _____. 2005a. Biological Opinion for the Cleanup and Reuse of Former Fort Ord, Monterey County, California, as it Affects California Tiger Salamander and Critical Habitat for Contra Costa Goldfields (1-8-04-F-25R).
- _____. 2004b. Endangered and threatened wildlife and plants; Proposed designation of critical habitat for the Santa Barbara County distinct population segment of the California Tiger Salamander. Federal Register, Vol. 69(14). Pp 3064-3094.
- _____. 2004a. Endangered and threatened wildlife and plants; Determination of threatened status for the California Tiger Salamander; and special rule exemption for existing routine ranching activities; Final rule. Federal Register, Vol. 69(149). Pp. 47211-47248.
- _____. 2003. Interim guidance on site assessment and field surveys for determining presence of a negative finding of the California tiger salamander. Available online at: http://www.fws.gov/sacramento/es/documents/cts_survey_protocol.PDF
- _____. 2002b. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for *Chorizanthe pungens* var. *pungens* (Monterey spineflower). Federal Register 67(103): 37497-3754.

- _____. 2002a. Recovery Plan for the California red-legged frog (*Rana aurora draytonii*). U.S. Fish and Wildlife Service, Portland, OR.
- _____. 2000. Draft Recovery Plan for the California red-legged frog (*Rana aurora draytonii*). U.S. Fish and Wildlife Service, Sacramento, CA.
- _____. 1998. Endangered and threatened wildlife and plants; Listing of Several Evolutionarily Significant Units of West Coast Steelhead. Register, Vol. 63(116). Pp. 32996-32998.
- _____. 1998. Endangered and threatened wildlife and plants; Withdrawal of Proposed Rule to List the Black Legless Lizard, Proposed rule. Federal Register, Vol. 69(149). Pp. 47211-47248.
- _____. 1996. Endangered and Threatened Wildlife and Plants; Determination of Threatened Status for the California Red-legged Frog; Final Rule. Federal Register, Vol. 61(101). Pp. 25813-25833.
- _____. 1994. Endangered and Threatened Wildlife and Plants; Endangered Status for Three Plants and Threatened Status for One Plant From Sandy and Sedimentary Soils of Central Coastal California. Federal Register, Vol. 59(24). Pp. 5499-5510.
- Ventana Wildlife Society. 2008. Avian Diversity and Riparian Focal Species Abundance on the Lower Carmel River, Monterey County, CA 1992-2007
- West Yost Associates 2013. Groundwater and Surface Water Evaluation Report; Eastwood/Odello Water Right Change Petition Project. October 2013
- Williams, D. 1986. Mammalian species of special concern in California. California Department of Fish and Game Report 86-1. 112 pp.
- Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White (eds.). 1988. California's wildlife, Volume I: Amphibians and reptiles. California Department of Fish and Game, Sacramento, CA. 272 pp.
- _____. 1990. California's Wildlife, Volume II: Birds. California Department of Fish and Game, Sacramento, CA. 731 pp.

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