

APPENDIX D – RECLAMATION/EDCWA DRAFT MASTER CONTRACT

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
Central Valley Project, California

CONTRACT BETWEEN THE UNITED STATES
AND
EL DORADO COUNTY WATER AGENCY
PROVIDING FOR PROJECT WATER SERVICE
FROM THE AMERICAN RIVER DIVISION

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M&I Only
Contract No. 07-WC-20-3534

1 UNITED STATES
2 DEPARTMENT OF THE INTERIOR
3 BUREAU OF RECLAMATION
4 Central Valley Project, California

5 CONTRACT BETWEEN THE UNITED STATES
6 AND
7 EL DORADO COUNTY WATER AGENCY
8 PROVIDING FOR PROJECT WATER SERVICE
9 FROM AMERICAN RIVER DIVISION

10 THIS CONTRACT, made this _____ day of _____, 2007, in
11 pursuance generally of the Act of June 17, 1902 (32 Stat. 388), and acts amendatory or
12 supplementary thereto, including, but not limited to, the Acts of August 26, 1937 (50 Stat. 844),
13 as amended and supplemented, August 4, 1939 (53 Stat. 1187), as amended and supplemented,
14 October 12, 1982 (96 Stat. 1263), Title XXXIV of the Act of October 30, 1992 (106 Stat. 4706),
15 and Section 206(b)(1)(B) of the Act of November 5, 1990 (104 Stat. 2074), all collectively
16 hereinafter referred to as Federal Reclamation law, between THE UNITED STATES OF
17 AMERICA, hereinafter referred to as the United States, and EL DORADO COUNTY WATER
18 AGENCY, hereinafter referred to as the Contractor, a public agency of the State of California,
19 duly organized, existing, and acting pursuant to the laws thereof;

20 WITNESSETH, That:

21 EXPLANATORY RECITALS

22 [1st] WHEREAS, the United States has constructed and is operating the Central Valley
23 Project (Project), California, for diversion, storage, carriage, distribution and beneficial use,
24 for flood control, irrigation, municipal, domestic, industrial, fish and wildlife mitigation,
25 protection and restoration, generation and distribution of electric energy, salinity control,

navigation and other beneficial uses, of waters of the Sacramento River, the American River, the Trinity River, and the San Joaquin River and their tributaries; and

[2nd] WHEREAS, the United States constructed Folsom Dam and Reservoir and related facilities, hereinafter collectively referred to as the American River Division facilities, which will be used in part for the furnishing of water to the Contractor pursuant to the terms of this Contract; and

[3rd] WHEREAS, the rights to Project Water were acquired by the United States pursuant to California law for operation of the Project; and

[4th] WHEREAS, Section 206(b)(1) of Public Law (P.L.) 101-514 (104 Stat. 2074) authorizes and directs the Secretary of the Interior (Secretary) to enter into a municipal and industrial (M&I) water supply contract with the Contractor, not to exceed 15,000 acre-feet annually, as the first phase of a contracting program to meet the long-term water supply needs of El Dorado County; and

[5th] WHEREAS, the Contractor has determined that, based on geographic settings and water need projections, the water needs of El Dorado County would be best met by sharing the annual quantity of Project water made available to the Contractor between El Dorado Irrigation District and Georgetown Divide Public Utility District by means of subcontracts with each of those agencies; and

[6th] WHEREAS, the Contractor has demonstrated to the satisfaction of the Contracting Officer that the Contractor has projected future demand for water use such that the

Contractor has the capability and expects to utilize fully for reasonable and beneficial use the quantity of Project Water to be made available to it pursuant to this Contract; and

[7th] WHEREAS, the economies of regions within the Project, including the Contractor's, depend upon the availability of water, including water service from the Project; and

[8th] WHEREAS, the Secretary intends through coordination, cooperation, and partnerships to pursue measures to improve water supply, water quality, and reliability of the Project for all Project purposes; and

[9th] WHEREAS, the mutual goals of the United States and the Contractor include: to provide for reliable Project Water supplies; to control costs of those supplies; to achieve repayment of the Project as required by law; to guard reasonably against Project Water shortages; to achieve a reasonable balance among competing demands for use of Project Water; and to comply with all applicable environmental statutes, all consistent with the legal obligations of the United States relative to the Project; and

[10th] WHEREAS, the United States and the Contractor are willing to enter into this Contract pursuant to Federal Reclamation law on the terms and conditions set forth below.

NOW, THEREFORE, in consideration of the mutual and dependent covenants herein contained, it is hereby mutually agreed by the parties hereto as follows:

DEFINITIONS

1. When used herein unless otherwise distinctly expressed, or manifestly incompatible with the intent of the parties as expressed in this Contract, the term:

66 (a) "Calendar Year" shall mean the period January 1 through December 31,
67 both dates inclusive;

68 (b) "Charges" shall mean the payments required by Federal Reclamation law
69 in addition to the Rates and Tiered Pricing Component specified in this Contract as determined
70 annually by the Contracting Officer pursuant to this Contract;

71 (c) "Condition of Shortage" shall mean a condition respecting the Project
72 during any Year such that the Contracting Officer is unable to deliver sufficient water to meet the
73 Contract Total;

74 (d) "Contracting Officer" shall mean the Secretary's duly authorized
75 representative acting pursuant to this Contract or applicable Federal Reclamation law or
76 regulation;

77 (e) "Contract Total" shall mean the maximum amount of water to which the
78 Contractor is entitled under subdivision (a) of Article 3 of this Contract;

79 (f) "Contractor's Service Area" shall mean the area to which the Contractor is
80 permitted to provide Project Water under this Contract as described in Exhibit "A" attached
81 hereto, which may be modified from time to time in accordance with Article 35 of this Contract
82 without amendment of this Contract;

83 (g) "CVPIA" shall mean the Central Valley Project Improvement Act, Title
84 XXXIV of the Act of October 30, 1992 (106 Stat. 4706);

85 (h) Omitted;

86 (i) Omitted;

(j) “Full Cost Rate” shall mean an annual rate as determined by the Contracting Officer that shall amortize the expenditures for construction properly allocable to the Project irrigation or M&I functions, as appropriate, of facilities in service including all operation and maintenance (O&M) deficits funded, less payments, over such periods as may be required under Federal Reclamation law or applicable contract provisions. Interest will accrue on both the construction expenditures and funded O&M deficits from October 12, 1982, on costs outstanding at that date, or from the date incurred in the case of costs arising subsequent to October 12, 1982, and shall be calculated in accordance with subsections 202(3)(B) and (3)(c) of the Reclamation Reform Act of October 12, 1982 (96 Stat. 1263), as amended, hereinafter referred to as RRA. The Full Cost Rate includes actual operation, maintenance, and replacement costs consistent with Section 426.2 of the Rules and Regulations for the RRA;

(k) Omitted;

(l) Omitted;

(m) “Irrigation Water” shall mean water made available from the Project that is used primarily in the production of agricultural crops or livestock, including domestic use incidental thereto, and watering of livestock;

(n) Omitted;

(o) “Municipal and Industrial” or “(M&I) Water” shall mean Project Water, other than Irrigation Water, made available to the Contractor. M&I Water shall include water used for human use and purposes such as the watering of landscaping or pasture for animals

107 (e.g., horses), which are kept for personal enjoyment, or water delivered to land holdings
108 operated in units of less than five acres unless the Contractor establishes to the satisfaction of the
109 Contracting Officer that the use of water delivered to any such landholding is a use described in
110 subdivision (m) of this Article;

111 (p) "M&I Full Cost Water Rate" shall mean the Full Cost Rate applicable to
112 the delivery of M&I Water;

113 (q) "Operation and Maintenance" or "O&M" shall mean normal and
114 reasonable care, control, operation, repair, replacement (other than capital replacement), and
115 maintenance of Project facilities;

116 (r) Omitted;

117 (s) "Project" shall mean the Central Valley Project owned by the United
118 States and managed by the Department of the Interior (Interior), Bureau of Reclamation;

119 (t) "Project Contractors" shall mean all parties who have water service
120 contracts for Project Water from the Project with the United States pursuant to Federal
121 Reclamation law;

122 (u) "Project Water" shall mean all water that is developed, diverted, stored, or
123 delivered by the Secretary in accordance with the statutes authorizing the Project and in
124 accordance with the terms and conditions of water rights acquired pursuant to California law;

125 (v) "Rates" shall mean the payments determined annually by the Contracting
126 Officer in accordance with the then-current applicable water ratesetting policies for the Project,
127 as described in subdivision (a) of Article 7 of this Contract;

128 (w) “Recent Historic Average” shall mean the most recent five-year average of
129 the final forecast of Water Made Available to the Contractor pursuant to this Contract;

130 (x) “Secretary” shall mean the Secretary of the Interior, a duly appointed
131 successor, or an authorized representative acting pursuant to any authority of the Secretary and
132 through any agency of the Interior;

133 (y) “Tiered Pricing Component” shall be the incremental amount to be paid
134 for each acre-foot of Water Delivered as described in subdivision (j) of Article 7 of this Contract;

135 (z) “Water Delivered” or “Delivered Water” shall mean Project Water
136 diverted for use by the Contractor at the point(s) of delivery approved by the Contracting
137 Officer;

138 (aa) “Water Made Available” shall mean the estimated amount of Project
139 Water that can be delivered to the Contractor for the upcoming Year as declared by the
140 Contracting Officer, pursuant to subdivision (a) of Article 4 of this Contract;

141 (bb) “Water Scheduled” shall mean Project Water made available to the
142 Contractor for which times and quantities for delivery have been established by the Contractor
143 and Contracting Officer, pursuant to subdivision (b) of Article 4 of this Contract; and

144 (cc) “Year” shall mean the period from and including March 1 of each
145 Calendar Year through the last day of February of the following Calendar Year.

TERM OF CONTRACT

2. (a) This Contract shall be effective March 1, 2008, through February 29, 2048. In the event the Contractor wishes to renew this Contract beyond February 29, 2048, the Contractor shall submit a request for renewal in writing to the Contracting Officer no later than two years prior to the date this Contract expires.

(b) Omitted.

(c) This Contract shall be renewed for successive periods of 40 years each which periods shall be consistent with then-existing Reclamation-wide policy, under terms and conditions mutually agreeable to the parties and consistent with Federal and State law. The Contractor shall be afforded the opportunity to comment to the Contracting Officer on the proposed adoption and application of any revised policy applicable to the delivery of Project M&I Water that would limit the term of any subsequent renewal contract with the Contractor for the furnishing of M&I Water to less than 40 years.

(d) The Contracting Officer shall make a determination 10 years after the date of execution of this Contract, and every five years thereafter during the term of this Contract, of whether a conversion to a contract under subsection 9(c)(1) of Section 9 of the Reclamation Project Act of 1939 can be accomplished. The Contracting Officer anticipates that during the term of this Contract, all authorized Project construction expected to occur will have occurred, and on that basis the Contracting Officer agrees upon such completion to allocate all costs that are properly assignable to the Contractor, and agrees further that, at any time after such allocation is made, and subject to satisfaction of the condition set out in this subdivision, this

167 Contract shall, at the request of the Contractor, be converted to a contract under said subsection
168 (c)(1) of Section 9, subject to applicable Federal law and under stated terms and conditions
169 mutually agreeable to the Contractor and the Contracting Officer. A condition for such
170 conversion to occur shall be a determination by the Contracting Officer that, account being taken
171 of the amount credited to return by the Contractor as provided for under Federal Reclamation
172 law, the remaining amount of construction costs assignable for ultimate return by the Contractor
173 can probably be repaid to the United States within the term of a contract under said subsection
174 (c)(1) of Section 9. If the remaining amount of costs that are properly assignable to the
175 Contractor cannot be determined during the term of this Contract, the Contracting Officer shall
176 notify the Contractor, and provide the reason(s) why such a determination could not be made.
177 Further, the Contracting Officer shall make such a determination as soon thereafter as possible so
178 as to permit, upon request of the Contractor and satisfaction of the condition set out above,
179 conversion to a contract under said subsection (c)(1) of Section 9. In the event such
180 determination of costs has not been made at a time which allows conversion of this Contract
181 during the term of this Contract or the Contractor has not requested conversion of this Contract
182 within such term, the parties shall incorporate in any subsequent renewal contract as described in
183 subdivision (c) of this Article a provision that carries forth in substantially identical terms the
184 provisions of this subdivision.

(e) The term of the subcontracts entered into by the Contractor for the Project Water made available to the Contractor pursuant to this Contract shall not exceed the term of this Contract.

WATER TO BE MADE AVAILABLE AND DELIVERED TO THE CONTRACTOR

3. (a) During each Year, consistent with all applicable California State water rights, permits, and licenses, Federal law, and subject to the provisions set forth in Articles 11 and 12 of this Contract, the Contracting Officer shall make available for delivery to the Contractor 15,000 acre-feet of Project Water for M&I purposes. Water Delivered to the Contractor in accordance with this subdivision shall be scheduled and paid for pursuant to the provisions of Articles 4 and 7 of this Contract.

(b) Because the capacity of the Project to deliver Project Water has been constrained in recent years and may be constrained in the future due to many factors including hydrologic conditions and implementation of Federal and State laws, the likelihood of the Contractor actually receiving the amount of Project Water set out in subdivision (a) of this Article in any given Year is uncertain. Nothing in subdivision (b) of this Article shall affect the rights and obligations of the parties under any provision of this Contract.

(c) The Contractor shall utilize the Project Water in accordance with all applicable legal requirements.

(d) The Contractor shall make reasonable and beneficial use of all water furnished pursuant to this Contract. Ground-water recharge programs (direct, indirect, or in lieu), ground-water banking programs, surface water storage programs, and other similar

programs utilizing Project Water or other water furnished pursuant to this Contract conducted within the Contractor's Service Area which are consistent with applicable State law and result in use consistent with Federal Reclamation law will be allowed; Provided: That any direct recharge program(s) is (are) described in the Contractor's water conservation plan submitted pursuant to Article 26 of this Contract; Provided further: That such water conservation plan demonstrates sufficient lawful uses exist in the Contractor's Service Area so that using a long-term average, the quantity of Delivered Water is demonstrated to be reasonable for such uses and in compliance with Federal Reclamation law. Ground-water recharge programs, ground-water banking programs, surface water storage programs, and other similar programs utilizing Project Water or other water furnished pursuant to this Contract conducted outside the Contractor's Service Area may be permitted upon written approval of the Contracting Officer, which approval will be based upon environmental documentation, Project Water rights, and Project operational concerns. The Contracting Officer will address such concerns in regulations, policies, or guidelines.

(e) The Contractor shall comply with all requirements applicable to the Contractor in biological opinion(s) prepared as a result of a consultation regarding the execution of this Contract undertaken pursuant to Section 7 of the Endangered Species Act of 1973 (ESA), as amended, that are within the Contractor's legal authority to implement. Nothing herein shall be construed to prevent the Contractor from challenging or seeking judicial relief in a court of

competent jurisdiction with respect to any biological opinion or other environmental
documentation referred to in this Article.

(f) Following the declaration of Water Made Available under Article 4 of this
Contract, the Contracting Officer will make a determination whether Project Water, or other
water available to the Project, can be made available to the Contractor in addition to the Contract
Total under Article 3 of this Contract during the Year without adversely impacting other Project
Contractors. At the request of the Contractor, the Contracting Officer will consult with the
Contractor prior to making such a determination. If the Contracting Officer determines that
Project Water, or other water available to the Project, can be made available to the Contractor,
the Contracting Officer will announce the availability of such water and shall so notify the
Contractor as soon as practical. The Contracting Officer will thereafter meet with the Contractor
and other Project Contractors capable of taking such water to determine the most equitable and
efficient allocation of such water. If the Contractor requests the delivery of any quantity of such
water, the Contracting Officer shall make such water available to the Contractor in accordance
with applicable statutes, regulations, guidelines, and policies.

(g) The Contractor may request permission to reschedule for use during the
subsequent Year some or all of the Water Made Available to the Contractor during the current
Year referred to as "carryover." The Contractor may request permission to use during the
current Year a quantity of Project Water which may be made available by the United States to
the Contractor during the subsequent Year referred to as "preuse." The Contracting Officer's

written approval may permit such uses in accordance with applicable statutes, regulations, guidelines, and policies.

(h) The Contractor's right pursuant to Federal Reclamation law and applicable State law to the reasonable and beneficial use of Water Delivered pursuant to this Contract during the term thereof and any subsequent renewal contracts, as described in Article 2 of this Contract, during the terms thereof shall not be disturbed so long as the Contractor shall fulfill all of its obligations under this Contract and any renewals thereof. Nothing in the preceding sentence shall affect the Contracting Officer's ability to impose shortages under Article 11 or subdivision (b) of Article 12 of this Contract or applicable provisions of any subsequent renewal contracts.

(i) Project Water furnished to the Contractor pursuant to this Contract may be delivered for purposes other than those described in subdivisions (o) of Article 1 of this Contract upon written approval by the Contracting Officer in accordance with the terms and conditions of such approval.

(j) The Contracting Officer shall make reasonable efforts to protect the water rights necessary for the Project and to provide the water available under this Contract. The Contracting Officer shall not object to participation by the Contractor, in the capacity and to the extent permitted by law, in administrative proceedings related to the Project Water rights; Provided: That the Contracting Officer retains the right to object to the substance of the Contractor's position in such a proceeding; Provided further: That in such proceedings the

Contracting Officer shall recognize the Contractor has a legal right under the terms of this
Contract to use Project Water.

TIME FOR DELIVERY OF WATER

(4) (a) On or about February 20 of each Calendar Year, the Contracting Officer
shall announce the Contracting Officer's expected declaration of the Water Made Available.
Such declaration will be expressed in terms of both Water Made Available and the Recent
Historic Average and will be updated monthly, and more frequently if necessary, based on then-
current operational and hydrologic conditions and a new declaration with changes, if any, to the
Water Made Available will be made. The Contracting Officer shall provide forecasts of Project
operations and the basis of the estimate, with relevant supporting information, upon the written
request of the Contractor. Concurrently with the declaration of the Water Made Available, the
Contracting Officer shall provide the Contractor with the updated Recent Historic Average.

(b) On or before each March 1 and at such other times as necessary, the
Contractor shall submit to the Contracting Officer a written schedule, satisfactory to the
Contracting Officer, showing the monthly quantities of Project Water to be delivered by the
United States to the Contractor pursuant to this Contract for the Year commencing on such
March 1. The Contracting Officer shall use all reasonable means to deliver Project Water
according to the approved schedule for the Year commencing on such March 1.

(c) The Contractor shall not schedule Project Water in excess of the quantity
of Project Water the Contractor intends to put to reasonable and beneficial use within the

Contractor's Service Area or to sell, transfer, or exchange pursuant to Article 9 of this Contract during any Year.

(d) Subject to the conditions set forth in subdivision (a) of Article 3 of this Contract, the United States shall deliver Project Water to the Contractor in accordance with the initial schedule submitted by the Contractor pursuant to subdivision (b) of this Article, or any written revision(s), satisfactory to the Contracting Officer, thereto submitted within a reasonable time prior to the date(s) on which the requested change(s) is/are to be implemented; Provided: That water delivered by means of an exchange shall be exchanged and delivered only within the terms of State water rights for said water, including any permits, licenses, or approvals issued by the California State Water Resources Control Board relating to those rights.

POINT OF DIVERSION AND RESPONSIBILITY FOR DISTRIBUTION OF WATER

5. (a) Project Water scheduled pursuant to subdivision (b) of Article 4 of this Contract shall be delivered to the Contractor or its designated subcontractors at Folsom Lake, by exchange for water from tributaries upstream of Folsom Lake on the American River or its tributaries, and at any additional point or points of delivery either on Project facilities or another location or locations mutually agreed to in writing by the Contracting Officer and the Contractor.

b) The Contractor may enter into subcontracts for the resale and distribution of water furnished pursuant to this Contract. Each such subcontract shall be subject to the obligations and limitations imposed, and to the rights granted, by this Contract and shall so provide. The failure of any subcontractor to perform those obligations shall not be deemed to be

305 the failure of the Contractor or any other subcontractor; Provided: That the Contractor does not
306 provide any water made available under this Contract to the non-performing subcontractor
307 during the period of non-performance upon Notice to the Contractor from the Contracting
308 Officer of the Subcontractor's non-performance. The terms and conditions of each subcontract
309 shall be approved by the Contracting Officer prior to the execution of such subcontract, which
310 approval shall be limited to a determination that the subcontract is consistent with the provisions
311 of this Contract. Nothing herein or therein contained shall be deemed in any way to release the
312 Contractor from its primary liability to the United States hereunder with respect to each and all
313 of the obligations undertaken by the Contractor in this Contract.

314 (c) The Contractor shall not deliver Project Water to land outside the
315 Contractor's Service Area unless approved in advance by the Contracting Officer.

316 (d) All Water Delivered to the Contractor pursuant to this Contract shall be
317 measured and recorded with equipment furnished, installed, operated, and maintained by the
318 United States, or other appropriate entity as designated by the Contracting Officer at the point or
319 points of delivery established pursuant to subdivision (a) of this Article. Upon the request of
320 either party to this Contract, the Contracting Officer shall investigate, or cause to be investigated,
321 the accuracy of such measurements and shall take any necessary steps to adjust any errors
322 appearing therein. For any period of time when accurate measurements have not been made, the
323 Contracting Officer shall consult with the Contractor prior to making a final determination of the
324 quantity delivered for that period of time.

(e) The Contracting Officer shall not be responsible for the control, carriage, handling, use, disposal, or distribution of Water Delivered to the Contractor pursuant to this Contract beyond the delivery point(s) specified in subdivision (a) of this Article. The Contractor shall indemnify the United States, its officers, employees, agents, and assigns on account of damage or claim of damage of any nature whatsoever for which there is legal responsibility, including property damage, personal injury, or death arising out of or connected with the control, carriage, handling, use, disposal, or distribution of such Water Delivered beyond such delivery points, except for any damage or claim arising out of (i) acts or omissions of the Contracting Officer or any of its officers, employees, agents, or assigns with the intent of creating the situation resulting in any damage or claim; (ii) willful misconduct of the Contracting Officer or any of its officers, employees, agents, or assigns; (iii) negligence of the Contracting Officer or any of its officers, employees, agents, or assigns; or (iv) damage or claims resulting from a malfunction of facilities owned and/or operated by the United States.

MEASUREMENT OF WATER WITHIN THE SERVICE AREA

6. (a) The Contractor shall establish a measuring program satisfactory to the Contracting Officer. The Contractor shall ensure that all surface water delivered for M&I purposes is measured at each M&I service connection. The water measuring devices or water measuring methods of comparable effectiveness must be acceptable to the Contracting Officer. The Contractor shall be responsible for installing, operating, and maintaining and repairing all such measuring devices and implementing all such water measuring methods at no cost to the

United States. The Contractor shall use the information obtained from such water measuring devices or water measuring methods to ensure its proper management of the water, to bill water users for water delivered by the Contractor, and, if applicable, to record water delivered for M&I purposes by customer class as defined in the Contractor's water conservation plan provided for in Article 26 of this Contract. Nothing herein contained, however, shall preclude the Contractor from establishing and collecting any charges, assessments, or other revenues authorized by California law. The Contractor shall include a summary of all its annual surface water deliveries in the annual report described in subdivision (c) of Article 26.

(b) To the extent the information has not otherwise been provided, upon execution of this Contract, the Contractor shall provide to the Contracting Officer a written report describing the measurement devices or water measuring methods being used or to be used to implement subdivision (a) of this Article and identifying the M&I service connections or alternative measurement programs approved by the Contracting Officer, at which such measurement devices or water measuring methods are being used, and, if applicable, identifying the locations at which such devices and/or methods are not yet being used including a time schedule for implementation at such locations. The Contracting Officer shall advise the Contractor in writing within 60 days as to the adequacy of, and necessary modifications, if any, of the measuring devices or water measuring methods identified in the Contractor's report and if the Contracting Officer does not respond in such time, they shall be deemed adequate. If the Contracting Officer notifies the Contractor that the measuring devices or methods are inadequate, the parties shall within 60 days following the Contracting Officer's response,

negotiate in good faith the earliest practicable date by which the Contractor shall modify said measuring devices and/or measuring methods as required by the Contracting Officer to ensure compliance with subdivision (a) of this Article.

(c) All new surface water delivery systems installed within the Contractor's Service Area after the effective date of this Contract shall also comply with the measurement provisions described in subdivision (a) of this Article.

(d) The Contractor shall inform the Contracting Officer and the State of California in writing by April 30 of each Year of the monthly volume of surface water delivered within the Contractor's Service Area during the previous Year.

(e) The Contractor shall inform the Contracting Officer on or before the 20th calendar day of each month of the quantity of M&I Water taken during the preceding month.

(f) The provisions of subsections 6(a) through 6(c) above shall be included in any subcontract(s) for Water Delivered under this Contract.

RATES AND METHOD OF PAYMENT FOR WATER

7. (a) The Contractor shall pay the United States as provided in this Article for all Delivered Water at Rates, Charges, and the Tiered Pricing Component established in accordance with: (i) the Secretary's then-existing ratesetting policy for M&I Water, which ratesetting policy shall be amended, modified, or superseded only through a public notice and comment procedure; (ii) applicable Federal Reclamation law and associated rules and regulations, or policies; and (iii) other applicable provisions of this contract. Payments shall be

made in accordance with Article 37 of this Contract. The Rates, Charges, and Tiered Pricing Component applicable to the Contractor upon execution of this Contract are set forth in Exhibit "B," as may be revised annually.

(b) The Contracting Officer shall notify the Contractor of the Rates, Charges, and Tiered Pricing Component as follows:

(1) Prior to July 1 of each Calendar Year, the Contracting Officer shall provide the Contractor an estimate of the Charges for Project Water that will be applied to the period October 1, of the current Calendar Year, through September 30, of the following Calendar Year, and the basis for such estimate. The Contractor shall be allowed not less than two months to review and comment on such estimates. On or before September 15 of each Calendar Year, the Contracting Officer shall notify the Contractor in writing of the Charges to be in effect during the period October 1 of the current Calendar Year, through September 30, of the following Calendar Year, and such notification shall revise Exhibit "B."

(2) Prior to October 1 of each Calendar Year, the Contracting Officer shall make available to the Contractor an estimate of the Rates and Tiered Pricing Component for Project Water for the following Year and the computations and cost allocations upon which those Rates are based. The Contractor shall be allowed not less than two months to review and comment on such computations and cost allocations. By December 31 of each Calendar Year, the Contracting Officer shall provide the Contractor with the final Rates and Tiered Pricing Component to be in effect for the upcoming Year, and such notification shall revise Exhibit "B."

406 (c) At the time the Contractor submits the initial schedule for the delivery of
407 Project Water for each Year pursuant to subdivision (b) of Article 4 of this Contract, the
408 Contractor shall make an advance payment to the United States equal to the total amount payable
409 pursuant to the applicable Rate(s) set under subdivision (a) of this Article, for the Project Water
410 scheduled to be delivered pursuant to this Contract during the first two calendar months of the
411 Year. Before the end of the first month and before the end of each calendar month thereafter, the
412 Contractor shall make an advance payment to the United States, at the Rate(s) set under
413 subdivision (a) of this Article, for the Water Scheduled to be delivered pursuant to this Contract
414 during the second month immediately following. Adjustments between advance payments for
415 Water Scheduled and payments at Rates due for Water Delivered shall be made before the end of
416 the following month; Provided: That any revised schedule submitted by the Contractor pursuant
417 to Article 4 of this Contract which increases the amount of Water Delivered pursuant to this
418 Contract during any month shall be accompanied with appropriate advance payment, at the Rates
419 then in effect, to assure that Project Water is not delivered to the Contractor in advance of such
420 payment. In any month in which the quantity of Water Delivered to the Contractor pursuant to
421 this Contract equals the quantity of Water Scheduled and paid for by the Contractor, no
422 additional Project Water shall be delivered to the Contractor unless and until an advance
423 payment at the Rates then in effect for such additional Project Water is made. Final adjustment
424 between the advance payments for the Water Scheduled and payments for the quantities of Water
425 Delivered during each Year pursuant to this Contract shall be made as soon as practicable but no

426 later than April 30th of the following Year, or 60 days after the delivery of Project Water carried
427 over under subdivision (g) of Article 3 of this Contract if such water is not delivered by the last
428 day of February.

429 (d) The Contractor shall also make a payment in addition to the Rate(s) in
430 subdivision (c) of this Article to the United States for Water Delivered, at the Charges and the
431 appropriate Tiered Pricing Component then in effect, before the end of the month following the
432 month of delivery. The payments shall be consistent with the quantities of M&I Water Delivered
433 as shown in the water delivery report for the subject month prepared by the Operating
434 Non-Federal Entity or, if there is no Operating Non-Federal Entity, by the Contracting Officer.
435 The water delivery report shall be deemed a bill for the payment of Charges and the applicable
436 Tiered Pricing Component for Water Delivered. Adjustment for overpayment or underpayment
437 of Charges shall be made through the adjustment of payments due to the United States for
438 Charges for the next month. Any amount to be paid for past due payment of Charges and the
439 Tiered Pricing Component shall be computed pursuant to Article 20 of this Contract.

440 (e) The Contractor shall pay for any Water Delivered under subdivision (a),
441 (f), or (g) of Article 3 of this Contract as determined by the Contracting Officer pursuant to
442 applicable statutes, associated regulations, any applicable provisions of guidelines or ratesetting
443 policies; Provided: That the Rate for Water Delivered under subdivision (f) of Article 3 of this
444 Contract shall be no more than the otherwise applicable Rate for M&I Water under subdivision
445 (a) of this Article.

(f) Payments to be made by the Contractor to the United States under this Contract may be paid from any revenues available to the Contractor.

(g) All revenues received by the United States from the Contractor relating to the delivery of Project Water or the delivery of non-Project water through Project facilities shall be allocated and applied in accordance with Federal Reclamation law and the associated rules or regulations, and the then-current Project ratesetting policies for M&I Water.

(h) The Contracting Officer shall keep its accounts pertaining to the administration of the financial terms and conditions of its long-term contracts, in accordance with applicable Federal standards, so as to reflect the application of Project costs and revenues. The Contracting Officer shall, each Year upon request of the Contractor, provide to the Contractor a detailed accounting of all Project and Contractor expense allocations, the disposition of all Project and Contractor revenues, and a summary of all water delivery information. The Contracting Officer and the Contractor shall enter into good faith negotiations to resolve any discrepancies or disputes relating to accountings, reports, or information.

(i) The parties acknowledge and agree that the efficient administration of this Contract is their mutual goal. Recognizing that experience has demonstrated that mechanisms, policies, and procedures used for establishing Rates, Charges, and Tiered Pricing Components, and/or for making and allocating payments, other than those set forth in this Article may be in the mutual best interest of the parties, it is expressly agreed that the parties may enter into

465 agreements to modify the mechanisms, policies, and procedures for any of those purposes while
466 this Contract is in effect without amending this Contract.

467 (j) (1) Beginning at such time as deliveries of Project Water in a Year
468 exceed 80 percent of the Contract Total, then before the end of the month following the month of
469 delivery the Contractor shall make an additional payment to the United States equal to the
470 applicable Tiered Pricing Component. The Tiered Pricing Component for the amount of Water
471 Delivered in excess of 80 percent of the Contract Total, but less than or equal to 90 percent of the
472 Contract Total, shall equal one-half of the difference between the Rate established under
473 subdivision (a) of this Article and the Irrigation Full Cost Water Rate or M&I Full Cost Water
474 Rate, whichever is applicable. The Tiered Pricing Component for the amount of Water
475 Delivered which exceeds 90 percent of the Contract Total shall equal the difference between (i)
476 the Rate established under subdivision (a) of this Article and (ii) the M&I Full Cost Water Rate.

477 (2) Omitted.

478 (3) For purposes of determining the applicability of the Tiered Pricing
479 Components pursuant to this Article, Water Delivered shall include Project Water that the
480 Contractor transfers to others but shall not include Project Water transferred to the Contractor
481 nor shall it include the additional water provided to the Contractor under the provisions of
482 subdivision (f) of Article 3 of this Contract.

483 (k) For the term of this Contract, Rates under the respective ratesetting
484 policies will be established to recover only reimbursable O&M (including any deficits) and
485 capital costs of the Project, as those terms are used in the then-current Project ratesetting

486 policies, and interest, where appropriate, except in instances where a minimum Rate is applicable
487 in accordance with the relevant Project ratesetting policy. Changes of significance in practices
488 which implement the Contracting Officer's ratesetting policies will not be implemented until the
489 Contracting Officer has provided the Contractor an opportunity to discuss the nature, need, and
490 impact of the proposed change.

491 (l) Except as provided in subsections 3405(a)(1)(B) and 3405(f) of the
492 CVPIA, the Rates for Project Water transferred by the Contractor shall be the Contractor's Rates
493 adjusted upward or downward to reflect the changed costs, if any, incurred by the Contracting
494 Officer in the delivery of the transferred Project Water to the transferee's point of delivery in
495 accordance with the then-applicable Project ratesetting policy.

496 (m) Omitted.

497 (n) Omitted.

498 NON-INTEREST BEARING O&M DEFICITS

499 8. Omitted.

500 SALES, TRANSFERS, OR EXCHANGES OF WATER

501 9. (a) The right to receive Project Water provided for in this Contract may be
502 sold, transferred, or exchanged to others for reasonable and beneficial uses within the State of
503 California if such sale, transfer, or exchange is authorized by this Contract, applicable Federal
504 and State laws, and applicable guidelines or regulations then in effect. No sale, transfer, or
505 exchange of Project Water under this Contract may take place without the prior written approval

of the Contracting Officer, except as provided for in subdivision (b) of this Article, and no such sales, transfers, or exchanges shall be approved absent all appropriate environmental documentation, including but not limited to documents prepared pursuant to the National Environmental Policy Act (NEPA) and ESA. Such environmental documentation should include, as appropriate, an analysis of ground-water impacts and economic and social effects, including environmental justice, of the proposed water transfers on both the transferor and transferee.

(b) In order to facilitate efficient water management by means of water transfers of the type historically carried out among Project Contractors located within the same geographical area and to allow the Contractor to participate in an accelerated water transfer program during the term of this Contract, the Contracting Officer shall prepare, as appropriate, all necessary environmental documentation including, but not limited to, documents prepared pursuant to the NEPA and ESA analyzing annual transfers within such geographical areas, and the Contracting Officer shall determine whether such transfers comply with applicable law. Following the completion of the environmental documentation, such transfers addressed in such documentation shall be conducted with advance notice to the Contracting Officer, but shall not require prior written approval by the Contracting Officer. Such environmental documentation and the Contracting Officer's compliance determination shall be reviewed every five years and updated, as necessary, prior to the expiration of the then-existing five-year period. All subsequent environmental documentation shall include an alternative to evaluate not less than the quantity of Project Water historically transferred within the same geographical area.

(c) For a water transfer to qualify under subdivision (b) of this Article, such water transfer must: (i) be for irrigation purposes for lands irrigated within the previous three years, for M&I use, ground-water recharge, water banking, or fish and wildlife resources; not lead to land conversion; and be delivered to established cropland, wildlife refuges, ground-water basins or M&I use; (ii) occur within a single Year; (iii) occur between a willing seller and a willing buyer; (iv) convey water through existing facilities with no new construction or modifications to facilities and be between existing Project Contractors and/or the Contractor and the United States, the Department of the Interior; and (v) comply with all applicable Federal, State, and local or tribal laws and requirements imposed for protection of the environment and Indian Trust Assets, as defined under Federal law. Such water transfers must not lead to land conversion.

(d) Solely for the purpose of determining whether Section 3404(a)(1)(M) of the CVPIA applies to the Contractor and its subcontractors as a transferor or transferee of Project Water, the Contracting Officer acknowledges that the Contractor and its subcontractors are within a county, watershed or other area of origin, as those terms are utilized under California law, of water that constitutes the natural flow of the American River and its tributaries above the confluence of the American and Sacramento Rivers.

APPLICATION OF PAYMENTS AND ADJUSTMENTS

10. (a) The amount of any overpayment by the Contractor of the Contractor's O&M, capital, interest and deficit (if any) obligations for the Year shall be applied first to any

current liabilities of the Contractor arising out of this Contract then due and payable. Overpayments of more than \$1,000 shall be refunded at the Contractor's request. In lieu of a refund, any amount of such overpayment, at the option of the Contractor, may be credited against amounts to become due to the United States by the Contractor. With respect to overpayment, such refund or adjustment shall constitute the sole remedy of the Contractor or anyone having or claiming to have the right to the use of any of the Project Water supply provided for herein. All credits and refunds of overpayments shall be made within 30 days of the Contracting Officer obtaining direction as to how to credit or refund such overpayment in response to the notice to the Contractor that it has finalized the accounts for the Year in which the overpayment was made.

(b) All advances for miscellaneous costs incurred for work requested by the Contractor pursuant to Article 25 of this Contract shall be adjusted to reflect the actual costs when the work has been completed. If the advances exceed the actual costs incurred, the difference will be refunded to the Contractor. If the actual costs exceed the Contractor's advances, the Contractor will be billed for the additional costs pursuant to Article 25.

TEMPORARY REDUCTIONS--RETURN FLOWS

11. (a) Subject to: (i) the authorized purposes and priorities of the Project and the requirements of Federal law; and (ii) the obligations of the United States under existing contracts, or renewals thereof, providing for water deliveries from the Project, the Contracting Officer shall make all reasonable efforts to optimize Project Water deliveries to the Contractor as provided in this Contract.

(b) The Contracting Officer may temporarily discontinue or reduce the quantity of Water Delivered to the Contractor as herein provided for the purposes of investigation, inspection, maintenance, repair, or replacement of any of the Project facilities or any part thereof necessary for the delivery of Project Water to the Contractor, but so far as feasible the Contracting Officer will give the Contractor due notice in advance of such temporary discontinuance or reduction, except in case of emergency, in which case no notice need be given; Provided: That the United States shall use its best efforts to avoid any discontinuance or reduction in such service. Upon resumption of service after such reduction or discontinuance, and if requested by the Contractor, the United States will, if possible, deliver the quantity of Project Water which would have been delivered hereunder in the absence of such discontinuance or reduction.

(c) The United States reserves the right to all seepage and return flow water derived from Water Delivered to the Contractor hereunder which escapes or is discharged beyond the Contractor's Service Area; Provided: That this shall not be construed as claiming for the United States any right to seepage or return flow being put to reasonable and beneficial use pursuant to this Contract within the Contractor's Service Area by the Contractor or those claiming by, through, or under the Contractor.

CONSTRAINTS ON THE AVAILABILITY OF WATER (WATER SHORTAGES)

12. (a) In its operation of the Project, the Contracting Officer will use all reasonable means to guard against a Condition of Shortage in the quantity of water to be made available to the Contractor pursuant to this Contract. In the event the Contracting Officer

determines that a Condition of Shortage appears probable, the Contracting Officer will notify the Contractor of said determination as soon as practicable.

(b) If there is a Condition of Shortage because of errors in physical operations of the Project, drought, other physical causes beyond the control of the Contracting Officer or actions taken by the Contracting Officer to meet current and future legal obligations, except as provided in subdivision (a) of Article 18 of this Contract then no liability shall accrue against the United States or any of its officers, agents, or employees for any damage, direct or indirect, arising therefrom.

(c) Omitted.

(d) Project Water furnished under this Contract will be allocated in accordance with the then-existing Project M&I Water Shortage Policy. Such policy shall be amended, modified, or superseded only through a public notice and comment procedure.

(e) By entering into this Contract, the Contractor does not waive any legal rights or remedies it may have to file or participate in any administrative or judicial proceeding contesting: (i) the sufficiency of the manner in which any Project M&I Water Shortage Policy adopted after the effective date of this Contract was promulgated; (ii) the substance of such a policy; or (iii) the applicability of such a policy. By agreeing to the foregoing, the Contracting Officer does not waive any legal defenses or remedies that it may then have to assert in such a proceeding.

UNAVOIDABLE GROUND-WATER PERCOLATION

13. Omitted.

RULES, REGULATIONS, AND DETERMINATIONS

14. (a) The parties agree that the delivery of water or the use of Federal facilities pursuant to this Contract is subject to Federal Reclamation law, as amended and supplemented, and the rules and regulations promulgated by the Secretary under Federal Reclamation law.

PROTECTION OF WATER AND AIR QUALITY

15. (a) Project facilities used to make available and deliver water to the Contractor shall be operated and maintained in the most practical manner to maintain the quality of the water at the highest level possible as determined by the Contracting Officer: Provided, That the United States does not warrant the quality of the water delivered to the Contractor and is under no obligation to furnish or construct water treatment facilities to maintain or improve the quality of water delivered to the Contractor.

(b) The Contractor shall comply with all applicable water and air pollution laws and regulations of the United States and the State of California; and shall obtain all required permits or licenses from the appropriate Federal, State, or local authorities necessary for the delivery of water by the Contractor; and shall be responsible for compliance with all Federal, State, and local water quality standards applicable to surface and subsurface drainage and/or discharges generated through the use of Federal or Contractor facilities or project water provided by the Contractor within the Contractor's Project Water Service Area.

(c) This Article shall not affect or alter any legal obligations of the Secretary to provide drainage or other discharge services.

QUALITY OF WATER

16. Omitted

WATER ACQUIRED BY THE CONTRACTOR OTHER THAN FROM THE
UNITED STATES

17. (a) Omitted.

(b) Water or water rights now owned or hereafter acquired by the Contractor, other than from the United States, may be stored, conveyed, and/or diverted through Project facilities, subject to the completion of appropriate environmental documentation, with the

approval of the Contracting Officer and the execution of any contract determined by the Contracting Officer to be necessary, consistent with the following provisions:

(1) The Contractor may introduce non-Project water into Project facilities and deliver said water to lands within the Contractor's Service Area, as described in Exhibit "A," subject to payment to the United States of an appropriate rate as determined by the applicable ratesetting policy and the Project use power policy, if such Project use power policy is applicable, each as amended, modified, or superseded from time to time. In addition, if electrical power is required to pump non-Project Water through the facilities, the Contractor shall be responsible for obtaining the necessary power and paying the necessary charges therefore.

(2) Delivery of such non-Project water in and through Project facilities shall only be allowed to the extent such deliveries do not: (i) interfere with other Project purposes as determined by the Contracting Officer; (ii) reduce the quantity or quality of water available to other Project Contractors; (iii) interfere with the delivery of contractual water entitlements to any other Project water service contractors; or (iv) interfere with the physical maintenance of the Project facilities.

(3) The United States shall not be responsible for control, care, or distribution of the non-Project water before it is introduced into or after it is delivered from the Project facilities. The Contractor hereby releases and agrees to defend and indemnify the United States and their respective officers, agents, and employees, from any claim for damage to persons or property, direct or indirect, resulting from the acts of the Contractor, its officers,

employees, agents, or assigns, act(s) in (i) extracting or diverting non-Project water from any source, or (ii) diverting such non-Project water into Project facilities.

(4) Diversion of such non-Project water into Project facilities shall be consistent with all applicable laws, and if involving groundwater, consistent with any applicable ground-water management plan for the area from which it was extracted.

(5) After Project purposes are met, as determined by the Contracting Officer, the United States and the Contractor shall share priority to utilize the remaining capacity of the facilities declared to be available by the Contracting Officer for conveyance and transportation of non-Project water prior to any such remaining capacity being made available to non-Project contractors.

OPINIONS AND DETERMINATIONS

18. (a) Where the terms of this Contract provide for actions to be based upon the opinion or determination of either party to this Contract, said terms shall not be construed as permitting such action to be predicated upon arbitrary, capricious, or unreasonable opinions or determinations. Both parties, notwithstanding any other provisions of this Contract, expressly reserve the right to seek relief from and appropriate adjustment for any such arbitrary, capricious, or unreasonable opinion or determination. Each opinion or determination by either party shall be provided in a timely manner. Nothing in subdivision (a) of Article 18 of this Contract is intended to or shall affect or alter the standard of judicial review applicable under Federal law to

any opinion or determination implementing a specific provision of Federal law embodied in statute or regulation.

(b) The Contracting Officer shall have the right to make determinations necessary to administer this Contract that are consistent with the provisions of this Contract, the laws of the United States and of the State of California, and the rules and regulations promulgated by the Secretary. Such determinations shall be made in consultation with the Contractor.

COORDINATION AND COOPERATION

19. (a) In order to further their mutual goals and objectives, the Contracting Officer and the Contractor shall communicate, coordinate, and cooperate with each other, and with other affected Project Contractors, in order to improve the O&M of the Project. The communication, coordination, and cooperation regarding O&M shall include, but not be limited to, any action which will or may materially affect the quantity or quality of Project Water supply, the allocation of Project Water supply, and Project financial matters including, but not limited to, budget issues. The communication, coordination, and cooperation provided for hereunder shall extend to all provisions of this Contract. Each party shall retain exclusive decision-making authority for all actions, opinions, and determinations to be made by the respective party.

(b) Within 120 days following the effective date of this Contract, the Contractor, other affected Project Contractors, and the Contracting Officer shall arrange to meet with interested Project Contractors to develop a mutually agreeable, written Project-wide process, which may be amended as necessary separate and apart from this Contract. The goal of

698 this process shall be to provide, to the extent practicable, the means of mutual communication
699 and interaction regarding significant decisions concerning Project O&M on a real-time basis.

700 (c) In light of the factors referred to in subdivision (b) of Article 3 of this
701 Contract, it is the intent of the Secretary to improve water supply reliability. To carry out this
702 intent:

703 (1) The Contracting Officer will, at the request of the Contractor,
704 assist in the development of integrated resource management plans for the Contractor. Further,
705 the Contracting Officer will, as appropriate, seek authorizations for implementation of
706 partnerships to improve water supply, water quality, and reliability.

707 (2) The Secretary will, as appropriate, pursue program and project
708 implementation and authorization in coordination with Project Contractors to improve the water
709 supply, water quality, and reliability of the Project for all Project purposes.

710 (3) The Secretary will coordinate with Project Contractors and the
711 State of California to seek improved water resource management.

712 (4) The Secretary will coordinate actions of agencies within the
713 Interior that may impact the availability of water for Project purposes.

714 (5) The Contracting Officer shall periodically, but not less than
715 annually, hold division level meetings to discuss Project operations, division level water
716 management activities, and other issues as appropriate.

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(d) Without limiting the contractual obligations of the Contracting Officer under the other Articles of this Contract, nothing in this Article shall be construed to limit or constrain the Contracting Officer's ability to communicate, coordinate, and cooperate with the Contractor or other interested stakeholders or to make decisions in a timely fashion as needed to protect health, safety, or the physical integrity of structures or facilities.

CHARGES FOR DELINQUENT PAYMENTS

20. (a) The Contractor shall be subject to interest, administrative, and penalty charges on delinquent installments or payments. If a payment is not received by the due date, the Contractor shall pay an interest charge on the delinquent payment for each day the payment is delinquent beyond the due date. If a payment becomes 60 days delinquent, in addition to the interest charge, the Contractor shall pay an administrative charge to cover additional costs of billing and processing the delinquent payment. If a payment is delinquent 90 days or more, in addition to the interest and administrative charges, the Contractor shall pay a penalty charge for each day the payment is delinquent beyond the due date, based on the remaining balance of the payment due at the rate of 6 percent per year. The Contractor shall also pay any fees incurred for debt collection services associated with a delinquent payment.

(b) The interest charge rate shall be the greater of the rate prescribed quarterly in the Federal Register by the Department of the Treasury for application to overdue payments, or the interest rate of one-half of one percent per month prescribed by Section 6 of the Reclamation Project Act of 1939 (P.L. 76-260). The interest charge rate shall be determined as of the due date and remain fixed for the duration of the delinquent period.

(c) When a partial payment on a delinquent account is received, the amount received shall be applied, first to the penalty, second to the administrative charges, third to the accrued interest, and finally to the overdue payment

EQUAL EMPLOYMENT OPPORTUNITY

21. During the performance of this Contract, the Contractor agrees as follows:

(a) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, disability, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, disability, or

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national origin. Such action shall include, but not be limited to, the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of this nondiscrimination clause.

(b) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, disability, or national origin.

(c) The Contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the Contracting Officer, advising the said labor union or workers' representative of the Contractor's commitments under Section 202 of Executive Order 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(d) The Contractor will comply with all provisions of Executive Order No. 11246 of September 24, 1965, as amended, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(e) The Contractor will furnish all information and reports required by said amended Executive Order and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by the Contracting Officer and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(f) In the event of the Contractor's noncompliance with the nondiscrimination clauses of this Contract or with any of the said rules, regulations, or orders, this Contract may be canceled, terminated, or suspended, in whole or in part, and the Contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in said amended Executive Order, and such other sanctions may be imposed and remedies invoked as provided in said Executive Order, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(g) The Contractor will include the provisions of paragraphs (a) through (g) in every subcontract or purchase order unless exempted by the rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of said amended Executive Order, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such

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action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, That in the event the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the Contractor may request the United States to enter into such litigation to protect the interests of the United States

GENERAL OBLIGATION--BENEFITS CONDITIONED UPON PAYMENT

22. (a) The obligation of the Contractor to pay the United States as provided in this Contract is a general obligation of the Contractor notwithstanding the manner in which the obligation may be distributed among the Contractor's water users and notwithstanding the default of individual water users in their obligations to the Contractor.

(b) The payment of charges becoming due pursuant to this Contract is a condition precedent to receiving benefits under this Contract. The United States shall not make water available to the Contractor through Project facilities during any period in which the Contractor is in arrears in the advance payment of water Rates due the United States. The Contractor shall not deliver water under the terms and conditions of this Contract for lands or parties that are in arrears in the advance payment of water rates as levied or established by the Contractor.

(c) With respect to subdivision (b) of this Article, the Contractor shall have no obligation to require advance payment for water rates which it levies.

COMPLIANCE WITH CIVIL RIGHTS LAWS AND REGULATIONS

23. (a) The Contractor shall comply with Title VI of the Civil Rights Act of 1964 (42 U.S.C. 2000d), Section 504 of the Rehabilitation Act of 1973 (P.L. 93-112, as amended), the Age Discrimination Act of 1975 (42 U.S.C. 6101, et seq.), Title II of the Americans with Disabilities Act of 1990, and any other applicable civil rights laws, as well as with their respective implementing regulations and guidelines imposed by the Interior and/or Reclamation.

(b) These statutes require that no person in the United States shall be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity receiving financial assistance from Reclamation on the grounds of race, color, national origin, disability, or age. By executing this Contract, the Contractor agrees to immediately take any measures necessary to implement this obligation, including permitting officials of the United States to inspect premises, programs, and documents.

(c) The Contractor makes this agreement in consideration of and for the purpose of obtaining any and all Federal grants, loans, contracts, property discounts, or other Federal financial assistance extended after the date hereof to the Contractor by Reclamation, including installment payments after such date on account of arrangements for Federal financial assistance which were approved before such date. The Contractor recognizes and agrees that such Federal assistance will be extended in reliance on the representations and agreements made in this Article, and that the United States reserves the right to seek judicial enforcement thereof.

(d) Complaints of discrimination against the Contractor shall be investigated by the Contracting Officer's Office of Civil Rights.

PRIVACY ACT COMPLIANCE

24. Omitted.

CONTRACTOR TO PAY CERTAIN MISCELLANEOUS COSTS

25. In addition to all other payments to be made by the Contractor pursuant to this Contract, the Contractor shall pay to the United States, within 60 days after receipt of a bill and detailed statement submitted by the Contracting Officer to the Contractor for such specific items of direct cost incurred by the United States for work requested by the Contractor associated with this Contract plus indirect costs in accordance with applicable Reclamation policies and procedures. All such amounts referred to in this Article shall not exceed the amount agreed to in writing in advance by the Contractor. This Article shall not apply to costs for routine contract administration.

WATER CONSERVATION

26. (a) Prior to the delivery of water provided from or conveyed through Federally-constructed or Federally-financed facilities pursuant to this Contract, the Contractor shall be implementing an effective water conservation and efficiency program based on the

834 Contractor's water conservation plan that has been determined by the Contracting Officer to meet
835 the conservation and efficiency criteria for evaluating water conservation plans established under
836 Federal law. The water conservation and efficiency program shall contain definite water
837 conservation objectives, appropriate economically feasible water conservation measures, and
838 time schedules for meeting those objectives. Continued Project Water delivery pursuant to this
839 Contract shall be contingent upon the Contractor's continued implementation of such water
840 conservation program. In the event the Contractor's water conservation plan or any revised water
841 conservation plan completed pursuant to subdivision (d) of Article 26 of this Contract have not
842 yet been determined by the Contracting Officer to meet such criteria, due to circumstances which
843 the Contracting Officer determines are beyond the control of the Contractor, water deliveries
844 shall be made under this Contract so long as the Contractor diligently works with the Contracting
845 Officer to obtain such determination at the earliest practicable date, and thereafter the Contractor
846 immediately begins implementing its water conservation and efficiency program in accordance
847 with the time schedules therein.

848 (b) Should the amount of M&I Water delivered pursuant to subdivision (a) of
849 Article 3 of this Contract equal or exceed 2,000 acre-feet per Year, the Contractor shall
850 implement the Best Management Practices identified by the time frames issued by the California
851 Urban Water Conservation Council for such M&I Water unless any such practice is determined
852 by the Contracting Officer to be inappropriate for the Contractor.

(c) The Contractor shall submit to the Contracting Officer a report on the status of its implementation of the water conservation plan on the reporting dates specified in the then existing conservation and efficiency criteria established under Federal law.

(d) At five-year intervals, the Contractor shall revise its water conservation plan to reflect the then-current conservation and efficiency criteria for evaluating water conservation plans established under Federal law and submit such revised water management plan to the Contracting Officer for review and evaluation. The Contracting Officer will then determine if the water conservation plan meets Reclamation's then current conservation and efficiency criteria for evaluating water conservation plans established under Federal law.

(e) If the Contractor is engaged in direct ground-water recharge, such activity shall be described in the Contractor's water conservation plan.

EXISTING OR ACQUIRED WATER OR WATER RIGHTS

27. Except as specifically provided in Article 17 of this Contract, the provisions of this Contract shall not be applicable to or affect non-Project water or water rights now owned or hereafter acquired by the Contractor or any user of such water within the Contractor's Service Area. Any such water shall not be considered Project Water under this Contract. In addition, this Contract shall not be construed as limiting or curtailing any rights which the Contractor or any water user within the Contractor's Service Area acquires or has available under any other contract pursuant to Federal Reclamation law.

872 O&M BY NON-FEDERAL ENTITY

873 28. Omitted.

874 CONTINGENT UPON APPROPRIATION OR ALLOTMENT OF FUNDS

875 29. The expenditure or advance of any money or the performance of any obligation of
876 the United States under this Contract shall be contingent upon appropriation or allotment of
877 funds. Absence of appropriation or allotment of funds shall not relieve the Contractor from any
878 obligations under this Contract. No liability shall accrue to the United States in case funds are
879 not appropriated or allotted.

880 BOOKS, RECORDS, AND REPORTS

881 30. (a) The Contractor shall establish and maintain accounts and other books and
882 records pertaining to administration of the terms and conditions of this Contract, including: the
883 Contractor's financial transactions; water supply data; project operation, maintenance, and
884 replacement logs; project land and rights-of-way use agreements; the water users' land-use (crop
885 census), land-ownership, land-leasing and water-use data; and other matters that the Contracting
886 Officer may require. Reports shall be furnished to the Contracting Officer in such form and on
887 such date or dates as the Contracting Officer may require. Subject to applicable Federal laws
888 and regulations, each party to this Contract shall have the right during office hours to examine
889 and make copies of the other party's books and records relating to matters covered by this
890 Contract.

891 (b) Notwithstanding the provisions of subdivision (a) of this Article, no
892 books, records, or other information shall be requested from the Contractor by the Contracting
893 Officer unless such books, records, or information are reasonably related to the administration or
894 performance of this Contract. Any such request shall allow the Contractor a reasonable period of
895 time within which to provide the requested books, records, or information.

896 (c) Omitted.

ASSIGNMENT LIMITED--SUCCESSORS AND ASSIGNS OBLIGATED

31. (a) The provisions of this Contract shall apply to and bind the successors and assigns of the parties hereto, but no assignment or transfer of this Contract or any right or interest therein shall be valid until approved in writing by the other party.

(b) The assignment of any right or interest in this Contract by either party shall not interfere with the rights or obligations of the other party to this Contract absent the written concurrence of said other party.

(c) The Contracting Officer shall not unreasonably condition or withhold approval of any proposed assignment.

SEVERABILITY

32. Omitted.

RESOLUTION OF DISPUTES

33. Should any dispute arise concerning any provisions of this Contract, or the parties' rights and obligations thereunder, the parties shall meet and confer in an attempt to resolve the dispute. Prior to the Contractor commencing any legal action, or the Contracting Officer referring any matter to Department of Justice, the party shall provide to the other party 30 days' written notice of the intent to take such action; Provided, That such notice shall not be required where a delay in commencing an action would prejudice the interests of the party that intends to file suit. During the 30-day notice period, the Contractor and the Contracting Officer shall meet and confer in an attempt to resolve the dispute. Except as specifically provided,

917 nothing herein is intended to waive or abridge any right or remedy that the Contractor or the
918 United States may have.

919 OFFICIALS NOT TO BENEFIT

920 34. No Member of or Delegate to the Congress, Resident Commissioner, or official of
921 the Contractor shall benefit from this Contract other than as a water user or landowner in the
922 same manner as other water users or landowners.

923
924 CHANGES IN CONTRACTOR'S SERVICE AREA

925 35. (a) While this contract is in effect, no change may be made in the Contractor's
926 organization, by inclusion or exclusion of lands or by any other changes which may affect the
927 respective rights, obligations, privileges, and duties of either the United States or the Contractor
928 under this contract including, but not limited to, dissolution, consolidation, or merger, except
929 upon the Contracting Officer's written consent.

930
931 (b) Within 30 days of receipt of a request for such a change, the Contracting
932 Officer will notify the Contractor of any additional information required by the Contracting
933 Officer for processing said request, and both parties will meet to establish a mutually agreeable
934 schedule for timely completion of the process. Such process will analyze whether the proposed
935 change is likely to: (i) result in the use of Project Water contrary to the terms of this Contract;
936 (ii) impair the ability of the Contractor to pay for Project Water furnished under this Contract or
937 to pay for any Federally-constructed facilities for which the Contractor is responsible; and (iii)
938 have an impact on any Project Water rights applications, permits, or licenses. In addition, the
939 Contracting Officer shall comply with the NEPA and ESA. The Contractor will be responsible
940 for all costs incurred by the Contracting Officer in this process, and such costs will be paid in
941 accordance with Article 25 of this Contract.

942 FEDERAL LAWS

943 36. By entering into this Contract, the Contractor does not waive its rights to contest
944 the validity or application in connection with the performance of the terms and conditions of this
945 Contract of any Federal law or regulation; Provided, That the Contractor agrees to comply with
946 the terms and conditions of this Contract unless and until relief from application of such Federal

947 law or regulation to the implementing provision of the Contract is granted by a court of
948 competent jurisdiction.

949 MEDIUM FOR TRANSMITTING PAYMENTS

950 37. (a) All payments from the Contractor to the United States under this Contract
951 shall be by the medium requested by the United States on or before the date payment is due. The
952 required method of payment may include checks, wire transfers, or other types of payment
953 specified by the United States.

954 (b) Upon execution of the contract, the Contractor shall furnish the Contracting
955 Officer with the Contractor's taxpayer's identification number (TIN). The purpose for requiring
956 the Contractor's TIN is for collecting and reporting any delinquent amounts arising out of the
957 Contractor's relationship with the United States.

958 CONTRACT DRAFTING CONSIDERATIONS

959 38. All double-spaced lines of this Contract have been drafted, negotiated, and
960 reviewed by the parties hereto, each of whom is sophisticated in the matters to which this
961 Contract pertains, and no one party shall be considered to have drafted such Articles.

962 NOTICES

963
964 39. Any notice, demand, or request authorized or required by this Contract shall be
965 deemed to have been given, on behalf of the Contractor, when mailed, postage prepaid, or
966 delivered to the Area Manager, Bureau of Reclamation, 7794 Folsom Dam Road, Folsom,
967 California 95630-1799, and on behalf of the United States, when mailed, postage prepaid, or
968 delivered to the Board of Directors of the El Dorado County Water Agency, 3932 Ponderosa
969 Road, Suite 200, Shingle Springs, California 95682. The designation of the addressee or the

970 address may be changed by notice given in the same manner as provided in this Article for other
971 notices.

972 CONFIRMATION OF CONTRACT

973 40. The Contractor, after the execution of this Contract, shall furnish to the
974 Contracting Officer evidence that pursuant to the laws of the State of California, the Contractor
975 is a legally constituted entity and the Contract is lawful, valid, and binding on the Contractor.
976 This Contract shall not be binding on the United States until such evidence has been provided to
977 the Contracting Officer's satisfaction.

R.O. Draft 9/14/2007
R.O. Draft 05/16/2007
R.O. Draft 03/02/2007

M&I Only
Contract No. 07-WC-20-3534

978 IN WITNESS WHEREOF, the parties hereto have executed this Contract as of
979 the day and year first above written.

980 THE UNITED STATES OF AMERICA

981 By: _____
982 Regional Director, Mid-Pacific Region
983 Bureau of Reclamation

984 EL DORADO COUNTY WATER AGENCY

985 By: _____
986 General Manager
987 El Dorado County Water Agency

988 Attest:

989 By: _____
990 Secretary
991 El Dorado County Water Agency

992

R.O. Draft 9/14/2007
R.O. Draft 05/16/2007
R.O. Draft 03/02/2007

M&I Only
Contract No. 07-WC-20-3534

EXHIBIT A

El Dorado County Water Agency
Service Area

M&I Only
Contract No. 07-WC-20-3534

EXHIBIT B

2008 Water Rates and Charges*
EL DORADO COUNTY WATER AGENCY

	Cost-Of-Service Rate M&I
O&M and Cost of Service (COS) Rates	
O&M Rate	\$
Water Marketing: \$	
Storage: \$	
Deficit Rate (Interest Bearing)	\$
Capital Rate	\$
CFO/PFR Adj. Rate	\$
Total COS Rate (O&M + Deficit + Capital + CFO/PFR)	\$
M&I Full Cost Rate	\$
Tiered Pricing Components	
2 nd Tier (>80% ≤ 90% of Contract Total) (Full Cost – COS)/2	\$
3 rd Tier (>90% of Contract Total) (Full Cost – COS)	\$
Surcharges to the Restoration Fund	\$

*Rates shown are based on temporary contract rates for the proposed Service Area as shown in the Special Water Rates for 2008. Long-term contract rates are calculated according to ratesetting policy after the contract is executed.

Conveyance and Conveyance Pumping O&M costs have been removed for ratesetting purposes and will be directly billed to the contractor.

Restoration Fund surcharges are payments in addition to the water rates and are determined on a fiscal year basis (i.e., October 1 - September 30) pursuant to Section 3407 of the “CVPIA”, P.L. 102-575, Title XXXIV, 106 Stat. 4706.

Recent Historical Use, as defined in the CVP M&I Water Shortage Policy, is _____ AF.

R.O. Draft 9/14/2007
R.O. Draft 05/16/2007
R.O. Draft 03/02/2007

M&I Only
Contract No. 07-WC-20-3534

Additional detail of rate components is available on the Internet at
www.mp.usbr.gov/cvpwaterrates/ .

APPENDIX E – EDCWA/EID DRAFT SUBCONTRACT

SUBCONTRACT BETWEEN THE EL DORADO COUNTY WATER AGENCY
AND THE EL DORADO IRRIGATION DISTRICT
PROVIDING FOR RESALE OF WATER UNDER CONTRACT BETWEEN
THE UNITED STATES OF AMERICA AND THE EL DORADO COUNTY WATER
AGENCY

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1 SUBCONTRACT BETWEEN THE EL DORADO COUNTY WATER AGENCY
2 AND THE EL DORADO IRRIGATION DISTRICT
3 PROVIDING FOR RESALE OF WATER UNDER CONTRACT BETWEEN
4 THE UNITED STATES OF AMERICA AND THE EL DORADO COUNTY WATER
5 AGENCY

6 This Subcontract is made this ____ day of _____, 2008, by and between the
7 EL DORADO COUNTY WATER AGENCY, hereinafter referred to as the Agency, acting
8 through the Chairman of the Board of Directors, with its principal place of business in Shingle
9 Springs, California, and the EL DORADO IRRIGATION DISTRICT, hereinafter referred to as
10 the Member Unit, acting through the President and Secretary of the Board of Directors, with its
11 principal place of business in Placerville, California.

12 WITNESSETH, that:

13 EXPLANATORY RECITALS

14 [1st] WHEREAS, on _____, _____, 2008, in pursuance generally of the Act
15 of June 17, 1902 (32 Stat. 388), and Acts amendatory thereof or supplementary thereto, the
16 United States of America and the El Dorado County Water Agency entered into Contract
17 No. 07-WC-20-3534 providing for water service, hereinafter referred to as Master Contract; and

18 [2nd] WHEREAS, Section 206(b)(1) of P.L. 101-514 (104 Stat. 2074) authorizes and
19 directs the Secretary of the Interior to enter into a municipal and industrial water supply contract
20 with the Contractor (the Agency), not to exceed 15,000 acre-fett annually, as the first phase of a
21 contracting program to meet the long-term water supply needs of El Dorado County; and

1 [3rd] WHEREAS, Article 5(b) of the Master Contract states:

2 “The Contractor [the Agency] may enter into subcontracts with Member Units for the
3 resale and distribution of water furnished pursuant to this Contract within the Contractor=s
4 Service Area. Each such Member Unit subcontract shall be subject to the obligations and
5 limitations imposed, and to the rights granted, by this Contract and shall so provide. The terms
6 and conditions of each Member Unit=s subcontract shall be approved by the Contracting Officer
7 prior to the execution of such Member Unit subcontract, which approval shall be limited to a
8 determination that the subcontract is consistent with the provisions of this Contract. Nothing
9 herein or therein contained shall be deemed in any way to release the Contractor from its primary
10 liability to the United States hereunder with respect to each and all of the obligations undertaken
11 by the Contractor in this Contract.”; and

12 [4th] WHEREAS, the Member Unit is a public agency within the Agency’s service
13 area organized for the purpose of obtaining a water supply from Folsom Dam and Reservoir or
14 for exchange upstream on the American River or its tributaries and is eligible to enter into a
15 subcontract within the meaning of Article 5(b) of the Master Contract; and

16 [5th] WHEREAS, the Member Unit and the United States of America (the United
17 States) have previously entered into and performed under contracts between them for the sale
18 and delivery by the United States to Member Unit of up to 7.550 acre-feet annually of Central
19 Valley Project Water by contract No. _____, dated _____, and the interim
20 renewal contracts related thereto; and

21 [6th] WHEREAS, there is a present and potential need for additional water in the
22 amount of 7,500 acre-feet annually for irrigation and/or municipal and industrial purposes within
23 the boundaries of the Member Unit, and that such a water supply to meet these present and

1 potential needs can be made available by and through the works constructed by the United
2 States; and

3 [7th] WHEREAS, upon motion duly made and seconded, the Board of Directors of the
4 Agency voted unanimously, at a regular meeting thereof on _____2008, to approve the
5 resale to the Member Unit by subcontract of 7,500 acre-feet of the Agency's annual entitlement
6 of 15,000 acre-feet of water pursuant to the Master Contract, subject to the prior approval of the
7 Contracting Officer as defined in the Master Contract; and

8 [8th] WHEREAS, said Contracting Officer has given advance consent to and approval
9 of the form, terms, and conditions of the Subcontract between the Agency and the Member Unit.

10 NOW, THEREFORE, in consideration of the mutual and dependent covenants herein
11 contained, it is hereby mutually agreed by the parties hereto as follows:

12 INCORPORATION OF TERMS OF MASTER CONTRACT

13 1. This Subcontract is entered into pursuant to Article 5(b) of the Master Contract
14 and subject to the terms, conditions, obligations, and limitations imposed by the Master Contract
15 unless specifically provided to the contrary herein.

16 RESALE OF WATER

17 2. The Agency hereby resells to the Member Unit a quantity of water up to 7,500
18 acre-feet of the 15,000 acre-feet of water to which the Agency is annually entitled pursuant to
19 Article 3 of the Master Contract. The Member Unit will not be liable to the Agency for
20 administrative or other charges in connection with said resale of water.

21 POINTS OF DELIVERY--OPERATION AND MAINTENANCE
22 OF PUMPING PLANTS BY MEMBER UNITS

23 3. The water to be furnished to the Member Unit pursuant to this Subcontract shall
24 be delivered at the El Dorado Hills Raw Water Pump Station of Folsom Lake and any additional

1 point or points of delivery upstream of Folsom Lake on the South Fork of the American River or
2 tributaries thereto or another location or locations mutually agreed to in writing by the
3 Contracting Officer and the Contractor.

4 ASSUMPTION OF ADMINISTRATIVE RESPONSIBILITIES BY MEMBER UNIT

5 4. The Member Unit, rather than the Agency, shall perform the following
6 administrative responsibilities with respect to the resale of water pursuant to this Subcontract:

7 (a) The Member Unit shall submit water use schedules to the United States in
8 the manner provided for in Article 4 of the Master Contract;

9 (b) The Member Unit shall make payment, on behalf of the Agency, to the
10 United States for water furnished pursuant to the Subcontract and in the manner and at the rates
11 provided for in Article 7 of the Master Contract. The Agency shall return to the Member Unit
12 any refund resulting from adjustments pursuant to Article 7 of the Master Contract.

13 (c) The Member Unit, on behalf of the Agency, shall pay interest on
14 delinquent payment for water furnished pursuant to this Subcontract in the manner provided for
15 in Article 20 of the Master Contract.

16 (d) The Member Unit, on behalf of the Agency, shall establish and maintain
17 the books, records, and reports pertaining to the Member Unit's financial transactions, land use
18 and crop census, water use, and other matters in the manner provided in Article 30 of the Master
19 Contract.

20 TERM OF SUBCONTRACT

21 5. The term of this Subcontract shall be the same as the term of the Master Contract.

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1 AGENCY TO BE HELD HARMLESS

2 9. The Member Unit shall hold the Agency harmless from every claim for damage to
3 persons or property, and from each and every obligation, arising out of, or connected with, the
4 performance by the Member Unit of this Subcontract.

5 NOTICES

6 10. Any notice, demand, or request authorized or required by this Subcontract shall be
7 deemed to have been given when mailed, postage prepaid, or delivered to the Area Manager,
8 Central California Area Office, U. S. Bureau of Reclamation, 7794 Folsom Dam Road, Folsom,
9 California 95630, on behalf of the United States; to the Board of Directors, El Dorado County
10 Water Agency, 3932 Ponderosa Road, Suite 200, Shingle Springs, California 95682, on behalf of
11 the Agency; and to the Board of Directors, 2890 Mosquito Road, Placerville, California 95667,
12 on behalf of the Member Unit. The designation of the addressee or the address may be changed
13 by notice given in the same manner as provided in this Article for other notices.

14 ASSIGNMENT LIMITED--SUCCESSORS AND ASSIGNS OBLIGATED

15 11. (a) The provisions of this Subcontract shall apply to and bind the successors
16 and assigns of the parties hereto, but no assignment or transfer of this Subcontract or any right or
17 interest therein shall be valid until approved in writing by the Contracting Officer.

18 (b) The assignment of any right or interest in this Subcontract by either party
19 shall not interfere with the rights or obligations of the other party to this Subcontract absent the
20 written concurrence of said other party.

21 (c) The Contracting Officer shall not unreasonably condition or withhold his
22 approval of any proposed assignment.

1 OFFICIALS NOT TO BENEFIT

2 12. No Member of or Delegate to Congress, Resident Commissioner, or official of the
3 Member Unit shall benefit from this Subcontract other than as a water user or landowner in the
4 same manner as other water users or landowners.

5 CONFIRMATION OF SUBCONTRACT

6 13. The Member Unit, after execution of this Subcontract, shall furnish to the
7 Contracting Officer evidence that pursuant to the laws of the State of California, the Member
8 Unit is a legally constituted entity and the Subcontract is lawful, valid, and binding on the
9 Subcontractor. This Subcontract shall not be binding on the United States until such evidence
10 has been provided to the Contracting Officer's satisfaction.

11 AMENDMENTS OF MASTER CONTRACT

12 14. The Agency and the Member Unit agree that neither party will take any action,
13 without the prior written consent of the other party, which would result in an amendment to the
14 Master Contract or this Subcontract which would increase the rates of payment for or the amount
15 of water furnished pursuant thereto.

IN WITNESS WHEREOF, the parties hereto have executed this Subcontract the day and
year here and above written.

EL DORADO COUNTY WATER AGENCY

By: _____
Chairman, Board of Directors

Attest:

Clerk of the Board of Directors
El Dorado County Water Agency

(SEAL)

EL DORADO IRRIGATION DISTRICT

By: _____
President, Board of Directors

By: _____
Secretary, Board of Directors

Approved:

THE UNITED STATES OF AMERICA

By: _____
Regional Director, Mid-Pacific Region
Bureau of Reclamation

APPENDIX F – EDCWA/GDPUD DRAFT SUBCONTRACT

SUBCONTRACT BETWEEN THE EL DORADO COUNTY WATER AGENCY
AND THE GEORGETOWN DIVIDE PUTLIC UTILITY DISTRICT
PROVIDING FOR RESALE OF WATER UNDER CONTRACT BETWEEN
THE UNITED STATES OF AMERICA AND THE EL DORADO COUNTY WATER
AGENCY

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1 SUBCONTRACT BETWEEN THE EL DORADO COUNTY WATER AGENCY
2 AND THE GEORGETOWN DIVIDE PUTLIC UTILITY DISTRICT
3 PROVIDING FOR RESALE OF WATER UNDER CONTRACT BETWEEN
4 THE UNITED STATES OF AMERICA AND THE EL DORADO COUNTY WATER
5 AGENCY

6 This Subcontract is made this ____ day of _____, 2008, by and between the
7 EL DORADO COUNTY WATER AGENCY, hereinafter referred to as the Agency, acting
8 through the Chairman of the Board of Directors, with its principal place of business in Shingle
9 Springs, California, and the GEORGETOWN DIVIDE PUBLIC UTILITY DISTRICT,
10 hereinafter referred to as the Member Unit, acting through the President and Secretary of the
11 Board of Directors, with its principal place of business in Georgetown, California.

12 WITNESSETH, that:

13 EXPLANATORY RECITALS

14 [1st] WHEREAS, on _____, _____, 2008, in pursuance generally of the Act
15 of June 17, 1902 (32 Stat. 388), and Acts amendatory thereof or supplementary thereto, the
16 United States of America and the El Dorado County Water Agency entered into Contract
17 No. 07-WC-20-3534 providing for water service, hereinafter referred to as Master Contract; and

18 [2nd] WHEREAS, Section 206(b)(1) of P.L. 101-514 (104 Stat. 2074) authorizes and
19 directs the Secretary of the Interior to enter into a municipal and industrial water supply contract
20 with the Contractor (the Agency), not to exceed 15,000 acre-fett annually, as the first phase of a
21 contracting program to meet the long-term water supply needs of El Dorado County; and

1 [3rd] WHEREAS, Article 5(b) of the Master Contract states:

2 “The Contractor [the Agency] may enter into subcontracts with Member Units for the
3 resale and distribution of water furnished pursuant to this Contract within the Contractor=s
4 Service Area. Each such Member Unit subcontract shall be subject to the obligations and
5 limitations imposed, and to the rights granted, by this Contract and shall so provide. The terms
6 and conditions of each Member Unit=s subcontract shall be approved by the Contracting Officer
7 prior to the execution of such Member Unit subcontract, which approval shall be limited to a
8 determination that the subcontract is consistent with the provisions of this Contract. Nothing
9 herein or therein contained shall be deemed in any way to release the Contractor from its primary
10 liability to the United States hereunder with respect to each and all of the obligations undertaken
11 by the Contractor in this Contract.”; and

12 [4th] WHEREAS, the Member Unit is a public agency within the Agency’s service
13 area organized for the purpose of obtaining a water supply from Folsom Dam and Reservoir or
14 for exchange upstream on the American River or its tributaries and is eligible to enter into a
15 subcontract within the meaning of Article 5(b) of the Master Contract; and

16 [5th] WHEREAS, there is a present and potential need for additional water in the
17 amount of 7,500 acre-feet annually for irrigation and/or municipal and industrial purposes within
18 the boundaries of the Member Unit, and that such a water supply to meet these present and
19 potential needs can be made available by and through the works constructed by the United
20 States; and

21 [6th] WHEREAS, upon motion duly made and seconded, the Board of Directors of the
22 Agency voted unanimously, at a regular meeting thereof on _____2008, to approve the
23 resale to the Member Unit by subcontract of 7,500 acre-feet of the Agency’s annual entitlement

1 of 15,000 acre-feet of water pursuant to the Master Contract, subject to the prior approval of the
2 Contracting Officer as defined in the Master Contract; and

3 [7th] WHEREAS, said Contracting Officer has given advance consent to and approval
4 of the form, terms, and conditions of the Subcontract between the Agency and the Member Unit.

5 NOW, THEREFORE, in consideration of the mutual and dependent covenants herein
6 contained, it is hereby mutually agreed by the parties hereto as follows:

7 INCORPORATION OF TERMS OF MASTER CONTRACT

8 1. This Subcontract is entered into pursuant to Article 5(b) of the Master Contract
9 and subject to the terms, conditions, obligations, and limitations imposed by the Master Contract
10 unless specifically provided to the contrary herein.

11 RESALE OF WATER

12 2. The Agency hereby resells to the Member Unit a quantity of water up to 7,500
13 acre-feet of the 15,000 acre-feet of water to which the Agency is annually entitled pursuant to
14 Article 3 of the Master Contract. The Member Unit will not be liable to the Agency for
15 administrative or other charges in connection with said resale of water.

16 POINTS OF DELIVERY--OPERATION AND MAINTENANCE
17 OF PUMPING PLANTS BY MEMBER UNITS

18 3. The water to be furnished to the Member Unit pursuant to this Subcontract shall
19 be delivered upstream of Folsom Lake pursuant to an exchange agreement to be made between
20 the Member Unit and Placer County Water Agency subject to the approval of that exchange
21 agreement by the State Water Resources Control Board and the United States, and any additional
22 point or points of delivery upstream of Folsom Lake on the South Fork of the American River or
23 tributaries thereto or another location or locations mutually agreed to in writing by the
24 Contracting Officer and the Contractor.

1 ASSUMPTION OF ADMINISTRATIVE RESPONSIBILITIES BY MEMBER UNIT

2 4. The Member Unit, rather than the Agency, shall perform the following
3 administrative responsibilities with respect to the resale of water pursuant to this Subcontract:

4 (a) The Member Unit shall submit water use schedules to the United States in
5 the manner provided for in Article 4 of the Master Contract;

6 (b) The Member Unit shall make payment, on behalf of the Agency, to the
7 United States for water furnished pursuant to the Subcontract and in the manner and at the rates
8 provided for in Article 7 of the Master Contract. The Agency shall return to the Member Unit
9 any refund resulting from adjustments pursuant to Article 7 of the Master Contract.

10 (c) The Member Unit, on behalf of the Agency, shall pay interest on
11 delinquent payment for water furnished pursuant to this Subcontract in the manner provided for
12 in Article 20 of the Master Contract.

13 (d) The Member Unit, on behalf of the Agency, shall establish and maintain
14 the books, records, and reports pertaining to the Member Unit's financial transactions, land use
15 and crop census, water use, and other matters in the manner provided in Article 30 of the Master
16 Contract.

17 TERM OF SUBCONTRACT

18 5. The term of this Subcontract shall be the same as the term of the Master Contract.

CONTRACTS FOR RESALE OF WATER

6. The Member Unit may enter into contracts, transfers, or exchanges of water furnished pursuant to this Subcontract in the manner provided for in Article 9 of the Master Contract.

GENERAL OBLIGATION OF THE AGENCY

7. Nothing herein contained shall be deemed in any way to release the County from its primary liability to the United States pursuant to the Master Contract with respect to each and all of the obligations undertaken by the Agency in said Master Contract.

GENERAL OBLIGATION OF THE MEMBER UNIT

8. (a) The Member Unit as a whole is obligated to pay the charges becoming due as provided in this Subcontract notwithstanding the individual default in the payment to the Member Unit by individual water users of assessments, tolls, or other charges levied by the Member Unit. The lands which may be charged with any taxes or assessments under this Subcontract are hereby designated as all the lands within the service area of the Member Unit.

(b) The Member Unit will cause to be levied and collected all necessary assessments, standby charges, or water tolls, and will use all of the authority and resources of the Member Unit to meet its obligations hereunder to make in full all payments to be made pursuant to this Subcontract on or before the dates such payments become due and to meet its other obligations under this Subcontract. The Member Unit may, either or both, require the payment of service or standby charges or levy assessments for such water or service.

1 AGENCY TO BE HELD HARMLESS

2 9. The Member Unit shall hold the Agency harmless from every claim for damage to
3 persons or property, and from each and every obligation, arising out of, or connected with, the
4 performance by the Member Unit of this Subcontract.

5 NOTICES

6 10. Any notice, demand, or request authorized or required by this Subcontract shall be
7 deemed to have been given when mailed, postage prepaid, or delivered to the Area Manager,
8 Central California Area Office, U. S. Bureau of Reclamation, 7794 Folsom Dam Road, Folsom,
9 California 95630, on behalf of the United States; to the Board of Directors, El Dorado County
10 Water Agency, 3932 Ponderosa Road, Suite 200, Shingle Springs, California 95682, on behalf of
11 the Agency; and to the Board of Directors, 6425 Main Street, Georgetown, California 95634, on
12 behalf of the Member Unit. The designation of the addressee or the address may be changed by
13 notice given in the same manner as provided in this Article for other notices.

14 ASSIGNMENT LIMITED--SUCCESSORS AND ASSIGNS OBLIGATED

15 11. (a) The provisions of this Subcontract shall apply to and bind the successors
16 and assigns of the parties hereto, but no assignment or transfer of this Subcontract or any right or
17 interest therein shall be valid until approved in writing by the Contracting Officer.

18 (b) The assignment of any right or interest in this Subcontract by either party
19 shall not interfere with the rights or obligations of the other party to this Subcontract absent the
20 written concurrence of said other party.

21 (c) The Contracting Officer shall not unreasonably condition or withhold his
22 approval of any proposed assignment.

1 OFFICIALS NOT TO BENEFIT

2 12. No Member of or Delegate to Congress, Resident Commissioner, or official of the
3 Member Unit shall benefit from this Subcontract other than as a water user or landowner in the
4 same manner as other water users or landowners.

5 CONFIRMATION OF SUBCONTRACT

6 13. The Member Unit, after execution of this Subcontract, shall furnish to the
7 Contracting Officer evidence that pursuant to the laws of the State of California, the Member
8 Unit is a legally constituted entity and the Subcontract is lawful, valid, and binding on the
9 Subcontractor. This Subcontract shall not be binding on the United States until such evidence
10 has been provided to the Contracting Officer's satisfaction.

11 AMENDMENTS OF MASTER CONTRACT

12 14. The Agency and the Member Unit agree that neither party will take any action,
13 without the prior written consent of the other party, which would result in an amendment to the
14 Master Contract or this Subcontract which would increase the rates of payment for or the amount
15 of water furnished pursuant thereto.

IN WITNESS WHEREOF, the parties hereto have executed this Subcontract the day and
year here and above written.

EL DORADO COUNTY WATER AGENCY

By: _____
Chairman, Board of Directors

Attest:

Clerk of the Board of Directors
El Dorado County Water Agency

(SEAL)

GEORGETOWN DIVIDE PUBLIC UTILITY DISTRICT

By: _____
President, Board of Directors

By: _____
Secretary, Board of Directors

Approved:

THE UNITED STATES OF AMERICA

By: _____
Regional Director, Mid-Pacific Region
Bureau of Reclamation

APPENDIX G – DRAFT TERRESTRIAL BIOLOGICAL ASSESSMENT

RECLAMATION

Managing Water in the West

Draft Biological Assessment

Central Valley Project Water Service Contract between U.S. Bureau of Reclamation and the El Dorado County Water Agency

Authorized under Public Law 101-514 (Section 206)



U.S. Department of the Interior
Bureau of Reclamation
Central California Area Office
Folsom, California



El Dorado County Water Agency
3932 Ponderosa Road, Ste 200
Shingle Springs, California

June 2009

Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Draft Biological Assessment

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Authorized under Public Law 101-514 (Section 206)

Prepared by

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April 2008

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Introduction and Background

The purpose of this Biological Assessment (BA) is to evaluate the U.S. Bureau of Reclamation (Reclamation) and the El Dorado County Water Agency (EDCWA) Central Valley Project (CVP) Water Service Contract to determine the effect of the Project (Proposed Action) on terrestrial federally listed threatened, endangered, candidate, and proposed species. This BA is prepared in accordance with legal requirements set forth under Section 7 of the Federal Endangered Species Act (ESA) (16 U.S.C. 1536c).

In 1990, Congress passed Public Law 101-514 (P.L. 101-514) as part of the approved appropriations under the Water Resources Development Act. P.L. 101-514 authorized and directed the Secretary of the Interior to enter into CVP municipal and industrial (M&I) water service contracts with Sacramento and El Dorado counties, including up to 15,000 acre-feet annually (AFA) to serve M&I water needs in El Dorado County. The legislation contemplates a contract for up to 22,000 AFA with the Sacramento County Water Agency, another contract for up to 13,000 AFA with the San Juan Suburban Water District, and third contract of up to 15,000 AFA with EDCWA. As currently proposed, the new CVP M&I water service contract between Reclamation and EDCWA would represent a master contract allowing EDCWA to execute subcontracts in various allocations, but not totaling more than 15,000 AFA, with two of its member districts in the western portion of El Dorado County—the El Dorado Irrigation District (EID) and the Georgetown Divide Public Utility District (GDPUD). This action, the execution of a master water service contract with EDCWA, and subcontracts with EID and GDPUD, represents the Proposed Action evaluated in this BA.

This BA addresses terrestrial species and includes an analysis of the effect of the Proposed Action on delta smelt (*Hypomesus transpacificus*) and its critical habitat. Delta smelt is a federally listed aquatic species under the jurisdiction of the U.S. Fish and Wildlife Service (USFWS). Refer to Appendix A for a summary of consultation completed for delta smelt.

Reclamation has also developed a separate BA for the Proposed Action related to other resources aquatic including federally listed marine species and critical habitat under the jurisdiction of National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA Fisheries). These include North American green sturgeon (*Acipenser medirostris*), Central Valley steelhead (*Oncorhynchus mykiss*), and three races of Chinook salmon (*Oncorhynchus tshawytscha*)—Central Valley spring-run, Central Valley fall- and late fall-run, and Sacramento River winter-run. NOAA Fisheries issued a Biological Opinion (BO) regarding project effects on these species on June 4, 2009. A summary of the BO and the current status of the consultation with NOAA Fisheries is provided under “Summary of Relevant Consultations” in of this document.

The primary analysis included in this BA addresses eight federally listed terrestrial species, listed below, that are known to occur in the Action Area, or that could potentially occur in the Action Area, based on geographic and elevation range and habitat present. The USFWS Species List (USFWS 2009, Appendix B) initially identified 11 federally listed terrestrial species as potentially occurring in the Action Area. However, three of these species—vernal pool fairy shrimp (*Branchinecta lynchi*), California tiger salamander (*Ambystoma californiense*), and giant garter snake (*Thamnophis gigas*)—were determined to be unlikely to occur because of lack of suitable

habitat. These species are not addressed further in this document. Refer to Appendix C for more

information on the occurrence or potential for occurrence for all 11 species.

The eight federally listed terrestrial species that are known to occur in the Action Area, or that could potentially occur in the Action Area, based on geographic and elevation range and habitat present, are listed here.

Federally Listed Plants

- Stebbins' morning glory (*Calystegia stebbinsii*; Federal Endangered (FE), California Endangered (CE), California Native Plant Society (CNPS) 1B.1^{1,2})
- Pine Hill ceanothus (*Ceanothus roderickii*; FE, California Rare (CR), CNPS 1B.2³)
- Pine Hill flannel bush (*Fremontodendron californicum* ssp. *decumbens*; FE, CR, CNPS 1B.2)
- El Dorado bedstraw (*Galium californicum* ssp. *sierrae*; FE, CR, CNPS 1B.2)
- Layne's ragwort (*Packera layneae*; Federal Threatened (FT), CR, CNPS 1B.2)

Federally Listed Wildlife

- Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*; FT, Federal Proposed for Delisting (FPD))
- California red-legged frog (*Rana aurora draytonii*; FT, California Species of Concern (CSC))
- Bald eagle (*Haliaeetus leucocephalus*; Former FT (Delisted July 9, 2007), CE, California Fully Protected Species (CFP))

¹ The California Native Plant Society (CNPS) maintains a rating system for rare, threatened, or endangered plants in California.

² 1B.1: Plant is seriously endangered in California and elsewhere. Over 80 percent of occurrences are threatened, with a high degree and immediacy of threat.

³ 1B.2: Plant is fairly endangered in California and elsewhere. 20–80 percent of occurrences are threatened.

Project History

Since P.L.101-514 was passed in 1990, numerous events have unfolded that have affected or have been a part of the 17-year contracting process for this Proposed Action. A summary of these events to date is provided below.

In 1992, the 102nd Congress signed into law the Central Valley Project Improvement Act (CVPIA), which mandated changes in management of the CVP, particularly for the protection, restoration, and enhancement of fish and wildlife. Among other things, the CVPIA called for Reclamation to negotiate long-term water contract renewals for more than 100 water districts. Section 3409 of the CVPIA required the completion of a programmatic Environmental Impact Statement (PEIS) prior to the renewal of these contracts. The requirement included a moratorium on new CVP water service contracts until the PEIS was completed and associated new fisheries restoration goals were attained. However, per the Act, this moratorium was not applicable to the P.L. 101-514 water contracts.

The project scoping process for the Proposed Action under the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA) was completed in early 1994, after which activity related to preparation of the environmental review documents for the contract slowed. In part, this was due to the renewed focus on the acquisition of new water rights for EID under the proposed “El Dorado Project.” The El Dorado Project was EID’s proposed acquisition of Federal Energy Regulatory Commission (FERC) Project No. 184 from Pacific Gas and Electric (PG&E) and the acquisition by EID of a water right permit for 17,000 AFA of water diverted through Project No. 184 for consumptive use purposes.

Additionally, at this time, the proponents of the P.L. 101-514 contract decided to wait to complete environmental review until the Sacramento County P.L. 101-514 EIS/EIR and contract were complete (see Summary of Relevant Consultations).

The environmental review process for the EDCWA P.L. 101-514 CVP Water Service Contract was reinitiated in July 1998 following the adoption of a General Plan for El Dorado County by the County Board of Supervisors in 1996. The EIR prepared for the General Plan was challenged in court for not adequately disclosing potential effects associated with the General Plan. In February 1999, the Sacramento County Superior Court ruled that, in certain respects, El Dorado County failed to comply with CEQA in the adoption of its General Plan. Later the court issued a peremptory writ of mandate (Writ) that allowed the County to approve some limited amount of development during the period in which the County prepared and certified a new EIR and approved a new General Plan.

Another court decision affecting the current project was issued by the Third District California Court of Appeal, also in 1999. The case of *County of Amador v. El Dorado County Water Agency et al.* established that, where the only land use planning agency within a water provider’s service area lacks a current, legally adequate General Plan, the water provider cannot seek to obtain new water supplies for future growth based solely on population projections found in a draft, unadopted General Plan. This court decision was in response to a legal challenge to EID’s acquisition of 17,000 AFA of Project 184 water, but the implications of the decision prolonged the postponement of this current project. The CVP water supply contract environmental review could not be completed, nor the contracts executed, before the County adopted a new General Plan and the Writ was lifted.

Following the 1999 issuance of the Writ, El Dorado County performed additional environmental analyses, resulting in the revision of the General Plan Update and its associated environmental documents by 2003. In September of 2005, the Sacramento County Superior Court determined that the new General Plan Update and its environmental review satisfied the terms of the Writ, and the Writ was lifted, allowing the full implementation of the General Plan.

The environmental review process for this contracting action was reinitiated in September of 2006 after the County planning documents and Reclamation operational tools (e.g., CALSIM II) were updated. A third Notice of Intent (NOI) and Notice of Preparation (NOP) was deemed necessary due to the elapsed time from the last noticing in 1998. The NOI and NOP were prepared and recirculated, with the comment period closing on October 16, 2006. Two Public Scoping Meetings were held in September 2006, one in Placerville (in the EID service area) and one in Greenwood (in the Georgetown service area). Public comment and response to the NOI and NOP were taken at the meetings, and by mail through October 16, 2006.

Consultation History

Reclamation, pursuant to the Federal ESA, must consult with USFWS with regard to projects that may affect the continued existence of a federally listed species. Species are defined as threatened or endangered by USFWS if they are listed in Title 50 of the Code of Federal Regulations (§§17.11 or 17.12).

Summary of Relevant Consultations

USFWS and NOAA Fisheries have issued a number of Biological Opinions (BOs) addressing the effects of delivery of federal

water on special-status species. Summarized below are seven BOs that provide a context for the consultation addressed in this BA. The first BO addresses potential effects of the Proposed Action on species under the jurisdiction of NOAA Fisheries. The second BO addresses delivery of federal water to Sacramento County under P.L. 101-514. The remaining five BOs address requirements of the 1992 Central Valley Project Improvement Act.

Biological Opinion on the Long-Term Central Valley Project and State Water Project Operations Criteria and Plan (NOAA Fisheries 2009)

NOAA Fisheries Service issued a Biological Opinion (BO) for the long-term coordinated operations of the CVP and the State Water Project (SWP) on June 4, 2009. Reclamation has provisionally accepted the Reasonable and Prudent Alternative (RPA) contained in the BO, and will immediately implement the near-term elements of the RPA by modifying the operations as required and continue with the planning and implementation associated with several major actions called for in the RPA, including construction of the Red Bluff Pumping Plant, replacement of the Whiskeytown Reservoir temperature curtain, and fish passage improvements on Battle Creek. The provisional acceptance is conditioned on the need to further evaluate and develop many of the longer-term actions. These actions are subject to future appropriations, and may be beyond Reclamation's authority, or require agreements from outside parties to implement, which are outside of Reclamation's control. Accordingly, Reclamation anticipates that re-initiation of Section 7 consultation may be needed as these actions are further developed.

Specifically, for the American River, a flow management standard has been identified for implementation. Reclamation is still evaluating this flow standard. The NOAA Fisheries BO RPA also includes a requirement to develop a genetic management plan for Nimbus Fish Hatchery, a new target temperature objective of

65°F at Watt Avenue and a flow threshold of 4,000 cfs. Specific cold water pool temperature management facilities and actions have been identified in the RPA for study and implementation and planning and implementation of fish passage facilities at both Nimbus and Folsom Dams are also identified. Reclamation is working to better understand, in detail, how all the RPA requirements CVP wide, may affect the CVP and its operations.

Formal Consultation on Water Service Contracts with Sacramento County Water Agency, San Juan Water District, and City of Folsom, Sacramento County, California (USFWS 1999a)

On July 17, 1997, USBR requested formal consultation on potential effects to eight terrestrial species resulting from 35,000 AFA of federal water to be delivered to Sacramento County under P.L. 101-514. On March 11, 1999, USFWS issued a final BO concluding that the Proposed Action was not likely to jeopardize the continued existence of any of the eight species. The BO did not authorize incidental take of valley elderberry longhorn beetle (VELB) because “the discrete distribution of elderberry shrubs is more appropriate for project-specific take authorization.” Terms and conditions for exemption from Section 9 prohibitions include implementation of USBR-proposed conservation measures, development of a Habitat Conservation Plan (HCP), and specific measures for the protection of wetland habitat and riparian corridors.

Reinitiation of Formal Endangered Species Action Consultation and Conference on the Interim Renewal of 67 Water Service Contracts of the Central Valley Project, California (USFWS 1995)

On February 27, 1995, USFWS issued a BO for 67 interim CVP water contracts to allow USBR to continue to deliver CVP water to existing CVP contractors, including EID, during the period from expiration of existing contracts until the PEIS was certified. The 1995 BO included all eight terrestrial species analyzed in this document. USFWS issued a “no jeopardy”

opinion for the interim contracts, provided that USBR implement programs within the water districts to ensure that land use changes associated with CVP water were addressed pursuant to the ESA in coordination with USFWS.

Draft Biological Opinion on Operation of the CVP and Implementation of the CVPIA (USFWS 2000)

In November 2000, USFWS issued a programmatic BO (CVPIA PBO) for the implementation of the CVPIA and continued operation and maintenance (O&M) of the CVP, including about 120 long-term water contract renewals for all districts receiving CVP water. USFWS issued a “no jeopardy” opinion for the Proposed Action based on implementation of and compliance with conservation measures and commitments included in USBR’s project description. The Incidental Take Statement in the CVPIA BO covers only normal O&M of CVP facilities. Terms and conditions for exemption from Section 9 prohibitions require that USBR implement a USFWS-approved O&M plan for the Central California Area Office (CCAO), which includes Placer, El Dorado, Sacramento, Calaveras, and Tuolumne counties.

Formal Endangered Species Consultation on the Operations and Maintenance Occurring on Bureau of Reclamation Lands within the Central California Area Office (USFWS 2005)

On August 27, 2003, USBR requested consultation on potential effects of its CCAO O&M Plan (developed in fulfillment of the requirements of the CVPIA BO) on VELB. The O&M Plan consists of three documents: (1) an O&M Plan, (2) an Integrated Pest Management (IPM) Plan, and (3) the CCAO Field Operations Manual, to be used by field personnel for identifying listed species and their habitat when conducting O&M activities. USFWS issued a BO on February 9, 2005, concluding that O&M conducted according to the Plan is not likely to jeopardize the continued existence of VELB. The incidental take statement allows for take of

all beetles inhabiting as many as, but no more than, five elderberry shrubs over 25 years, each with at least one stem measuring 1.0 inch or greater in diameter at ground level; or as many as 50 elderberry stems measure 1.0 inch or greater in diameter at ground level due to routine maintenance over 25 years.

Formal Consultation on Renewal of the Long-Term Water Service Contract for the El Dorado Irrigation District in the American River Division (USFWS 2006a) On January 12, 2006, USFWS issued a specific BO for the renewal of a long-term water contract for EID. As required by the CVPIA PBO, the EID long-term contract analysis tiered off the programmatic analysis for the implementation of the CVPIA and CVP, and carried forward Reclamation's commitments under the CVPIA PBO. The analysis included 7,550 AFA for delivery to the EID service area. It did not include the 7,500 AFA to be delivered to the Action Area under P.L. 101-514. USFWS issued a "no jeopardy" opinion for the continued existence of the five federally listed gabbro plants, stating that loss of undeveloped and unprotected parcels of land representing potential habitat for gabbro plants would not substantially preclude or impair management and recovery activities within the Pine Hill Preserve. The 2006 BO also concluded that the long-term contract renewal would not adversely affect vernal pool fairy shrimp, VELB, California red-legged frog (CRLF), giant garter snake, or bald eagle.

Summary of Key Consultation for the Proposed Action

Following is a brief summary of relevant key consultation conducted specifically for federally listed terrestrial species potentially occurring in the Action Area analyzed in this BA. Copies of pertinent documents and correspondence related to this consultation are provided in Appendix D.

- **May 25, 2006:** Following re-initiation of the environmental review process for the

Proposed Action, representatives from Reclamation, EDCWA, and USFWS met to discuss the potential effects of P.L. 101-514 in El Dorado County. USFWS stated that preservation of special-status plants on gabbro-derived soils in the southern portion of the Action Area is the primary ESA issue under USFWS jurisdiction. Other ESA issues to be addressed include **VELB, CRLF, and bald eagle.**

- **July 11, 2006:** A meeting was held between Reclamation, EDCWA, and USFWS to define the Section 7 Action Area and discuss initial screening criteria for evaluating potential effects on gabbro soil plants.
- **July 18, 2006:** USBR received an e-mail from USFWS stating that impacts to gabbro-derived soil plants should be analyzed for all undeveloped parcels larger than 4 acres that have appropriate habitat (based on screening criteria).
- **August 22, 2006:** Representatives from Reclamation, EDCWA, and USFWS met to continue evaluation of appropriate gabbro-derived soils parcels in the southern portion of the Action Area and to discuss impact analysis approaches for species of concern for the northern portion of the Action Area (i.e., VELB, CRLF, bald eagle). USFWS concurred that the best approach to evaluate project effects on CRLF is to determine effects on potential breeding habitat. Additionally, with limited survey data available for VELB, USFWS concurred that Reclamation should determine effects on potential VELB habitat, defined as elderberry shrubs in riparian areas.
- **September 25, 2006:** USBR provided USFWS with revised Action Area maps and other information requested by USFWS at the Pine Hill Preserve Management Team meeting.
- **December 7, 2006:** Representatives from EDCWA, and Steve Thompson, Roger Guinee, and Dan Castleberry of USFWS, met to discuss the status of relevant

consultation to date. USFWS agreed that the P.L. 101-514 contract can proceed through Section 7 consultation.

- **August 24, 2007:** Meeting with USFWS to review and discuss comments on the draft BA.
- **November 20, 2007:** Conference call with USFWS to discuss next steps for submittal of the BA to USFWS.
- **June 10, 2008:** Letter from USFWS addressing Reclamation's request for concurrence that the Proposed Action is not likely to adversely affect any federally listed species. USFWS concluded that the information included in the 2008 Draft BA was not sufficient and requested additional information on federally listed species in the EID CVP CPOU west of Bass Lake, as well as additional information on use of water from EID's Sly Park reservoir.
- **May 12, 2009:** Representatives from Reclamation, EDCWA, and USFWS met to review the data requests included in the June 10, 2008 USFWS Letter and obtain clarification on the requested revisions to the Draft BA.
- **May 12, 2009:** E-mail from USFWS providing sample language to address CRLF. This language was determined to be inappropriate for the Project at a latter date.
- **May 20, 2009:** Representative from EDCWA and USFWS met to discuss the status of the BA and consultation to date. USFWS committed to review the sample language that was provided on May 12, 2009 and justify the need for this language to address CRLF and VELB instead of the approach that was included in the Draft BA. EDCWA also provided USFWS with a detailed schedule for completion of the Draft BA so that it could be included as an attachment in the Project EIR.
- **June 10, 2009:** Conference call with Susan Moore of USFWS to discuss the

appropriateness of the sample language provided by USFWS on May 12, 2009 to address CRLF and VELB. Susan Moore confirmed that the language was not necessary to address CRLF for the Project. The approach included in the Draft BA was appropriate. USFWS determined that further investigation was necessary to make a determination on whether the sample language was appropriate for VELB.

Summary of Conservation Efforts for Gabbro Soils Plants

USFWS, Reclamation, EDCWA, EID, El Dorado County, and other parties have been involved in ongoing efforts to preserve gabbro plants and their habitat. These efforts have been focused on regional planning for the protection of gabbro plants. Efforts to preserve the gabbro plants began in 1979 when, under recommendation from the California Native Plant Society (CNPS), the California Department of Forestry (CDF) transferred 320 acres of habitat at Pine Hill to the California Department of Fish and Game (CDFG) for ecosystem management. In 1992, the El Dorado County Board of Supervisors formed a Rare Plant Technical Advisory Committee (RPTAC) with business, non-profit, and state and federal agency participation to advise the County on a rare plant policy. Also in 1992, Reclamation, CDFG, and Bureau of Land Management (BLM) signed a Memorandum of Understanding (MOU) that acknowledged the importance of preservation of habitat for gabbro species. In 1995, USFWS conducted a critical needs analysis as part of its BO developed for the 67 CVP interim water contracts and identified the need to establish a preserve for gabbro species (USFWS 1995).

The five gabbro plants were listed by USFWS on October 18, 1996. In 2001, eight local, state, and federal agencies signed a Cooperative

Management Agreement that formalized each participant's role in the management and protection of the gabbro plants.

USFWS issued its Recovery Plan for Gabbro Soil Plants of the Central Sierra Nevada Foothills (Recovery Plan) in 2002. The Recovery Plan provides a recommendation for a 5,000-acre preserve that would provide the best achievable protection for gabbro species in western El Dorado County. The location and prioritization for areas in the preserve was developed in conjunction with the RPTAC. USFWS considered the following criteria in developing the preserve:

- Priority was given to areas occupied by several of the targeted species
- Principles of preserve design (linkages, size of preserve) were considered
- Developed lands were eliminated to the extent possible
- Proportion of private to public lands was considered

County, state, and federal agencies have provided funding since the 1990s for the acquisition of properties for the gabbro plants preserve, called the Pine Hill Preserve (Appendix E). A management plan for the preserve, the Pine Hill Preserve Management Plan (PHPMP) was issued in July 2008 (CDFG 2008). The Preserve currently includes 4,042 acres in western El Dorado County, of which 3,114 lie within the 5,000 acres designated for the recovery of the gabbro species in the USFWS Recovery Plan. Ownership of the land is divided among BLM (3,284 acres), CDFG (625 acres), El Dorado County (104 acres), and Reclamation (29 acres).

The Preserve is currently managed under a revised Cooperative Management Agreement between BLM, Reclamation, USFWS, CDFG, CDF, EDCWA, EID, El Dorado County, and the

private non-profit American River Conservancy (ARC). The Agreement was entered into on July 18, 2006, and is in effect until July 2011. The PHPMP will be formally reviewed and updated every 5 years.

The purpose of the PHPMP is to coordinate management activities at the Preserve with actions undertaken by federal, state and local agencies; conservation organizations; and private landowners to fulfill the mission of the preserve. The PHPMP outlines strategies for achieving the following objectives.

- Protect and manage gabbro soil rare plant habitat areas in western El Dorado County to ensure their conservation and recovery.
- Promote and conduct research to find the best management techniques to aid in the conservation and recovery of the gabbro soil rare plants.
- Treat vegetation to reduce fuel loads, maintain functional habitat for the rare gabbro soil plant species, and reduce the risks of wildfire damage to human life and property in areas adjacent to the Preserve.
- Provide the community with recreational, educational and outreach opportunities concerning rare plants and their habitats.
- Establish a solid mechanism for funding management activities at the Preserve.

Current Regulatory Environment

This section summarizes current regulatory management in the Action Area as described in various documents published by federal, state, and local agencies, including USFWS, NOAA Fisheries Service, the Army Corps of Engineers (USACE), CDFG, State Water Resources Control Board (SWRCB), Regional Water

Quality Control Board (Regional Water Board), and El Dorado County.

Endangered Species Act

USFWS, pursuant to the federal ESA, must be consulted with regard to projects that may affect the continued existence of federally listed species. Species are defined as threatened or endangered by USFWS if they are listed in Title 50 of the Code of Federal Regulations (§§17.11 or 17.12). Section 9 of ESA and federal regulations prohibit the "take" of federally listed species. The federal ESA defines take as killing, harming, or harassment of such species and includes in the definition habitat modification or degradation that results in death or injury to wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.

For projects involving a federal action, an incidental take permit is issued as part of a consultation under Section 7 of the ESA. USFWS determines whether a proposed project would have "no effect" on listed threatened or endangered species or "may affect" these species. Should USFWS render a "may affect" determination, formal consultation would be initiated between USFWS and the lead agency (in this case, USBR) via submittal of a BA to USFWS. The BA provides an evaluation of the effects of a project on listed and proposed threatened and endangered species. USFWS then prepares a Biological Opinion (BO) regarding whether the Project would jeopardize the continued existence of a species.

For Projects where a federal action is not involved and take of a listed species may occur, the Project proponent must secure an incidental take permit under Section 10(a) of the ESA. This requires that the proponent develop and submit an HCP that addresses project effects to listed species and mitigation.

It should be noted that the ESA does not provide equal protections to federally listed animals and plants. Section 9(a)(1) gives federally listed animals full protection from destruction "within the United States or the territorial sea of the United States" or "upon the high seas." However, Section 9(a)(2)(B) prohibits destruction of federally listed plant species only on "areas under Federal jurisdiction" or in a manner that violates state law. Therefore, listed plants are only protected on federal lands or during activities that are funded, permitted, or carried out by a federal agency, or only to the extent that the plants are already protected by state law. Additional protections for federally listed plants are provided by the Native Plant Protection Act (NPPA), the California Endangered Species Act (CESA), and CEQA.

Fish and Wildlife Coordination Act

Under the Fish and Wildlife Coordination Act (16 USC 661-666c), Reclamation is required to consult with USFWS and NOAA-Fisheries Service before approving projects that will modify the waters or channel of a body of water. Reclamation has been engaged in informal consultation with USFWS and NOAA-Fisheries Service—the reports and recommendations of these agencies will be integrated into documents prepared for this Proposed Action. Specifically, this BA includes methodologies and approaches developed during informal consultation with USFWS to quantify and address potential effects of the Proposed Action on federally listed terrestrial species.

Bald Eagle Protection Act

The Bald Eagle Protection Act was originally passed on June 8, 1940, and was last amended in 1978. The enacting clause of the original act stated that the Continental Congress in 1782 adopted the bald eagle as the national symbol; that the bald eagle became the symbolic

representation of a new nation and the American ideals of freedom; and that the bald eagle was threatened with extinction. As such, the Act imposes criminal and civil penalties on anyone (including associations, partnerships and corporations) in the United States or within its jurisdiction who, unless excepted, takes, possesses, sells, purchases, barter, offers to sell or purchase or barter, transports, exports or imports at any time or in any manner a bald or golden eagle, alive or dead; or any part, nest or egg of these eagles; or violates any permit or regulations issued under the Act.

Clean Water Act

The Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants to surface waters within the United States. The law authorizes the U.S. Environmental Protection Agency (EPA) to set point-source effluent limits for industry and publicly owned treatment works and requires states to set water quality standards for contaminants in surface waters. As defined by the CWA, water quality standards consist of two elements: (1) designated beneficial uses of the water body in question, and (2) criteria that protect the designated uses.

The CWA authorizes the EPA to delegate many permitting, administrative, and enforcement aspects of the law to state governments, although the EPA still retains oversight responsibilities. In California, the CWA is administered through the SWRCB and the nine Regional Water Board offices. Under Section 401 of the CWA, the (Regional Water Board must certify that any project which may result in a discharge into a water of the United States is in compliance with all state and federal water quality standards. Any applicant for a USACE 404 Permit or Rivers and Harbors Act Section 10 Permit must also apply for a Section 10 Water Quality Certificate.

National Environmental Policy Act

The National Environmental Policy Act (NEPA) was signed into law on January 1, 1970. The act establishes national environmental policy and goals for the protection, maintenance, and enhancement of the environment; and it provides a process for implementing these goals in the federal agencies. The Act also established the Council on Environmental Quality (CEQ). NEPA requires federal agencies to integrate environmental values into their decision-making processes by considering the environmental impacts of their proposed actions and reasonable alternatives to those actions.

Any project that has a federal nexus is required to go through the NEPA process, which consists of an evaluation of the environmental effects of a federal undertaking, including its alternatives.

There are three levels of analysis, depending on whether or not an undertaking could significantly affect the environment. These three levels include categorical exclusion determination, preparation of an environmental assessment/finding of no significant impact (EA/FONSI), and preparation of an environmental impact statement (EIS).

California Endangered Species Act

The California Endangered Species Act (CESA) of 1970 generally parallels the main provisions of the federal ESA and is administered by CDFG. Under CESA the term “endangered species” is defined as a species of plant, fish, or wildlife that is “in serious danger of becoming extinct throughout all, or a significant portion of its range.” A threatened species is one that, though not presently threatened with extinction, is likely to become endangered in the foreseeable future. Species listed under CESA

are limited to species or subspecies native to California.

CESA prohibits the “taking” of listed species except as otherwise provided in state law, where take is defined as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” Under California Fish and Game Code section 2081, DFG may “authorize, by permit, the take of endangered species, threatened species, and candidate species if...the take is incidental to an otherwise lawful activity” and if certain other requirements are met.

State agencies, moreover, have additional obligations. Each state lead agency was formerly required to consult with CDFG to ensure that any action it undertakes is not likely to jeopardize the continued existence of any endangered or threatened species or result in destruction or adverse modification of essential habitat. This requirement expired on January 1, 1999, however, as the original legislation creating it had a sunset date of the end of 1998. Even so, every state agency remains subject to a statutory duty “to seek to conserve endangered species and threatened species.” In addition, all state agencies remain subject to the command that they “should not approve projects as proposed which would jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of those species, if there are reasonable and prudent alternatives available consistent with conserving the species or its habitat which would prevent jeopardy.” However, “in the event specific economic, social, or other conditions make infeasible such alternatives, individual projects may be approved if appropriate mitigation and enhancement measures are provided.” (California Fish & Game Code, §§ 2053, 2054.)

In regard to the taking of state-listed plants, CESA also includes exemptions to take as

outlined in the NPPA. However, because of the discrepancies between the NPPA and CESA in the application and definition of the terms “endangered,” “threatened,” and “rare,” there have been various legal interpretations as to which law takes precedence and which protections are guaranteed to state-listed plants under CESA.

California Native Plant Protection Act

The NPPA was implemented in 1977 to “preserve, protect and enhance endangered or rare native plants of this state.” The NPPA defines a plant as endangered when its prospects of survival and reproduction are in immediate jeopardy from one or more causes. A rare plant is defined as a plant species that, though not presently threatened with extinction, occurs in such small numbers throughout its range that it may become endangered if its present environment worsens. The NPPA prohibits the take or sale of rare and endangered plants in California. However, the law includes broad exemptions to the prohibition of take, including emergency work necessary to protect life or property; agricultural operations; fire control measures; timber harvest operations authorized by a Timber Harvest Plan; removal of endangered or rare plants from a canal, lateral ditch, building site, road, or right-of-way; or the removal of endangered or rare plants by a public agency for the provision of public service.

California Environmental Quality Act

The basic goal of CEQA is to develop and maintain a high-quality environment, and the specific goals are for California’s public agencies to identify the significant environmental effects of their actions and to either avoid or mitigate those effects, where feasible.

CEQA applies to “projects” proposed to be undertaken or requiring approval by state, regional, and local government agencies. Projects are activities which have the potential to have a direct or reasonably foreseeable indirect physical impact on the environment and may include the enactment of zoning ordinances, the issuance of conditional use permits, and the approval of tentative subdivision maps. Where a project requires approvals from more than one public agency, CEQA requires one of these public agencies to serve as the “lead agency.” The lead agency must complete the environmental review process required by CEQA, which may include preparation of an EIR if it is determined that the project may have a significant impact on the environment.

CEQA provides certain protections for federally listed plants that are not provided under the federal ESA, NPPA, or CESA. Specifically, CEQA requires a mandatory “finding of significance” for any project that results in a substantial reduction in the number or range of special-status plant species, including federally listed plant species or, in some instances, candidates for federal listing.

Natural Community Conservation Planning Act

The Natural Community Conservation Planning Act (NCCPA) was enacted in 1991. The NCCPA is broader in its orientation and objectives than both the federal ESA and CESA, and is designed to identify and protect individual species that have already significantly declined in number. The primary objective of the NCCP is to conserve natural communities at the ecosystem scale while accommodating compatible land use. The NCCPA seeks to anticipate and prevent the controversies and gridlock caused by species’ listings by focusing on the long-term stability of wildlife and plant communities and including key interests in the process.

An NCCP identifies and provides for the regional or area-wide protection of plants, animals, and their habitats, while allowing compatible and appropriate economic activity. An NCCP also seeks to satisfy the requirements of an HCP under Section 10 of the ESA. El Dorado County, pursuant to its General Plan, is currently in the initial phase of developing an Integrated Natural Resources Management Plan (INRMP). The El Dorado County Board of Supervisors decided on April 30, 2007 not to pursue the development of an INRMP that meets the requirements of a federal HCP or NCCP. Instead the INRMP will be developed to meet the requirements of the El Dorado County Plan, with a separate Memorandum of Understanding to achieve ESA compliance for federally listed gabbro soils plants (El Dorado County 2007).

California State Wetlands Conservation Policy

The Governor of California issued an executive order on August 23, 1993 that created a California State Wetlands Conservation Policy. This policy is being implemented by an interagency task force that is jointly headed by the State Resources Agency and the California Environmental Protection Agency (Cal-EPA). The policy’s three goals are:

- to ensure no overall net loss and a long-term net gain in wetlands acreage and values in a manner that fosters creativity, stewardship, and respect for private property;
- to reduce the procedural complexity of state and federal wetland conservation program administration; and
- to encourage partnerships that make restoration, landowner incentives, and cooperative planning the primary focus of wetlands conservation.

Central Valley Project Improvement Act

Previously referred to as H.R. 429, Public Law 102-575 contains 40 separate titles providing for water resource projects throughout the West. This multipurpose water legislation was signed into law on October 30, 1992. The CVPIA (Title 34 of P.L. 102-575) mandates changes in management of the CVP, particularly for the protection, restoration, and enhancement of fish, wildlife, and associated habitats in the Central Valley and Trinity River basins of California. The primary activities include restoring habitat, modifying water delivery structures, providing water for fish and wildlife, and modifying CVP operations.

Provisions of the CVPIA include the following:

- 800,000 acre-feet of water dedicated and managed to implement fish, wildlife, and habitat restoration purposes and measures annually;
- tiered water pricing applicable to new and renewed contracts;
- water transfer provisions, including sale of water to users outside the CVP service area;
- special efforts to restore anadromous fish population by 2002;
- restoration funds financed by water and power users for habitat restoration and enhancement and water and land acquisitions;
- no new water contracts until fish and wildlife goals are achieved;
- no contract renewals until completion of a PEIS;
- terms of contracts reduced from 40 to 25 years with renewal at the discretion of the Secretary of the Interior;

- installation of a temperature control device at Shasta Dam;
- implementation of fish passage measures at Red Bluff Diversion Dam;
- firm water supplies for Central Valley wildlife refuges; and
- development of a plan to increase CVP yield.

Water Quality Control Plan (Basin Plan) – Central Valley Region, the Sacramento River Basin, and the San Joaquin River Basin

The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins (Basin Plan) (Regional Water Board 1998) defines the beneficial uses, water quality objectives, implementation programs, and surveillance and monitoring programs for waters of the Sacramento River and San Joaquin River Basins. Beneficial uses that are protected against quality degradation, as defined by state law, include “...domestic; municipal; agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves” (Water Code Section 13050(f)). Beneficial use designations include “uses of water that support aquatic habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal laws as rare, threatened, or endangered species.” The Basin Plan contains specific numeric water quality objectives for bacteria, dissolved oxygen, pH, pesticides, electrical conductivity, total dissolved solids, temperature, turbidity, and trace elements, as well as numerous narrative water quality objectives, that are applicable to certain water bodies or portions of water bodies.

El Dorado County General Plan

The 2004 *El Dorado County General Plan: A Plan for Managed Growth and Open Roads, A Plan for Quality Neighborhoods and Traffic Relief* was adopted July 19, 2004, and fully implemented in September 2005 (see Project History). The General Plan has a planning horizon of 2025, and is intended to provide long-range direction and policy for the use of land within El Dorado County.

The General Plan constitutes the most current source of information on land use and land use policy for El Dorado County.

The Plan is organized into nine chapters or “Elements.”

- Land Use Element
- Transportation and Circulation Element
- Housing Element
- Public Services and Utilities Element
- Public Health, Safety, and Noise Element
- Conservation and Open Space Element
- Agriculture and Forestry Element
- Parks and Recreation Element
- Economic Development Element

Each Element is organized into general Goals, then Objectives, and finally, Policies, which provide specific requirements or regulations related to each Objective. Each Element also includes an implementation program, which provides specific measures for the implementation of Goals, and Objectives, and Policies. For example, if a particular Policy requires the County to develop a resource management plan, the implementation plan would include a measure detailing who is to

develop the plan, what is to be included in the plan, a timeline for implementation, etc.

Elements of the General Plan that are pertinent to the analyses included in this BA include Land Use, and Conservation and Open Space.

The Land Use Element divides the County into three broad land use “concept areas:” (1) Community Regions, including communities such as El Dorado Hills, Placerville, and Cameron Park, where urban and suburban land uses will be developed; (2) Rural Centers, including communities such as Cool, Georgetown, and Pilot Hill, where urban and semi-urban land uses will be developed; and (3) Rural Regions, including all lands not contained within the boundaries of the Community Regions and Rural Centers, where natural, agricultural, and forest/timber resources will be preserved. These concept areas are further subdivided into 13 land use or zoning designations meant to “distribute growth and development in a manner that maintains the rural character of the County ... and further(s) the implementation of the Community Region, Rural Center, and Rural Region concept areas” (El Dorado County 2004). Table 1 provides a list of land use designations and their relationship to each concept area.

In addition, the Land Use Element provides for the establishment of three “Overlay Land Use Designations,” including the Agricultural Districts, Platted Lands, and Ecological Preserve overlays, which “provide additional direction for the development of land where circumstances apply generally to lands regardless of the underlying land use designations.” The Ecological Preserve (–EP) overlay identifies areas which have the potential to be established or have been established as habitat preserve areas for rare or endangered plant or wildlife species. The –EP overlay enables land use or building densities for discretionary projects to be transferred to other lands or mitigated.

Table 1. Planning Concept Areas and Land Use Designation Matrix (from EDC 2004).			
Land Use Designations	Concept Areas		
	Community Regions	Rural Centers	Rural Regions
Multifamily Residential	■	■	
High-Density Residential	■	■	
Medium-Density Residential	■	■	
Low-Density Residential	■	■	■
Rural Residential			■
Agricultural Lands			■
Natural Resource			■
Commercial	■	■	
Research & Development	■	■	
Industrial	■	■	■
Open Space	■	■	■
Public Facilities	■	■	■
Tourist Recreational	■	■	■

Additional protections for special-status and common plants and wildlife and their habitats are provided in the Conservation and Open Space Element. This element includes policies related to soil conservation and erosion, water quality and preservation of wetlands, conservation of special-status plants, and other conservation measures for plants and wildlife. Refer to Appendix F for excerpts of these policies that are applicable to analysis described in this document. Specifically, measures in this Element include a requirement for the County to develop and implement within 5 years an INRMP that identifies important habitat in the

County and establishes a program for effective habitat preservation and management (Policy 7.4.2.8); and a requirement that the County review and update the Important Biological Corridor (-IBC) overlay that will apply to lands identified as having high wildlife habitat values (Policy 7.4.2.9).

Additionally, a Biological Resources Study will be completed by a qualified biologist for all discretionary projects resulting in ground disturbance to important biological areas as defined in the INRMP. The Study will identify potential effects of proposed projects and provide mitigation requirements, if necessary, in an Important Habitat Mitigation Program. Mitigation will reduce effects of proposed development to less-than-significant levels in accordance with CEQA thresholds, and therefore will provide protections to federally listed species as required under CEQA. Mitigation will also include a 10-year mitigation monitoring and reporting period (Implementation Measure CO-U for Policy 7.4.1.6).

The County is in the process of developing the INRMP. Activities to date include conducting workshops, issuing a request for a proposal for the INRMP, and developing a work plan. On April 30, 2007, the County Board of Supervisors met to consider several approaches for the development of an INRMP in the context of compliance with ESA, CESA, and the NPPA. The Board voted to move forward with the development of an INRMP in compliance with the General Plan, with separate state and federal compliance through a Memorandum of Understanding specifically addressing gabbro soils plants (El Dorado County 2007).

Proposed Action

P.L. 101-514 (Section 206), as part of the approved appropriations under the Water Resources Development Act of 1990, included,

in total, 50,000 AFA of new CVP M&I contract water for Sacramento and El Dorado counties. These new CVP water contracts represented the first phase of a long-term effort to secure additional water supplies to meet the future needs of this growing region of California.

Sacramento County, under the Sacramento County Water Agency and San Juan Water District (then, San Juan Suburban Water District) completed its joint EIS/EIR with Reclamation in 1997 and has since begun diverting this new CVP allocation. Their allocations are 22,000 AFA for the Sacramento County Water Agency (with an agreed upon 7,000 AFA of that amount allocated to the City of Folsom's East Area) and 13,000 AFA for San Juan Water District. In total, the Sacramento County portion of P.L. 101-514 was 35,000 AFA of new CVP M&I contract water. These contracts approved new diversions from Folsom Reservoir, the lower American River, and the Sacramento River.

As noted previously (see Introduction), the Proposed Action being evaluated in this BA is the execution of the new long-term CVP water service contract between EDCWA and Reclamation, as well as subcontracts with two member districts, EID and GDPUD. Once executed, these contracts will fulfill the mandate of P.L. 101-514 and complete this congressionally authorized new water contracting action. For this Proposed Action, Reclamation is the federal water contracting entity and, accordingly, the federal Lead Agency for this consultation. Both agencies have jointly and cooperatively prepared this BA. Under the new contract, not to exceed 15,000 AFA, CVP M&I water would be made available to EDCWA consistent with Reclamation water contracting requirements. Consistent with P.L. 101-514, this new CVP water allocation can be taken directly from Folsom Reservoir, or exchanged for non-CVP water to be diverted from the American River upstream of Folsom Reservoir.

This contract is a new American River Division CVP M&I water service contract. No new infrastructure, facilities, or land conversions are included as part of the Proposed Action.

Master Contract

Under this Proposed Action, EDCWA would make this new water available to fulfill both current and future in-county water needs. EDCWA is a special district established to address a range of water issues in El Dorado County. EDCWA has no land use authority, is not a physical supplier of water in the County, and acts only as an advisory agency to purveyors in El Dorado County. Furthermore, EDCWA is governed by a separate board of directors than the El Dorado County Board of Supervisors.

The purveyors in the County with the authority to supply water are referred to as EDCWA's member units, and include irrigation districts, public utility districts, and community service districts with the authority to supply water. Several are empowered to provide water service, but currently do not. This new CVP M&I water service contract would represent a master contract which, upon execution, would provide EDCWA the necessary flexibility to subsequently execute subcontracts with two of its member units—either EID, GDPUD, or both—depending on the timing, needs and desires of those districts.

Project Location

El Dorado County is located in Northern California, and stretches from the eastern border of Sacramento County to the California/Nevada border south of Lake Tahoe (Figure 1). Folsom Reservoir lies at the western end of El Dorado County, and includes portions of Sacramento, Placer, and El Dorado counties. Much of the county is in the American River watershed. The South Fork American, Middle Fork American, and Rubicon rivers drain much of the central and

northern portions of the county into Folsom Reservoir. The southern portion of the county is drained by the North, Middle, and South forks of the Cosumnes River. At its eastern end, the Upper Truckee River drains a small portion of the county in the Lake Tahoe basin.

As of 2000, the county was home to 173,407 people (California Department of Finance 2000). The primary cities and towns are South Lake Tahoe, El Dorado Hills, Cameron Park, and Placerville; which together, account for approximately 64% of the county population (California Department of Finance 2005). Two of the most rapidly growing areas are El Dorado Hills and Cameron Park, along the western slopes of the county.

ALLOCATION OF P.L. 101-514 WATER

P.L. 101-514 does not specify how much of the contract amount would be specifically allocated to each individual district in El Dorado County. The law, in fact, is silent on identifying specific districts by name with whom EDCWA could subsequently enter into contracts. For purposes of this document and the analyses contained herein, the Proposed Action is intended to represent a split of the master contract evenly between EID and GDPUD through subcontracts of 7,500 AFA each.

POINTS OF DIVERSION

Under the Proposed Action, all water diverted by EID would be taken from Folsom Reservoir at EID's existing intake. This water would be conveyed to EID's El Dorado Hills Water Treatment Plant (Figure 2) or, possibly to a new water treatment facility at Bass Lake. EID is in the process of completing engineering design for a new intake structure and improved temperature control device (TCD) to replace the existing intake structure at Folsom reservoir. Installing the new, improved TCD would also include expansion of the capacity of the existing intake and possible relocation. The construction of the new TCD is a future federal action that will be

subject to separate Section 7 consultation. For purposes of analysis in this BA, the existing intake is in place and operation for all current diversions.

Distinct from EID's direct diversion capabilities at Folsom Reservoir, GDPUD may only obtain water under the Proposed Action through a water exchange with another purveyor, most likely Placer County Water Agency (PCWA). This is because GDPUD does not possess a direct diversion point on Folsom Reservoir. Water obtained by GDPUD through such an exchange would be from PCWA's Middle Fork American River Project, and could be diverted from the Middle Fork American River, near Auburn. PCWA has recently constructed a new permanent pump station on the American River at the site of the Auburn cofferdam. Initial designs for this project included an under-river caisson from the new pump station to the south side of the river. Were an agreement to be reached between GDPUD and PCWA, GDPUD could use this caisson and build its own pump station along the northern bank of the Middle Fork American River. The pump project would be a future federal project requiring separate environmental analysis. At this time, a Memorandum of Understanding between PCWA and GDPUD has been drafted and is under negotiation. Together, these facilities would be capable of diverting water from the river and conveying it out of the American River canyon to one of GDPUD's existing water treatment facilities, or to a new water treatment facility on the Georgetown Divide.

GDPUD/PCWA Exchange

As noted previously, for GDPUD to receive a new allocation of water under this new contract, an exchange would first have to be negotiated between GDPUD and, most likely, PCWA. Without a direct diversion at Folsom Reservoir, GDPUD must seek an alternative water source because CVP water may not be diverted from

the American River upstream of Folsom Reservoir, the furthest upstream federal impoundment on the American River. P.L. 101-514 expressly provided for this situation by noting that the, "... CVP water could be diverted directly from Folsom Lake or for exchange upstream on the American River or its tributaries."

Since GDPUD has no direct diversion capability of any kind from the North, South, or Middle forks of the American River, it must rely on other facilities or establish its own. As noted previously, the existing permanent Auburn Pumps would provide the necessary diversion facility for GDPUD. No other current efforts to establish new diversion facilities on these water bodies are being considered by GDPUD.

Under the water exchange being considered, GDPUD would divert a prescribed quantity of PCWA's Middle Fork Project (MFP) water-rights water at the Auburn Pumps, in exchange for relinquishing a prescribed quantity of its CVP allocation to PCWA for diversion at Folsom Dam (PCWA is already a CVP contractor and has an authorized point of diversion for CVP water from the urban water supply intake at Folsom Dam). The exact quantities of the exchange and the conditions of its diversions would be the subject of an agreement between GDPUD, PCWA, and Reclamation. One important consideration will be addressing the differential in shortage provisions between CVP water and non-CVP water rights allocations.

For such a water exchange to be put to beneficial use by GDPUD, PCWA would ultimately have to petition the SWRCB for a Change in Place of Use (POU) of its MFP water rights because MFP water rights are not approved for use in El Dorado County. Therefore, for GDPUD to use MFP water-rights water, its service area would have to be included in an expanded POU for MFP water rights. Consequently, because of

this contemplated exchange, both PCWA and the SWRCB would be Responsible Agencies under CEQA for this current action, based on the reasons described above. Additional, project-level environmental review and documentation would need to be prepared when this exchange proceeds and the petition brought before the SWRCB.

Proposed Subcontractor Service Areas

For purposes of clarity in this document, the district within which EID and GDPUD provide water is referred to as a district (EID or GDPUD) service area. Each is identified in Figure 2. CVP water is permitted for use only within a specified area as set forth in Reclamation's permits with the SWRCB. This area is known as the CVP Consolidated Place of Use (or CVP CPOU) (Figure 2). The areas in which the proposed P.L. 101-514 water will be put to beneficial use in each district service area is referred to as a Subcontractor Service Area (SCSA). Each is identified in black hatching on Figure 2. The SCSA where EID intends to deliver water obtained through this contract is consistent with the CVP CPOU. In compliance with state water rights law, no CVP water can or will be delivered to areas outside the CVP CPOU.

Because GDPUD is acquiring new water through an exchange of CVP and non-CVP water, the CVP CPOU is not applicable for this use of new water. As long as the exchanged CVP water (to PCWA) is used within the CVP CPOU, which it presumably would be, there would be no issue regarding the exchange. The SCSAs are also known collectively as the terrestrial federal action area.

Because the new contract water would be restricted to M&I use, the black hatched areas shown in Figure 2 are limited to areas zoned for residential, commercial, public and industrial

use according to the 2004 El Dorado County General Plan. All areas in the proposed SCSAs are wholly within the current district service boundaries of EID and GDPUD. In the future, if either purveyor wishes to expand its SCSA beyond that currently delineated, the areas will need to be 1) annexed into the District boundary (local action) and 2) included within the federal service area (federal action). An annexation is a local boundary change process facilitated by the El Dorado Local Agency Formation Commission (LAFCO). The annexation process requires approvals from local land use authorities as well as compliance with state environmental review. Once the local annexation process is complete, the subcontractor may request to add the area to its existing federal service area. The federal action approving this change is referred to as an inclusion. The inclusion process requires environmental and administrative review. All future changes to the SCSAs will be subject to environmental review pursuant to NEPA, ESA, and other applicable laws.

EID PROPOSED SUBCONTRACTOR SERVICE AREA

The western portion of the EID service area, where EID provides surface water to approximately 140,000 acres, is shown in Figure 2. The EID service area, which covers approximately 30% of western El Dorado County and includes 347,000 acres, spans from El Dorado Hills in the west to Pollock Pines in the east, and from the Cosumnes River to the Middle Fork American River. Elevations in the primary EID service area range from 500 feet msl in the west to over 4,000 feet msl in the east. EID provides treated water to the communities of Pollock Pines, Camino, El Dorado, Diamond Springs, Shingle Springs, Cameron Park, and El Dorado Hills. It also provides water service to the City of Placerville.

Hydraulic constraints in the EID system restrict distribution of treated water originally diverted from Folsom Reservoir to areas west of

Cameron Park. The eastern boundary of the EID SCSA is the highest hydraulic grade planned to be served using the recently constructed Bass Lake Tanks. Water will be pumped from Folsom Reservoir to the Bass Lake Tanks, which have a high-water elevation of 1,477 feet, and distributed to the Cameron Park and El Dorado Hills area. The tank high-water elevation was chosen to maximize the area that could be served by the tanks, and to match the existing hydraulic grade in Cameron Park (Mueller, pers. comm., 2006). The area within the EID SCSA is primarily zoned for residential, commercial, or industrial use.

GDPUD PROPOSED SUBCONTRACTOR SERVICE AREA

GDPUD provides surface water to about 30,000 acres in its service area, of which 2,500 acres are in irrigated commercial crops. Its service area encompasses approximately 75,000 acres. GDPUD's sphere of influence, about 173,000 acres, extends from the Middle and North Fork American River upstream of Folsom Reservoir and the Rubicon River to the north, to the South Fork American River, and east as far as Stumpy Meadows Reservoir on Pilot Creek. Elevations in the GDPUD service area range from between 800 feet msl in the southwest, to about 3,500 feet msl in the northeast.

GDPUD's proposed SCSA, like EID's, is restricted to areas within its current boundaries zoned for residential, commercial, public and industrial use. The boundaries for the GDPUD SCSA include the maximum feasible distance and elevation change over which the District can pump water. Within the district boundary, GDPUD determined that it would be infeasible to serve water to areas over 2,000 feet in elevation. Areas GDPUD would plan to serve with the P.L. 101-514 water include Cool, Auburn Lake Trails, Greenwood, and Pilot Hill.

Contract and Diversion Pattern

As a proposed new federal action, the CVP M&I water service contract and subcontracts could affect the coordinated operations of the CVP and California's State Water Project (SWP).

Regardless of how the total contract amount is split between EID and GDPUD, actual annual allocations would be set based on the yearly determination of water availability made by Reclamation. Early in the water year, CVP contractors request a certain amount of water, up to their full contract amount, based on anticipated needs for that year. Reclamation, through individual contracting officers, then determines allocations for all CVP contractors, based on the CVP Shortage Policy, total project storage, and water-year type (based on several indices). Where shortages are necessary, such cutbacks (percent reduction) are made against averaged historical use. The proposed new CVP water service contract would be subject to the same shortage provisions (maximum 25% cutback) as all other CVP M&I contractors. Adherence to Reclamation's shortage provisions is a term and condition of the contract.

The proposed P.L. 101-514 water contract with EDCWA will be consistent with all pertinent laws and regulations, including the CVPIA (Title 34 of P.L. 102-525) and the Federal ESA. The draft contract will include the standard articles pertaining to CVP water service

contracts, including, but not necessarily limited to:

- Terms of the Contract
- Point of Diversion
- Point of Delivery/Place of Use and CSA
- Timing of Delivery
- Measurement of Water
- Rates and Methods of Payment
- Sales, Transfers or Exchanges
- Temporary Reductions and Shortage Provisions
- Constraints on Availability
- Water Conservation Requirements

Typically, new water deliveries are expected to occur on a characteristic demand pattern, consistent with monthly use. Table 2 illustrates a potential monthly demand/diversion pattern for both EID and GDPUD, and assumes an equal allocation of 7,500 AFA each to the two districts. Operational constraints during much of the year preclude EID from diverting CVP water on a typical demand pattern. Consequently, EID would most likely take the new CVP water allocation during a short period in the late summer months. To accurately represent the likely diversion pattern, EID's diversions will be simulated as occurring wholly during the months of July, August, and September, as individual diversions of 2,500 AF per month. GDPUD would divert its current yearly demand pattern.

Table 2. Expected Monthly Diversions of the P.L. 101-514 Contract Water by EID and GDPUD (AF per month).

Diversion	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
% of annual	2	2	2	2.5	4	22.6	24.7	24.7	6.5	4.5	2.5	2	100
EID	0	0	0	0	0	2500	2500	2500	0	0	0	0	7,500
GDPUD	300	300	300	375	600	900	1200	1200	975	675	375	300	7,500
Total	300	300	300	375	600	3400	3700	3700	975	675	375	300	15,000

The Section 7 Action Area

The Action Area as defined in the ESA is the immediate area involved in the action and the entire area where effects to listed species extend as a direct and indirect effect of the Proposed Action (50 CFR 402.14(g)(3)). The Action Area in this BA was developed in consultation with USFWS and is shown in Figure 3. There are two discrete portions of the Action Area—a southern portion and a northern portion. Each of these is described below.

THE SOUTHERN PORTION OF THE ACTION AREA

The southern portion of the Action Area is the EID SCSA (Figure 3). As described above, the EID SCSA includes all areas within EID's district boundary west of the CVP CPOU. Although consultation has already been completed on 17,010 acres in EID's SCSA west of Bass Lake (USFWS 2006a), in a letter dated June 10, 2008, USFWS requested this area also be included in the Action Area for this proposed action.

THE NORTHERN PORTION OF THE ACTION AREA

The northern portion of the Action Area (Figure 3) is equivalent to the GDPUD SCSA described previously in this section, and includes only those portions of the broader GDPUD service area below 2,000 feet in elevation that will receive new water under the Proposed Action.

Existing Environment

This section summarizes the methods and results of the studies completed to characterize existing conditions in the study area. The analyses in this section address one or more of the species covered in this BA.

Methods

Information on the existing environment developed for this BA is based on a review of

existing information and applicable geographical information systems (GIS) data. Independent field verification of these sources was not conducted as part of this BA.

REVIEW OF EXISTING INFORMATION

A literature review was conducted to determine the available information on federally listed species in the Action Area. This included a review of the resources listed below, consultation with experts, and other pertinent information referenced in this document as appropriate.

- CDFG California Natural Diversity Database (CNDDB) (CDFG 2007 and 2009)
- USFWS Species List (USFWS 2009; Appendix B)
- CNPS Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPS 2007 and 2009)
- USFWS Recovery Plan for Gabbro Soil Plants of the Central Sierra Nevada Foothills (USFWS 2002a)
- USFWS Valley Elderberry Longhorn Beetle Recovery Plan (USFWS 1984)
- USFWS Valley Elderberry Longhorn Beetle 5-Year Review: Summary and Evaluation (USFWS 2006b)
- USFWS Recovery Plan for California Red-legged Frog (USFWS 2002b)
- USFWS Endangered and Threatened Wildlife and Plants; Revised Critical Habitat for the California Red-Legged Frog (*Rana aurora draytonii*); Proposed Rule (USFWS 2008)
- Pacific Bald Eagle Recovery Plan (USFWS 1986)
- Proposed Rule To Remove the Bald Eagle in the Lower 48 States From the List of Endangered and Threatened Wildlife (USFWS 1999b)

- Final Rule Removing the Bald Eagle in the List of Endangered and Threatened Wildlife (USFWS 2007)

DATA ANALYSIS

Data analyses were conducted to determine the location and extent of potential habitat for gabbro plants, VELB, CRLF, and bald eagle in the Action Area. Methods for these analyses were determined in conjunction with USFWS, and are described below.

As described in Consultation History, Reclamation has been in consultation with USFWS since May 2006 regarding effects the Proposed Action may have on federally listed terrestrial species in the Action Area. During consultation, it was determined that effects analysis for both portions of the Action Area would address VELB, CRLF, and bald eagle. Additional analysis for the southern portion of the Action Area would focus on the five federally listed plant species included in this BA (referred to collectively as “gabbro soils plants” because they are known to grow in gabbro-derived soils in western El Dorado County).

GIS data layers were obtained from the El Dorado County Planning Department to provide information on land use, soils, and biological resources in the Action. These data were compiled by El Dorado County as part of the General Plan, and constitute the most current and best available source of information on land use and resources for the County. Data layers obtained from the County, as well as other sources, include:

- El Dorado County land use planning data, including –EP and Important Biological Corridors (-IBC) layers (El Dorado County 2009)
- CalVeg vegetation alliances data (USDA-FS 2000)

- Wetland habitat data from El Dorado County (2007) and the National Wetlands Inventory (NWI) (2001)
- El Dorado County serpentine- and gabbro-derived soils layers (NRCS 2005)
- CNDDDB GIS layers (CDFG 2007 and 2009)
- Aerial photography of the Action Area (USGS 2001)

It was determined through consultation with USFWS that habitat analyses for the five gabbro soils plants would focus only on the southern portion of the Action Area. Potential habitat for gabbro soils plants is defined in this analysis as undeveloped parcels greater than 4 acres in size containing gabbro- or serpentine-derived soils and supporting chaparral, grassland, or oak woodland vegetation communities.

Additionally, because gabbro soils plants are most commonly associated with specific gabbro soils types (i.e., Rescue very stony sandy loam and Rescue extremely stony sandy loam on the Pine Hill formation) (USFWS 2002a), gabbro plant habitat is further defined to include only these gabbro soil types.

Criteria for determination of potential habitat were developed based on consultation with USFWS (described in the Consultation History section of this document) and on information on gabbro soils plant habitat provided in the *Recovery Plan for Gabbro Soil Plants of the Central Sierra Nevada Foothills* (USFWS 2002a). A step-wise process was then used to determine the location and extent of potential habitat for gabbro plants: (1) the Action Area was defined and mapped in consultation with USFWS, (2) a GIS layer was superimposed on the Action Area showing all vacant (undeveloped or unassigned) parcels equal to or greater than 4 acres in size, (3) a GIS layer of the extent of gabbro- and serpentine-derived soils was superimposed on the Action Area, (4) intersections of vacant parcels equal to or greater

than 4 acres with gabbro- and serpentine-derived soils and appropriate vegetation communities (i.e., chaparral, grassland, and oak woodland) were identified, and (5) total acreage was calculated and El Dorado County land use designations were determined for these intersections. Parcels that were identified by the County as undeveloped or unassigned, but which were coded as “Urban/Developed” by CalVeg and/or identified as being developed through aerial photo review, were not included in acreage calculations.

It was also determined through consultation with USFWS that habitat analysis for VELB and CRLF would focus on wetland and riparian areas within the Action Area. Both VELB and CRLF may occur in upland habitats. For example, upland areas in the Action Area may support elderberry shrubs representing potential habitat for VELB. However, USFWS recovery efforts for VELB have been based primarily on preservation and restoration of riparian habitat, and the USFWS recommendation for the delisting of VELB is based on the extent of riparian habitat that has been preserved to date (USFWS 2006b). Therefore, it was determined that analyses would focus on wetland or riparian areas potentially supporting habitat for VELB (i.e., elderberry shrubs).

Additionally, USFWS defines habitat for CRLF as “aquatic breeding areas embedded within a matrix of riparian and upland dispersal habitats” and it is known that CRLF will use upland habitats up to a mile away from aquatic breeding habitats for dispersal during the wet season (USFWS 2002b). However, USFWS recovery objectives have been focused on the preservation and restoration of aquatic and riparian ecosystems required by CRLF for “reproduction, development, and survival” (USFWS 2002b). Therefore, it was determined that analyses in this BA would focus on wetland or riparian areas potentially supporting breeding habitat for CRLF.

A step-wise process, similar to that used for gabbro plants, was used to evaluate potential habitat for CRLF and VELB potentially present in the northern and southern portions of the Action Area: (1) the Action Area was defined and mapped in consultation with USFWS; (2) a GIS layer was superimposed on the Action Area showing all vacant (undeveloped or unassigned) parcels; (3) a GIS layer was superimposed on the Action Area showing all areas containing wetland and riparian habitats; (5) intersections of vacant parcels with wetland and riparian habitats were identified; and (6) total acreage was calculated and El Dorado County land use designations were determined for these intersections. Parcels that were identified by the County as being undeveloped or unassigned, but which were coded as “Urban/Developed” by CalVeg and/or identified as being developed through aerial photos were not included in acreage calculations.

Results

The results of the review of existing information and data analyses conducted for the Action Area are provided below. These include an Action Area overview and information on the location of federally listed species and potential habitat.

ACTION AREA OVERVIEW

The Action Area is located along the west slope of the Sierra Nevada in El Dorado County. In the past, El Dorado County has been characterized as a rural community; however, 2000 U.S. Census data identified El Dorado as the ninth fastest growing county in California, with population growth rates at about 2.5%. The majority of the development is concentrated in unincorporated communities along the El Dorado and Sacramento county lines and along the U.S. Highway 50 corridor (El Dorado County 2003).

Western El Dorado County supports a variety of vegetation types, including, but not limited to,

chaparral, mixed conifer, oak woodland, and annual grassland (Figure 5). A brief description of each of these is provided below.

Oak Woodland Vegetation Communities

Four oak-dominated vegetation communities occur throughout the Action Area: Canyon Live Oak, Blue Oak, Valley Oak, and Interior Live Oak. Oak woodlands are widely distributed at lower elevations in coastal California, interior valleys of the Coast Ranges and foothills around the Central Valley grasslands. Oak woodlands are dominated by oaks mixed with other broad-leaved and coniferous trees, with an understory of shrubs and herbaceous vegetation. The canopy is more open than in a forest and trees form groupings with openings composed of grasses and shrubs. Oak woodlands are generally found on gently sloping terrain or on north- or east-facing hillsides. Oak woodlands typically occur in areas with Mediterranean climate, characterized by cool, wet winters and hot, dry summers. Typical species include interior live oak (*Quercus wislizenii*), canyon live oak (*Quercus chrysolepis*), black oak (*Quercus kelloggii*), blue oak (*Quercus douglasii*), valley oak (*Quercus lobata*), bigleaf maple (*Acer macrophyllum*), and dogwood (*Cornus* spp.).

Chaparral Vegetation Communities

Four chaparral communities occur throughout the Action Area: Chamise, Foothill Mixed Chaparral, Scrub Oak, and Whiteleaf Manzanita. Chaparral typically consists of evergreen and drought-resistant shrubs that may form a dense canopy that is nearly impenetrable. Many chaparral plant species require some fire cue (i.e., heat, smoke, or charred wood) for germination. Chaparral plant species are adapted to particular fire regimes with characteristic season, frequency, intensity, and severity of the burn. Typical species include whiteleaf manzanita (*Arctostaphylos viscida*), chamise (*Adenostoma fasciculatum*), wedgeleaf ceanothus (*Ceanothus cuneatus*), mountain

mahogany (*Cercocarpus betuloides*), poison oak (*Toxicodendron diversilobum*), and huckleberry oak (*Quercus vaccinifolia*).

Grassland Communities

The Annual Grass-Forb vegetation community is found throughout the Action Area. Most grasslands in California have been highly altered through the introduction of non-native species. Historically, grasslands in California were dominated by native perennial bunchgrasses with a mixture of annual, perennial, and bulb-bearing wildflowers. Today, annual grasses dominate the grasslands in California and include introduced annual grasses in the genera *Bromus*, *Vulpia*, *Avena*, and *Lolium*. Native species that may occur include purple needlegrass (*Nassella pulchra*), Idaho fescue (*Festuca idahoensis*), and California poppy (*Eschscholzia californica*).

Coniferous Forest Communities

Three conifer-dominated vegetation communities occur throughout the Action Area: Gray Pine, Ponderosa Pine and Mixed Conifer-Pine. Coniferous forests either are dominated by evergreen conifers or are a mix of conifers and broadleaf evergreen and/or deciduous trees. The forest structure is simple and generally consist an overstory and an understory, while some forests may support an intermediate layer of shrubs.

THE SOUTHERN PORTION OF THE ACTION AREA

The southern portion of the Action Area that was initially analyzed for this BA, in the unincorporated community of Cameron Park, contains approximately 5,485 acres of land and is dominated by chaparral, oak woodland, and annual grassland vegetation types (USDA-FS 2000) (Figure 5). Development in Cameron Park is primarily residential. As of 2006, approximately 892 acres of the total 5,485 acres were undeveloped. Most of these undeveloped areas have been designated by the County as low-density residential (one single-family

residence per 5–10 acres) or high-density residential (one to five residential units per acre) (Figure 6).

Analyses were also conducted for the southern portion of the Action Area west of Bass Lake, which includes an additional 17,010 acres of land. Similar to the area east of Bass Lake, this area is dominated by chaparral, oak woodland, and annual grassland vegetation types (USDA-FS 2000) (Figure 5). As of 2009, approximately 9,170 acres of the total 17,010 acres are undeveloped. Most of these undeveloped areas have been designated by the County as Adopted Plan (AP) areas, low-density residential (one single-family residence per 5–10 acres) or high-density residential (one to five residential units per acre) (Figure 6). The AP land use category includes areas for which specific land use plans have been prepared separately and adopted by reference into the General Plan. In addition, a significant portion of undeveloped land located along Salmon Falls Road near Folsom Lake is designated as open space. The open space land use category indicates public lands dedicated to government-related open space uses such as parks and ecological preserves. This area includes land that has been set aside as part of the Pine Hill Preserve (Appendix E).

THE NORTHERN PORTION OF THE ACTION AREA

The northern portion of the Action Area contains about 12,927 acres of land and is dominated by oak woodland, coniferous forest, chaparral, and annual grassland vegetation types (USDA-FS 2000) (Figure 5).

Existing development in the Action Area is primarily residential. As of 2006, approximately 6,566 acres of the total 12,927 acres are undeveloped. Most of these undeveloped areas have been designated by the County as low-density residential (one single-family residence per 5–10 acre unit) or medium-density residential (one single-family residence per 1–5 acre unit) (Figure 6).

Status of Federally Listed Plants and Wildlife in the Action Area

Provided below is a summary of the status of federally listed plant and wildlife species known to occur or potentially occurring in the Action Area. Each summary includes an analysis of the location and extent of potential habitat for these species. Detailed information on critical habitat and the life history for each of these species is provided as Appendix G.

FEDERALLY LISTED PLANTS

Four of the five gabbro soils plants—Stebbins' morning glory, Pine Hill ceanothus, and Layne's ragwort, and El Dorado bedstraw—are known to occur in the Action Area, and one could potentially occur in appropriate habitat (Pine Hill flannel bush). Refer to Figure 4 for a map of known occurrences of these species in the Action Area. Three of the species—Pine Hill ceanothus, Pine Hill flannel bush and El Dorado bedstraw—are endemic (restricted) to gabbro-derived soils (also called Rescue soils) of the Pine Hill formation in western El Dorado County. The two remaining species—Stebbins' morning glory and Layne's ragwort—occur primarily in Rescue soils of the Pine Hill formation, but are also known to occur in several other locations on serpentine- and gabbro-derived soils (USFWS 2002a).

A summary of the location of known occurrences of each gabbro plant in the southern portion of the Action Area is provided below. Refer to Appendix G for an overview of the life history and ecology of each plant.

Stebbins' morning glory
(*Calystegia stebbinsii*; FE, CE, CNPS 1B.1)
Stebbins' morning glory is found on serpentine- and gabbro-derived soils, and occurs primarily in western El Dorado County. One known occurrence was identified in initial analyses conducted for the southern portion of the Action

Area east of Bass Lake—two colonies about 0.35 mile west of the Cameron Park Drive exit, north of Highway 50 and the frontage road. There are several additional occurrences immediately east of the Action Area, east of Cameron Park Drive overpass, and northeast of the junction of Meder Road and Cameron Park Drive.

The southern portion of the Action Area located west of Bass Lake supports several large populations totaling 300 or more individuals located from Salmon Falls Road to Kanaka Valley, south of the South Fork American River. These populations are located within the Salmon Falls Unit of the Pine Hill Preserve and extend outside of the Action Area, eastward along the South Fork American River.

Pine Hill ceanothus

(*Ceanothus roderickii*; FE, CR, CNPS 1B.2)

Pine Hill ceanothus is endemic to the Rescue soils of the Pine Hill formation in western El Dorado County. A population of Pine Hill ceanothus was known to occur in the southern portion of the Action Area in Cameron Park, ½ mile west of Cameron Park Drive exit on the north side of Highway 50. However, CNDDDB (2007) notes that this population has most likely been extirpated. There are additional occurrences east of the southern portion of the Action Area, along Highway 50 between Cameron Park and Shingle Springs.

CNDDDB includes records for the southern portion of the Action Area located west of Bass Lake, including several populations of Pine Hill ceanothus located south of the South Fork American River, east of Salmon Falls Road and Folsom Lake. While the total number of individuals in these populations is not known, estimates are as high as 12,000 individuals. These populations are located within the Salmon Falls Unit of the Pine Hill Preserve. These populations extend outside of the Action Area, eastward along the South Fork American River.

Pine Hill flannel bush

(*Fremontodendron californicum* ssp. *decumbens*; FE, CR, CNPS 1B.2)

Pine Hill flannel bush is endemic to the Rescue soils of the Pine Hill formation in western El Dorado County. There are no known occurrences of Pine Hill flannel bush in the Action Area. However, there is a known occurrence just outside the southern portion of the Action Area.

El Dorado bedstraw

(*Galium californicum* ssp. *sierrae*; FE, CR, CNPS 1B.2)

El Dorado bedstraw is endemic to Rescue soils of the Pine Hill formation in western El Dorado County. There are several populations of El Dorado bedstraw located in the southern portion of the Action Area west of Bass Lake. These include two populations, one located at 0.5 miles east of the Salmon Falls bridge, and one at 2 miles east of the Salmon Falls bridge in a ravine opening into the South Fork American River; a population located near the confluence of Sweetwater Creek and the South Fork American River; and five colonies totaling approximately 150 individuals located east of Folsom Lake between Sweetwater and Cracker creeks. These populations are located within or partly within the Salmon Falls Unit of the Pine Hill Preserve. In addition, there is a known occurrence immediately east of the Action Area, between Cameron Park Drive and Sabana Drive.

Layne's ragwort

(*Packera layneae*; FT, CR, CNPS 1B.2)

Layne's ragwort is found on serpentine- and gabbro-derived soils, and occurs primarily in western El Dorado County. There are several known occurrences of Layne's ragwort in the southern portion of the Action Area east of Bass Lake—on the east side of Bass Lake Road, about 0.25 mile south of intersection with Green Valley Road; on the east side of Bass Lake Drive, near intersection with Woodleigh Lane; west of Wilkinson Road, about 1 mile ENE of Bass Lake; east of Bass Lake, on Woodleigh Court; about 1 air mile due east of Bass Lake,

west of Woodleigh Lane; and near a small reservoir at the corner of Woodleigh Lane and Surrey Lane. There are additional occurrences immediately east of the Action Area, south of the intersection of Cameron Park Drive and Meder Road.

In addition, there are several records for populations located near Salmon Falls Road and the South Fork American River and along Crocker Creek within the Sweetwater Creek Drainage. These populations are located within the Salmon Falls Unit of the Pine Hill Preserve. These populations extend outside of the Action Area, eastward along the South Fork American River.

Potential Habitat for Federally Listed Plants

Below is a summary of the location and extent of potential habitat for gabbro soils plants in the Action Area. The southern portion of the Action Area initially analyzed for this BA contains 5,485 total acres of land, of which approximately 1,923 acres contain gabbro- or serpentine-derived soils that may support gabbro soil plants. Of these 1,923 acres, approximately 360 acres occur on undeveloped parcels equal to or greater than 4 acres in size (Figure 7). Additionally, 326 of the 360 acres contain grassland, chaparral, or oak woodland vegetation communities known to support gabbro plant species.

The remaining 34 acres are identified by CalVeg (USDA-FS 2000) as barren/rock, pine, or open water habitat types. Therefore, a total of 326 acres of potential habitat for gabbro soils plants are present in the initial area analyzed. None of this acreage falls within or is contiguous with the Pine Hill Preserve or the 5,000 acres of land designated by USFWS for the recovery of the species (USFWS 2002). All of the acreage is privately owned.

In the additional area analyzed west of Bass Lake, there are a total of 17,010 acres of land, approximately 964 containing gabbro- or serpentine-derived soils that may support gabbro soil plants. Of these 964 acres, approximately 929 acres occur on undeveloped parcels equal to or greater than 4 acres in size (Figure 7). All 929 acres contain grassland, chaparral, or oak woodland vegetation communities known to support gabbro plant species. Therefore, a grand total of 1,255 acres of potential habitat for gabbro soils plants are present in the Action Area (Figure 8 and Table 3).

FEDERALLY LISTED WILDLIFE

A summary of the location of known occurrences of federally listed wildlife species is provided below. Refer to Appendix G for an overview of the life history and ecology of each species and to Figure 4 for a map of known occurrences of these species in the Action Area.

Table 3. Vegetation Communities and Soils in Potential Gabbro Soils Plants Habitat.				
Vegetation Communities	Rescue Extremely Stony Sandy Loam 3 to 50% Slope	Rescue Very Stony Sandy Loam 3 to 15% Slope	Serpentine Rock Land	Totals
Annual Grassland	0.24	4.12	0	4.36
Chaparral	866.46	0	228.62	1,095.08
Oak Woodland	69.99	12.29	73.69	155.97
Totals	936.69	16.41	302.31	1,255.41

Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*; FT)

There is no critical habitat for VELB in the Action Area. The closest critical habitat is located in Sacramento County along the American River Parkway (USFWS 1984). No survey data are available on elderberry shrubs in riparian areas within the Action Area, and there are no known occurrences of VELB within the Action Area (CNDDDB 2007).

At the time of its listing, the loss of riparian habitat was identified as one of the major threats to VELB, and recovery efforts for VELB have focused on the preservation and restoration of riparian habitat (USFWS 2006b). In its 5-year review for VELB issued on October 2, 2006, USFWS recommended VELB for delisting, noting that since 1980 approximately 50,000 acres of existing riparian habitat have been protected in the Sacramento and San Joaquin valleys, and an additional 5,000 acres of habitat have been restored for the benefit of the beetle (USFWS 2006b).

California red-legged frog
(*Rana aurora draytonii*; FT, CSC)

The Action Area does not contain USFWS-designated critical habitat for CRLF. The nearest critical habitat units, ELD-1 and PLA-1 are located approximately 15 miles to the east and 15 miles to the northeast of the Action Area, respectively (USFWS 2008).

There are no known occurrences of CRLF in the northern or southern portions of the Action Area. The closest known records for CRLF in El Dorado County include a 2005 record for a single adult CRLF found just outside the Action Area in a drainage leading to Folsom Lake, located at Fitch Way (CNDDDB 2009). It is not confirmed if this individual was from a larger population in the vicinity. The closest confirmed CRLF population is located approximately 20 miles east of the southern portion of the Action Area at Spivey Pond, on the north fork of Weber Creek; and

approximately 5 miles to the northwest from the southern portion of the Action Area, on the east side of Folsom Lake. The closest known records for CRLF in Placer County are approximately 15–20 miles northeast of the northern portion of the Action Area at Michigan Bluff and at Ralston Ridge.

One CRLF expert who has conducted surveys in the vicinity of the GDPUD service area states CRLF were not present in the northern portion of the Action Area historically, and that there is a very limited potential for CRLF within the area (Barry, pers. comm., 2006). However, breeding habitat may be present in riparian or wetland areas, especially in small ponds and potholes in flat or gently sloping terrain close to the headwaters of short foothill streams (Barry, pers. comm., 2006).

Bald eagle
(*Haliaeetus leucocephalus*; Former FT, CE, CFP)
USFWS removed the bald eagle in the lower 48 states from the list of threatened and endangered wildlife on July 9, 2007 (USFWS 2007). The Action Area is located in what was previously Bald Eagle Management Zone 28, Sierra Nevada Mountains (CA-NV) (USFWS 1986). The Action Area does not contain a “key occupied area or potential nesting area” as formerly designated by USFWS for recovery of the species (USFWS 1986).

There are no known occurrences of bald eagle in the Action Area. However, Bass Lake, just west of the southern portion of the Action Area, represents wintering habitat for bald eagle, which have been observed wintering at this location since the 1950s (CNDDDB 2007). Bald eagles are known to nest at Sly Park and Stumpy Meadows reservoirs, approximately 25 miles to the east and northeast, respectively (Ebert, pers. comm., 2006).

POTENTIAL HABITAT FOR FEDERALLY LISTED WILDLIFE

Provided below is a summary of the location and extent of potential habitat for VELB, CRLF, and bald eagle in the Action Area.

The Southern Portion of the Action Area

Valley Elderberry Longhorn Beetle and California Red-legged frog

Approximately 157 acres of land were identified in the initial analyses conducted for the southern portion of the Action Area east of Bass Lake that contain lacustrine and palustrine wetland features, as indicated by El Dorado County data, and areas with seasonal wetlands, lakes and ponds, and riparian woodlands as indicated by NWI data (Figure 9). Of the 157 acres, approximately 100 acres remain undeveloped and represent potential habitat for VELB and CRLF. No data are available on the number of elderberry shrubs in riparian areas that may represent potential habitat for VELB.

In addition, there are 215 acres of undeveloped land in the southern portion of the Action Area west of Bass Lake that contain lacustrine and palustrine wetland features, as indicated by El Dorado County data, and areas with seasonal wetlands, lakes and ponds, and riparian woodlands as indicated by NWI data (Figure 9). No data are available on the number of elderberry shrubs in riparian areas that may represent potential habitat for VELB. Based on this analysis, a total of 315 acres of potential habitat for VELB and CRLF are present in the southern portion of the Action Area.

Bald Eagle

Bald eagle habitat includes large aquatic ecosystems such as lakes, reservoirs, or free-flowing rivers. Old-growth components (i.e., large trees and snags) are generally required for nesting (USFWS 1986). The southern portion of the Action Area has several streams and creeks that may provide forage for bald eagle. However, bald eagles are not known to nest or

winter in the southern portion of the Action Area.

Northern Portion of the Action Area

Valley Elderberry Longhorn Beetle and California Red-legged frog

There are approximately 206 acres of land in the northern portion of the Action Area that contain lacustrine and palustrine wetland features as indicated by El Dorado County data, and areas with seasonal wetlands, lakes, ponds, and riparian woodlands as indicated by NWI data (Figure 9). Of the 206 acres, approximately 152 acres are currently undeveloped. No data are available on the number of elderberry shrubs in riparian areas that may represent potential habitat for VELB. Based on this analysis, 152 acres of potential habitat for VELB and CRLF are present in the northern portion of the Action Area.

Bald Eagle

Bald eagle habitat includes large aquatic ecosystems such as lakes, reservoirs, or free-flowing rivers, (old-growth components (i.e., large trees and snags) are generally required for nesting (USFWS 1986). The northern portion of the Action Area has several streams and creeks that may provide forage for bald eagle. However, bald eagles are not known to nest or winter in the northern portion of the Action Area.

Potential Effects of the Proposed Action

The evaluation of potential effects on biological resources under the federal ESA of 1973 requires consideration of both the resource itself and how that resource fits into a regional or local context. An impact is considered “substantial” under the ESA if it jeopardizes the continued existence of a federally listed species. To “jeopardize,” as defined in Section 7 of the ESA, means to engage in an action that could

reasonably be expected, directly or indirectly, to appreciably reduce the likelihood of both the survival and recovery of a listed species in the wild by reducing reproduction, numbers, or distribution. This analysis is focused on the potential effects of the Proposed Action on federally listed species known or potentially occurring in the Action Area.

Direct Effects

USFWS defines a direct effect as the immediate effect of a project on a species or its habitat (USFWS 1998). The Proposed Action—the execution of a new CVP M&I water contract with EDCWA, and subcontracts with EID and GDPUD—as defined in this BA, will not require new infrastructure, facilities, or land conversions, and thus will not result in any direct effects. Any future infrastructure (i.e., installation of a new TCD on EID’s primary intake at Folsom Reservoir; increase of EID’s intake conveyance and treatment capacity at the El Dorado Hills WTP, or construction of a new WTP at Bass Lake; or any infrastructure required as part of potential water exchange between GDPUD and PCWA) that may result from the Proposed Action, will be addressed under additional, project-level environmental review and a separate ESA compliance process if and when it occurs.

Interrelated and Interdependent Actions

Interrelated and interdependent actions would include the effects of routine operations and maintenance associated with the Proposed Action and initiation of a water exchange with PCWA. These effects are covered under separate consultation with USFWS as summarized below.

Operations and Maintenance of Federal (CVP) Facilities
Implementation of the Proposed Action would not result in a change to existing O&M of

federal facilities, including Folsom Reservoir and associated appurtenances. O&M at these facilities would continue to be implemented in accordance with the CVPIA PBO (USFWS 2000) and the CCAO BO (USFWS 2005), summarized in Consultation History.

OPERATIONS AND MAINTENANCE OF EID FACILITIES

EID currently receives federal water from Folsom Reservoir as part of a long-term CVP water contract, renegotiated as required by the CVPIA. The Proposed Action would use the same EID facilities for diversion of water from Folsom, and implementation of the Proposed Action will not result in a change in existing O&M of these facilities. O&M would, therefore, continue in accordance with the CCAO BO (USFWS 2000) and the BO issued for the EID long-term water service contract (USFWS 2006a), summarized in Consultation History.

OPERATIONS AND MAINTENANCE OF GDPUD FACILITIES

GDPUD does not currently have facilities for the conveyance of P.L. 101-514 federal water to the Action Area. Instead, GDPUD would obtain water under the Proposed Action through a water exchange with another purveyor, most likely PCWA. Were an agreement to be reached between GDPUD and PCWA, GDPUD would build its own pump station on the northern bank of the Middle Fork American River. This, coupled with existing PCWA facilities, would divert water from the river and convey it out of the American River canyon to one of GDPUD’s existing facilities or to a new water treatment facility on the Georgetown Divide. Construction of these facilities and associated O&M would be evaluated under additional project-level environmental review and a separate ESA compliance process.

Indirect Effects

This section provides an analysis of the indirect effects to federally listed species that are

reasonably certain to occur as a result of the Proposed Action. USFWS defines an indirect effect as an effect that is caused by or results from the Proposed Action, is later in time, and is reasonably certain to occur. Reasonable certainty may be determined based on (1) evidence such as work plans, permits issued, or budgeting; (2) a predictable pattern of activity undertaken by the agency in the Action Area; or (3) a logical extension of the Proposed Action.

It is reasonably certain that that 15,000 AFA of federal M&I water to be provided to El Dorado County under P.L. 101-514 will result in indirect effects, including new residential and commercial development within the Action Area, consistent with the El Dorado County General Plan.

As stated in P.L. 101-514 (206 (b)), the Proposed Action is intended to serve as the first phase in a long-term water contracting program for El Dorado County. Water Needs Assessments (WNAs) developed for EID and GDPUD include the P.L. 101-514 federal water as a portion of the total water supply that will be necessary to meet growth projections at the County's 2025 planning horizon (EID 2007). Because issuance of new development permits by the County requires applicants to demonstrate availability of sufficient water sources, new development may be facilitated by the additional M&I water supplies.

Increased residential and commercial development could affect federally listed plants, VELB, and CRLF through loss or fragmentation of habitat, or loss of individuals. It is not anticipated that the Proposed Action will result in indirect effects to bald eagle. Refer to Appendix H for a summary of potential effects and proposed conservation measures.

Provided below is an analysis of the indirect effects of the Proposed Action on each species,

including species-specific conservation measures.

INDIRECT EFFECTS TO GABBRO SOILS PLANTS

The southern portion of the Action Area includes known populations of Stebbins' morning glory, Pine Hill Ceanothus, El Dorado bedstraw, and Layne's ragwort. It also includes 1,255 acres of potential habitat that could support one or more of the five federally listed gabbro plant species. As stated in the Existing Environment section, it was determined through consultation with USFWS that habitat analyses for the five gabbro soils plants would focus only on the southern portion of the Action Area. Potential habitat for gabbro soils plants is defined in this analysis as undeveloped parcels greater than 4 acres in size containing gabbro- or serpentine-derived soils and supporting chaparral, grassland, or oak woodland vegetation communities. Additionally, because gabbro soils plants are most commonly associated with specific gabbro soils types—i.e., Rescue very stony sandy loam and Rescue extremely stony sandy loam on the Pine Hill formation (USFWS 2002a)—this potential habitat is further defined to include only these specific gabbro soil types.

Implementation of the Proposed Action could result in indirect effects from potential future development through loss and fragmentation of habitat and loss of individuals.

Loss or fragmentation of potential habitat
It is not anticipated that loss or fragmentation of potential habitat in the Action Area would result in species-level effects to gabbro plants for several reasons. The 326 acres of potential habitat identified in the southern portion of the Action Area east of Bass Lake do not represent high-priority habitat necessary for the recovery of the gabbro species as defined by USFWS in their Recovery Plan (2002a). The acreage is not within the 5,000-acre area designated by USFWS or the RPTAC as the highest priority habitat to be preserved for the species (USFWS

2002a). In addition, the 326 acres of potential habitat do not fall within the El Dorado County –EP layer designating the boundaries of the Pine Hill Preserve, nor are they contiguous to the preserve lands.

However, the 326 acres does represent potential habitat for gabbro soils plants (as defined through consultation with USFWS), and residential or commercial development resulting from the provision of new water within the Action Area may eliminate this potential habitat, or lead to further fragmentation or degradation.

Of the 929 total acreage of potential habitat for gabbro soils plants in the southern portion of the Action Area west of Bass Lake, approximately 594 acres of potential habitat are located within the boundaries of the Salmon Falls Unit of the Pine Hill Preserve (Appendix E), or within the boundaries El Dorado County –EP layer (Figure 11). Land within the Pine Hill Preserve is owned by BLM, Reclamation, the State of California, and El Dorado County.

332 of the 929 acres are located outside the Pine Hill Preserve and the –EP layer in areas designated as low density residential (one single-family residence per 5–10 acres) under the County Plan. These 332 acres also lie outside priority habitat for gabbro soils as defined by USFWS in their Recovery Plan. However, this undeveloped acreage is contiguous to PHP and –EP land.

Habitat fragmentation may isolate sub-populations, therefore, within a total of 658 acres in the southern portion of the Action Area (including 326 acres east of Bass Lake and 332 acres west of Bass Lake), making them more vulnerable to extirpation from random environmental, demographic, and genetic events (USFWS 2002a). Fragmentation increases “edge effect,” making the habitat more vulnerable to external factors (USFWS 2002a). These external factors include invasion by non-

native plants and increased human encroachment (i.e., foot, horse and bicycle traffic and off-road vehicle use), which may lead to trampling of vegetation and soil compaction. Increased vehicular traffic can affect habitat near roadways through increased air pollution and dust, which has been shown to adversely affect vegetation by reducing photosynthesis and overall plant productivity (Winner 1991).

Loss of individuals

Four of the five federally listed plant species, Stebbins’ morning glory, Pine Hill ceanothus, and Layne’s ragwort, are reported as occurring within the Action Area (Figure 4). Future development of currently undeveloped parcels or other activities associated with increasing population densities, such as road widening and increased human or vehicular traffic, may result in the loss of individuals of these species.

Stebbins’ morning glory: One known colony of Stebbins’ morning glory is located on the north side of Highway 50. This area is already developed and, therefore, it is not anticipated that it will be affected by future development resulting from the Proposed Action.

Several populations of Stebbins’ morning glory are located on undeveloped land within the Salmon Falls Unit of the Pine Hills Preserve and within the County-designated –EP layer. These populations would be protected from future development.

Pine Hill ceanothus: A population of Pine Hill ceanothus has been recorded in the Action Area along Highway 50 in the vicinity of Cameron Park; however, it is believed that this population may already be extirpated (CNDDDB 2007).

Several additional populations of Pine Hill ceanothus are located on undeveloped land within the Salmon Falls Unit of the Pine Hills Preserve and within the County-designated –EP layer. These populations would be protected from future development.

Layne's ragwort: There are six populations of Layne's ragwort located in the vicinity of Cameron Park. Three of these six populations are located in or immediately adjacent to roads or residential areas that have already been developed. Therefore, it is not anticipated that these populations will be affected by ground disturbance or construction associated with future development.

The remaining three populations of Layne's ragwort in the vicinity of Cameron Park are located on currently undeveloped parcels that have been assigned a high-density residential land use designation by El Dorado County. These colonies could be removed as a result of ground disturbance or construction associated with future development.

Additionally, habitat in Cameron Park vicinity that does not currently support a growing population of gabbro soils plants may contain seed banks that could germinate under appropriate ecological conditions (i.e., following a fire or other disturbance of the appropriate intensity). Ground disturbance resulting from development may result in the loss of these potential seed banks.

In addition to the Cameron Park populations, several populations of Layne's ragwort are located on undeveloped land within the Salmon Falls Unit of the Pine Hills Preserve and within the County-designated –EP layer. These populations would be protected from future development.

CONSERVATION MEASURES FOR GABBRO SOILS PLANTS

Implementation of the following conservation measures would avoid or minimize indirect effects to and/or protect gabbro soils plants and their habitat.

Contributions to the Development of the Pine Hill Preserve—Cooperative Management
Reclamation, EDCWA, and EID have been partners in the development and ongoing management of the Pine Hill Preserve since the 1990s. In 1992, Reclamation, CDFG, and BLM signed an MOU recognizing the importance of establishing a preserve for gabbro soils species, particularly in the Salmon Falls area. Reclamation and EID signed the Pine Hill Preserve Cooperative Management Agreement in 2001 with BLM, USFWS, CDFG, CDF, El Dorado County, and ARC. The Agreement was amended in 2005 to include EDCWA. The Agreement, which formalizes the roles each participant will play in the management of the Preserve, was ratified in 2006 and will be in effect until July 2011. Common responsibilities of all parties of the Agreement include development of the PHP Management Plan, and promotion and support of research, public outreach, and law enforcement efforts conducted for the PHP.

Reclamation, EDCWA, and EID will continue to fulfill their roles and responsibilities as outlined in the PHP Cooperative Management Agreement. Specific responsibilities include management of Reclamation land and EID easements located in the Preserve in accordance with the approved Management Plan.

Contributions to the Development of the Pine Hill Preserve—Funding
Reclamation, EDCWA, and EID have provided extensive funding for the long-term preservation of gabbro soils plants in light of future federal actions in El Dorado County. Specific contribution and acres of land purchased for long-term preservation are described below. Table 4 summarizes the financial contributions by Reclamation, EDCWA, and EID for the long-term preservation of gabbro soil plants.

Table 4. USBR, EDCWA, and EID Financial Contributions for Land Purchases and Management of the Pine Hill Preserve.			
Year	Contribution Amount (\$)	Acres	Action
Bureau of Reclamation			
2000	750,000	90	Land acquisition, Ponderosa property
2001	250,000	49	Land acquisition, Gabbert property
2002	400,000	157	Land acquisition, Salmon Falls Unit
2003	450,000	229	Land acquisition, Zee property
2003	25,000	--	Gabbro soil plants seed collection
2004	100,000	--	Preserve manager salary
2006	103,000	--	Gabbro soil plants baseline research, GIS mapping and predictive modeling
Subtotal	\$2,078,000	525	
El Dorado County Water Agency			
July 1998	1,343,000	Unavailable	Land acquisition, general/multiple parcels
Feb 2002	828,000	Unavailable	Land acquisition, general/multiple parcels
July 2002	755,000	Unavailable	Land acquisition, general/multiple parcels
2005	--	--	Signatory to Joint Powers Agreement
July 2006	--	--	Officially included in renewal of Cooperative Management Agreement for Pine Hill Preserve
Subtotal	\$2,926,000	Unavailable	
El Dorado Irrigation District			
Oct 1997	834,000	117	Land acquisition, Phase I for Cameron park Unit
July 1998	500,000	63	Land acquisition, Phase II for Cameron park Unit
Oct 1998	Unavailable	--	\$345 surcharge per connection to fund continuing mitigation toward future conservation measures
Mar 2001	--	--	Participation in BLM Mgmt Advisory Group and Cooperative Management Agreement
Jan 2003	212,500	229	Purchase of Zee property
Feb 2003	Unavailable	--	Vote for continuation of \$345 surcharge
2002–2007	150,000	--	Preserve mgr salary 2002–2007
Through 2007	4,480,000	--	EID contribution to CVPIA Habitat Restoration Program Fund
Subtotal	\$6,176,500	409	
TOTAL	\$11,180,500	934	

Reclamation has contributed a total of \$2,078,000 toward land acquisition, an endemic gabbro soils plants seed collection, research, and management salaries for the Pine Hill Preserve. These contributions were made as part of Reclamation's involvement in ongoing efforts to restore and protect species potentially affected by the CVP since the 1990s through the Central Valley Project Conservation Program (CVPCP), which was developed in consultation with USFWS in 1991, and the Habitat Restoration Program (HRP), which was established under subsection 3406(b)(1) of the CVPIA to protect, restore, and mitigate for past fish and wildlife potential effects of the CVP not already addressed by the CVPIA. The CVPCP and HRP are managed cooperatively by Reclamation and USFWS, with input from CDFG, as a single integrated process.

EDCWA has contributed \$2,926,000 toward land acquisition. These contributions were made by the agency in consideration of future water supply projects.

EID has contributed a total of at least \$6,176,500. This includes \$1,546,500 for land acquisition, \$150,000 toward six years of preserve manager funding, and more than \$4,480,000 to the HRP. Additionally, a total of \$8,000,000 in federal funds were secured through EID lobbying efforts in 2001–2002. This funding, from legislation sponsored by Senator John Doolittle, included \$5,000,000 of Land and Water Conservation Fund money administered by BLM, starting in fiscal year 2001; and an additional \$3,000,000 of Land and Water Conservation Fund money allocated in fiscal year 2002. These funds were used for land acquisition in the Cameron Park area as of January 2002 (USFWS 2002a).

Contributions by Reclamation, EDCWA, and EID have resulted in long-term preservation and management of at least 934 acres of high-

priority habitat for gabbro soils plants as designated by USFWS

Cooperation with USFWS and El Dorado County EDCWA will continue to consult with USFWS and El Dorado County to develop an MOA for the long-term protection and preservation of gabbro soils plants in El Dorado County. Representative from the agencies are currently meeting to discuss the components of the MOA.

Compliance with the El Dorado County General Plan Neither Reclamation, EDCWA, nor EID has jurisdiction to regulate future development that may occur in the Action Area—jurisdiction of land use lies with El Dorado County.

However, a number of policies included in the El Dorado County General Plan will provide protection for gabbro soils plant species. A summary of pertinent policies from Element 7, Conservation and Open Space, of the General Plan that provide guidelines for the conservation of biological resources is provided below. Relevant text from Element 7 is also provided in Appendix F

Policies specific to gabbro soils plants:

- The County is required to provide for the permanent protection of federally listed plants through the establishment of a preserve in accordance with County Code Chapter 17.71 and the Recovery Plan for the Gabbro Soil Plants of the Central Sierra Nevada (USFWS 2002a); to limit land uses within the Preserve; and to develop conservation strategies for discretionary projects on land that supports gabbro soils plants (Policies 7.4.1.1–7.4.1.5).
- Proposed preserve lands will be designated by an Ecological Preserve (-EP) overlay (Figure 11) (Policy 7.4.1.7).
- Discretionary projects will be designed to avoid gabbro soils plants and habitat. Where this is not feasible, mitigation will be required (Policy 7.4.1.6).

- A Biological Resources Study will be completed by a qualified biologist for all discretionary projects resulting in ground disturbance to important biological areas as defined in the INRMP described below. The Study will identify project potential effects and provide mitigation requirements, if necessary, in an Important Habitat Mitigation Program. Mitigation will reduce effects of proposed development to less than significant levels in accordance with CEQA thresholds, and therefore will provide protections to federally listed plants as required under CEQA. Mitigation will also include a 10-year mitigation monitoring and reporting period (Implementation Measure CO-U for Policy 7.4.1.6).
 - Mitigation will include sufficient funding to the County's conservation fund to acquire and protect important habitat at a minimum 2:1 ratio. For development projects of greater than 10 acres, additional onsite preservation and/or restoration of important habitat is required at a 1:1 ratio (Implementation Measure CO-U for Policy 7.4.1.6).
 - The County will review and update the important Biological Corridor (-IBC) overlay (Figure 10) that will apply to lands identified as having high wildlife habitat values. Lands located within the overlay will have increased minimum parcel sizes; higher canopy retention standards; lower thresholds for grading permits; higher wetland retention standards and more stringent wetland mitigation requirements; increased riparian and wetland setbacks; greater protection for rare plants; more stringent development requirements; and no structures (i.e., fences) that would restrict the movement of wildlife (Policy 7.4.2.9).
 - All plant and wildlife protection programs will be coordinated with the appropriate federal and state agencies (Objective 7.4.3).
- Implementation of these measures would avoid and minimize potential effects of future residential and commercial development on gabbro soils plants and would provide for additional long-term protection for gabbro soils plants in El Dorado County.

General habitat protection policies:

The County will form a Plant and Wildlife Technical Advisory Committee to advise the Planning Commission and Board of Supervisors on plant and wildlife issues (Policy 7.4.2.7).

- An INRMP will be developed to identify important habitat and establish a program for effective habitat preservation and management. The INRMP will include a habitat inventory, protection, and acquisition strategy; a mitigation program that includes mitigation options and incentives for developer and landowner participation; a habitat monitoring program; and establishment of a conservation fund to ensure adequate funding for the INRMP (Policy 7.4.2.8).

INDIRECT EFFECTS TO VALLEY ELDERBERRY LONGHORN BEETLE

There are no data available on the number of VELB individuals in the Action Area, and no known occurrences have been reported through CNDDB (CDFG 2007). The Action Area contains a total of 315 acres of potential VELB habitat, including 215 acres in the southern portion of the Action Area, and 100 acres in the northern Portion of the Action Area. It was determined through consultation with USFWS that habitat analysis for VELB would focus on wetland and riparian areas within the Action Area. USFWS recovery efforts for VELB have been based primarily on preservation and restoration of riparian habitat, and the USFWS recommendation for the delisting of VELB is based on the extent of riparian habitat that has

been preserved to date (USFWS 2006b). Undeveloped upland areas in the Action Area may support elderberry shrubs representing potential habitat for VELB. However, because undeveloped parcels in the Action Area are privately owned and focused surveys are not possible, it was determined that the analyses would focus on wetland or riparian areas potentially supporting habitat for VELB (i.e., elderberry shrubs).

The Proposed Action could increase the likelihood of development of the remaining undeveloped parcels that include potential VELB habitat. The potential effects to VELB resulting from future development are loss, fragmentation, or degradation of habitat.

Loss, Fragmentation, or Degradation of Potential Habitat

It is not anticipated that indirect effects of the Proposed Action would lead to species-level potential effects to VELB. The Action Area does not contain any designated critical habitat for VELB. The nearest critical habitat is located in Sacramento County, along the American River Parkway. As shown in Figure 9, potential habitat for VELB in the Action Area is limited, particularly in the southern portion of the Action Area in Cameron Park, which is already densely developed.

On October 2, 2006, USFWS recommended VELB for delisting, stating that since 1980, approximately 50,000 acres of existing riparian habitat have been protected in the Sacramento and San Joaquin valleys, and an additional 5,000 acres of habitat have been restored for the benefit of the beetle (USFWS 2006b).

The proposed action could result in the conversion of approximately 315 acres of potential VELB habitat may result in the loss or fragmentation of habitat that supports or could potentially support elderberry shrubs. VELB have been known to have limited dispersal ability, and increased fragmentation of habitat

would increase distances between VELB subpopulations, making colonization of new habitat, or recolonization of prior habitat, unlikely (USFWS 2006b).

Urban development could degrade remaining VELB habitat in the Action Area by altering hydrology and decreasing water quality. Impermeable surfaces created through urban development—including streets, rooftops, concrete, and asphalt—can decrease water infiltration into soil and increase stormwater runoff. Runoff from landscaped areas, gardens, disturbed ground, and paved surfaces, if uncontrolled, can transport fertilizers, pesticides, sediment, oil, and grease into surrounding habitat and result in decreased water quality. Ground disturbance and altered hydrology in habitat adjacent to development can also result in increased erosion and sedimentation.

CONSERVATION MEASURES FOR VALLEY ELDERBERRY LONGHORN BEETLE

Implementation of the following conservation measures would avoid or minimize indirect effects to and/or protect VELB and their habitat.

Compliance with the El Dorado County General Plan
As stated previously, Reclamation, EDCWA, and EID do not have jurisdiction to regulate future development that may occur in the Action Area as a result of delivery of federal water under the P.L. 101-514 water contract. Jurisdiction of land use lies with El Dorado County.

A number of policies in the El Dorado County General Plan will provide protection of habitats that may support elderberry shrubs and VELB. A summary of pertinent policies from Element 7 of the General Plan, Conservation and Open Space, which provide guidelines for the conservation of biological resources, is provided below. Relevant text from Element 7 is also provided in Appendix F.

Erosion control and sedimentation policies:

- The County will prohibit development of slopes exceeding 30%, except for repair or replacement of existing structures, projects necessary to avoid or mitigate hazards to the public, or agriculture uses implemented in conjunction with County Best Management Practices (BMPs) (Policy 7.1.2.1).
- Discretionary and ministerial projects that require ground disturbance (e.g., grading, cut and fill for roads) will be required to minimize erosion and sedimentation using specific standards to be incorporated into the Zoning Ordinance (Policy 7.1.2.2).
- The County will enforce erosion control ordinances for and develop monitoring provision for all projects that require grading (Policy 7.1.2.3).

Policies for the protection of water resources and wetlands:

- The County will encourage the use of NRCS BMPs and establish water conservation programs (Policy 7.3.1.1 and 7.3.1.2).
- The County will protect stream and lakes from embankment erosion and excessive turbidity (Policy 7.3.2.1).
- Projects requiring grading will implement an erosion control program as necessary (Policy 7.3.2.2).
- Parking lot storm drainage will include facilities to separate oils and salts from storm water, and the County will evaluate feasible alternatives to the use of salt for ice control (Policy 7.3.2.3 and 7.3.2.4).
- Wetland delineations will be conducted for all projects that may result in discharge to or would affect the function and value of rivers, streams, lakes,

ponds, or other wetland features (Policy 7.3.3.1).

- The County will maintain a database of all wetland features (Policy 7.3.3.3)
- The Zoning Ordinance will be amended to provide buffers and special setbacks for the protection of riparian areas and wetlands (Policy 7.3.3.4). Wetlands are currently managed under the *Interim Interpretative Guidelines for El Dorado County Plan Policy 7.3.3.4*, which requires setbacks of 100 feet from all perennial streams, rivers and lakes; of 50 feet from all intermittent streams and wetlands; or appropriate mitigation and implementation of BMPs where such setbacks deny “reasonable use of property.” The County may allow exceptions to these requirements on a project-by-project basis if implementation of buffers or mitigation measures are deemed “not feasible” based on documentation by the project proponent.
- Wetland features will be integrated into new development to avoid or minimize disturbance to and limit fragmentation of the resource (7.3.3.5).

General habitat protection policies:

- The County will develop an Important Biological Resources Map that identifies critical fish and wildlife habitat. These resources will be protected in accordance with applicable laws using appropriate land use designation, setbacks, clustering, and large lot design. (Policy 7.4.2.1).
- The County will form a Plant and Wildlife Technical Advisory Committee to advise the Planning Commission and Board of Supervisors on plant and wildlife issues (Policy 7.4.2.7).
- An INRMP will be developed to identify important habitat and establish a program for effective habitat preservation and management. The

INRMP will include a habitat inventory, protection, and acquisition strategy; a mitigation program that includes mitigation options and incentives for developer and landowner participation; a habitat monitoring program; and establishment of a conservation fund to ensure adequate funding for the INRMP (Policy 7.4.2.8).

- The County will review and update the important Biological Corridor (-IBC) overlay that will apply to lands identified as having high wildlife habitat values. Lands located within the overlay will have increased minimum parcel sizes; higher canopy retention standards; lower thresholds for grading permits; higher wetland retention standards and more stringent wetland mitigation requirements; increased riparian and wetland setbacks; greater protection for rare plants; more stringent development requirements; and no structures (i.e., fences) that would restrict the movement of wildlife (Policy 7.4.2.9).
- All plant and wildlife protection programs will be coordinate with appropriate federal and state agencies (Objective 7.4.3).

Implementation of these measures would avoid and minimize the impact of potential future residential and commercial development on VELB and their habitat in the Action Area.

INDIRECT EFFECTS TO CALIFORNIA RED-LEGGED FROG

There are no known occurrences of CRLF in the Action Area, which contains a total of 315 acres of potential habitat, including 215 acres in the southern portion of the Action Area, and 100 acres in the northern Portion of the Action Area. USFWS defines habitat for CRLF as “aquatic breeding areas embedded within a matrix of riparian and upland dispersal habitats” and it is known that CRLF will use upland habitats up to a mile away from aquatic breeding habitats for dispersal during the wet season (USFWS

2002b). However, USFWS recovery objectives have been focused on the preservation and restoration of aquatic and riparian ecosystems required by CRLF for “reproduction, development, and survival” (USFWS 2002b). Therefore, it was determined that analyses in this BA would focus on wetland or riparian areas potentially supporting breeding habitat for CRLF.

The potential effects to CRLF resulting from future development are loss, fragmentation, or degradation of habitat.

Loss, Fragmentation, or Degradation of Potential Habitat

It is not anticipated that indirect effects of the Proposed Action would lead to species-level potential effects to CRLF. The Action Area does not contain designated critical habitat for CRLF. Additionally, as shown in Figure 9, potential breeding habitat in the Action Area that could support CRLF is limited, particularly in the southern portion of the Action Area, which is already densely developed. A CRLF researcher who has conducted surveys in the vicinity of the GDPUD service area confirmed that there is limited potential for CRLF in the northern portion of the Action Area (Barry, pers. comm., 2006).

Residential or commercial development may result in loss of 315 acres of potential CRLF habitat. Development could also impede CRLF dispersal between breeding habitats and suitable upland habitats.

Urban development can also degrade remaining habitat by altering hydrology and decreasing water quality. Impermeable surfaces created through urban development—including streets, rooftops, concrete, and asphalt—can decrease water infiltration into soil and increase storm-water runoff. Runoff from landscaped areas, gardens, disturbed ground, and paved surfaces, if uncontrolled, can transport fertilizers, pesticides, sediment, oil, salts, and grease into surrounding

habitat and result in decreased water quality. Ground disturbance and altered hydrology in habitat adjacent to development can also result in increased erosion and sedimentation.

Urbanization may increase habitat for non-native species that are predators on one or more life stages of CRLF. These include bull frogs and various non-native fish (USFWS 2002b).

Increased human encroachment resulting from increasing population densities, including recreational uses such as hiking and off-road vehicles, may also degrade habitat (e.g., through trampling of vegetation or frog eggs).

CONSERVATION MEASURES FOR CALIFORNIA RED-LEGGED FROG

Implementation of the following conservation measures would avoid or minimize indirect effects to and/or protect CRLF and their habitat.

Contributions to existing CRLF Habitat Preservation and Restoration

Reclamation and EID have been involved in efforts to protect and manage the two known populations of CRLF in El Dorado County at Spivey Pond and at Weber Creek.

In 1998–1999, Reclamation contributed \$189,205 toward the purchase of 54 acres of land from the Spivey family. In 2003, Reclamation contributed an additional \$130,000 toward the construction of a pond on the preserve. These contributions were made as part of the CVPCP and the HRP (USBR 2007).

The preserve, which is now owned by BLM, is managed by ARC under the Management Plan for the Spivey Pond Management Area (BLM 2004). Signatories to this plan include Reclamation, EID, CDFG, BLM, El Dorado County, ARC, USFWS, and USDA-FS. The six management objectives outlined in the plan are:

- to control bullfrogs and predatory fish,

- to monitor water quality within the pond to determine the effects of potential contaminants (e.g., salts and herbicides),
- to maintain the integrity of the habitat through management of sedimentation, fuels, emergency operations, and dam vegetation,
- to create and manage additional CRLF habitat on the Spivey Pond parcel,
- to promote research and maintain a centralized GIS database for all research data and observations at the pond, and
- to provide input to watershed planning and activities for the benefit of the Spivey Pond CRLF population.

In 2003, EID signed an MOU with CDFG for the implementation of the Weber Creek Flow and Restoration Plan (CDFG and EID 2003).

This plan seeks to restore and enhance habitat at Weber Creek impacted by the release of silt from EID's Weber Reservoir in 2001.

Restoration and enhancement measures in the plan include modification of release operations; installation, maintenance, and monitoring by EID of two continuous recording flow gages; implementation of pulse flows; and macroinvertebrate monitoring.

These efforts to protect and enhance CRLF habitat at Spivey Pond and Weber Creek will provide for the long-term protection of CRLF in El Dorado County.

Compliance with the El Dorado County General Plan
As stated previously, Reclamation, EDCWA, and EID do not have jurisdiction to regulate future development that may occur in the Action Area as a result of delivery of federal water under the P.L. 101-514 water contract. Jurisdiction of land use lies with El Dorado County.

A number of policies included in the El Dorado County General Plan will provide protection for wetland and riparian habitats that may support

CLRF. A summary of pertinent policies from Element 7, Conservation and Open Space, of the General Plan is described above under conservation measures for VELB.

Implementation of these measures would avoid and minimize the impact of potential future residential and commercial development on CRLF and their habitat within the Action Area.

INDIRECT EFFECTS TO BALD EAGLE

There are no known occurrences of bald eagle in the Action Area, and bald eagles are not known to winter or nest in the Action Area. However, Bass Lake, just west of the southern portion of the Action Area, represents wintering habitat for bald eagle, which have been observed wintering at this location since the 1950s (CNDDDB 2007). Because wintering eagles continue to use the habitat at Bass Lake, which is already developed, it is not anticipated that new development that may result from the new federal water to be supplied under P.L. 101-514 will result in adverse effects to bald eagle.

Cumulative Effects

USFWS is required to consider cumulative effects in formulating its biological opinions (50 CFR §402.14(g)(3) and (4)). Cumulative effects under ESA are defined as “...effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in the biological assessment. Future Federal actions that are unrelated to the proposed action are not considered because they require separate consultation pursuant to Section 7 of the Act.”

The proposed action under consideration is the execution of a new CVP M&I water service contract between the U.S. Bureau of Reclamation and EDCWA, which will serve as a “master contract” allowing EDCWA and its member agencies, EID and/or GDPUD, to enter

into subcontracts. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time. The following discussion identifies private actions that are reasonably certain to occur along with an evaluation of their cumulative effects on the eight terrestrial federally listed species potentially affected by this proposed action.

Future Development and Related Infrastructure

As described in the El Dorado County General Plan section of this BA, the El Dorado County Board of Supervisors adopted a new General Plan in July 2004. Assuming a 2025 planning horizon, the General Plan includes detailed information on allowable land use and development in anticipation of projected population growth in the County. This growth will include private discretionary residential and commercial development projects, as well as appropriate infrastructure to support such development, including additional roads and new or upgraded public utilities (e.g., water, wastewater, recycled water, gas, electrical, cable, etc.). For example, the Bass Lake Hills Specific Plan (El Dorado County 2004a) provides for the development, in several phases, of 1,414 acres including 1,458 housing units as well as parks, schools, a church, and open space. A portion of this development will occur within EID’s portion of the Action Area. The Bass Lake Hills Specific Plan also includes a comprehensive transportation network to meet the demands of increased traffic volumes resulting from the development. This will include widening and realignment of several roads that intersect the Action Area, including Bass Lake Road, County Club Drive, and the Highway 50/Bass Lake Road interchange.

EID is planning to construct or upgrade water, wastewater, and recycled water treatment plants and associated facilities in its service area in the western slope of El Dorado County to meet

projected future growth as authorized by El Dorado County and provided for in the County General Plan. EID recently completed upgrades at the Deer Creek wastewater treatment plant and continues to conduct phased upgrades of the El Dorado Hills water and wastewater treatment plants, which will enable EID to meet the increased wastewater treatment demand, increase recycled water supply, improve reliability, and comply with increasingly stringent water quality regulations. Other proposed projects include the replacement of the existing water Outingdale treatment plant, future expansion of the El Dorado Hills Water Treatment Plant and possibly construction of a second water treatment plant in the El Dorado Hills area, construction of recycled water storage reservoirs near the Deer Creek and El Dorado Hills Wastewater Treatment Plants. At Folsom Reservoir, EID is currently undergoing design improvements for a new temperature control device and associated water conveyance pipelines at its water intake facility along the southern arm of the reservoir.

While the southern portion of the Action Area, serviced by EID, is already largely developed, the northern portion of the Action Area, serviced by GDPUD, has more than 6,000 acres of undeveloped land that support a variety of grassland, oak woodlands and stands of conifers in large contiguous undeveloped parcels. These areas are designated by the County primarily for rural residential and low-density residential development, with development limited to one single-family housing unit every 5–10 acres. GDPUD maintains a raw-water ditch system from Stumpy Meadows Reservoir, as well as water treatment plants at Auburn Lake Trails and Walton Lake. Currently, GDPUD is in the process of approving and constructing the new Greenwood Lake Water Treatment Plant, which, when completed, will replace the Auburn Lake Trails water treatment plant.

Remaining privately owned land could potentially be converted to small-scale agricultural uses, such as vineyards. The existing communities in the GDPUD service area (e.g., Cool, Greenwood, Pilot Hill, Kelsey, and Georgetown) will unlikely see growth comparable to that of the southern County areas along Highway 50 (e.g., El Dorado Hills and Cameron Park).

Private owners may also choose to harvest timber. Timber harvests that occur on private lands are approved through the Timber Harvest Plan (THP) Process, regulated by the California Department of Forestry and Fire Protection (CDF) through the 1973 Forest Practice Act (FPA). The FPA regulates when, where, and how commercial timber harvests can be conducted to prevent adverse effects to soils, riparian corridors, and resident wildlife and wildlife habitat. The FPA requires the development of a THP, an environmental review document submitted by landowners to CDF that describes the proposed timber harvest and outlines the steps that will be taken to prevent damage to the environment. The THP must be prepared by a Registered Professional Forester

The El Dorado County General Plan also requires implementation of measures for the conservation of habitat for common and special-status plant and wildlife species. Some of these measures are described in the El Dorado County General Plan section, and Indirect Effects of this BA. For example, the County is in the process of developing an Integrated Natural Resources Management Plan (INRMP) that identifies important habitat in the County and establishes a long-term program for effective habitat preservation and management. The County has also developed interim interpretive guidelines for the preservation of forest and oak woodland resources (El Dorado County 2007) required per General Plan Policy 7.4.4.4, which requires tree canopy retention standards for all new development projects, or contribution to the

INRMP conservation fund if those standards cannot be met.

Since the proposed action would potentially facilitate the construction of approved development as provided for in the General Plan, the potential effects of private development on the eight federally listed species addressed in this consultation, as well as existing measures already in place to protect these species and their habitat, have already been analyzed in the Potential Effects of the Proposed Action section of this BA.

Conclusion

After reviewing the current status of the federally listed species included in this BA; the existing environment; the effects of the proposed action, including implementation of protective measures required by the El Dorado County General Plan; and cumulative effects from other present, and future private actions that are reasonably certain to occur in the basin (as required under the ESA); we have determined that the proposed action will not adversely affect the species addressed in this BA, and is not likely to destroy or adversely modify designated critical habitat. No special-status species designated critical habitat is present in the vicinity of the Action Area and therefore, none will be affected.

In addition, environmental measures described in this BA may result in enhanced protection and habitat quality for some species. These measures include financial contributions from Reclamation, EDCWA and EID toward land purchases and management of the Pine Hill Preserve; development of the MOA between EDCWA, El Dorado County, and USFWS for the longer-term management of the Pine Hills Preserve; funding from Reclamation for the preservation of CRLF at Spivey Pond; an MOU between EID and CDFG for the management of Weber Creek Reservoir to enhance wetland habitat; and the development and

implementation of environmental measures such as the INRMP and oak woodlands preservation requirements by El Dorado County.

Conclusions and Determinations

The following provides conclusions and determinations as to whether the Proposed Action is likely to adversely affect each of the eight federally listed plant and wildlife species addressed in this BA. Formal consultation under Section 7 of the ESA is necessary for federally listed species likely to be adversely affected by the Proposed Action. The conclusions in this BA are intended to assist the USFWS in reaching its own determinations regarding the effects to each species as rendered in a BO.

Provided below are the definitions for all possible effects determinations, as defined by USFWS, followed by the effects determinations for each federally listed species based on the findings of this BA.

Effects Determination Definitions

No effect – Is the appropriate conclusion when the effects of the action will not affect any listed species or its critical habitat.

Likely to benefit – Is the appropriate conclusion when an action is likely to directly or indirectly benefit a listed species or its critical habitat.

May affect, not likely to adversely affect – Is the appropriate conclusion when the effects of an action on a species or its critical habitat are likely to be insignificant and discountable.

May affect, likely to adversely affect – Is the appropriate conclusion when an action is likely to directly or indirectly have an adverse effect on a listed species or its critical habitat.

Effects Determinations

Based on the findings presented in this BA, it is determined that the Proposed Action will have the following effects on federal species and their habitats.

Stebbins' morning glory
(*Calystegia stebbinsii*; FE, CE, CNPS 1B.1)

It is our determination that the Proposed Action may affect, but is not likely to adversely affect, Stebbins' morning glory (Indirect Effects).

Pine Hill ceanothus
(*Ceanothus roderickii*; FE, CR, CNPS 1B.2)

It is our determination that the Proposed Action may affect, but is not likely to adversely affect, Pine Hill ceanothus (Indirect Effects).

Pine Hill flannel bush
(*Fremontodendron californicum* ssp. *decumbens*; FE, CR, CNPS 1B.2)

It is our determination that the Proposed Action may affect, but is not likely to adversely affect, Pine Hill flannel bush (Indirect Effects).

El Dorado bedstraw

(*Galium californicum* ssp. *sierrae*; FE, CR, CNPS 1B.2)

It is our determination that the Proposed Action may affect, but is not likely to adversely affect, El Dorado bedstraw (Indirect Effects).

Layne's ragwort
(*Packera layneae*; FT, CR, CNPS 1B.2)

It is our determination that the Proposed Action may affect, but is not likely to adversely affect, Layne's ragwort (Indirect Effects).

Valley elderberry longhorn beetle
(*Desmocerus californicus dimorphus*; FT)

It is our determination that the Proposed Action may affect, but is not likely to adversely affect, VELB (Indirect Effects).

California red-legged frog
(*Rana aurora draytonii*; FT, CSC)

It is our determination that the Proposed Action may affect, but is not likely to adversely affect CRLF (Indirect Effects).

Bald eagle
(*Haliaeetus leucocephalus*; Former FT, CE, CFP)
It is our determination that the Proposed Action will have no effect on bald eagle (Indirect Effects).

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FIGURES

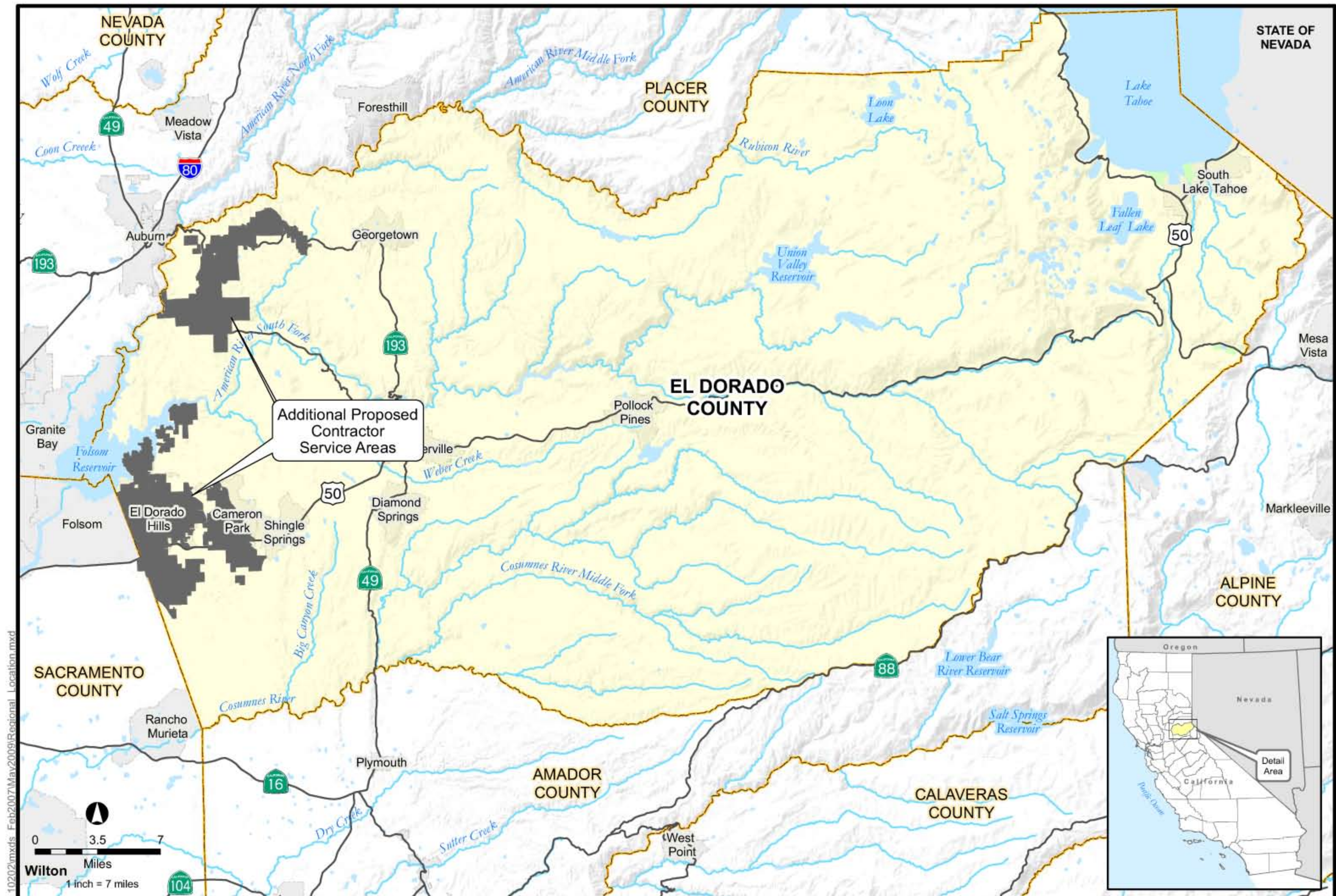


FIGURE 1
Regional Location

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Section 7 Action Area
Biological Assessment

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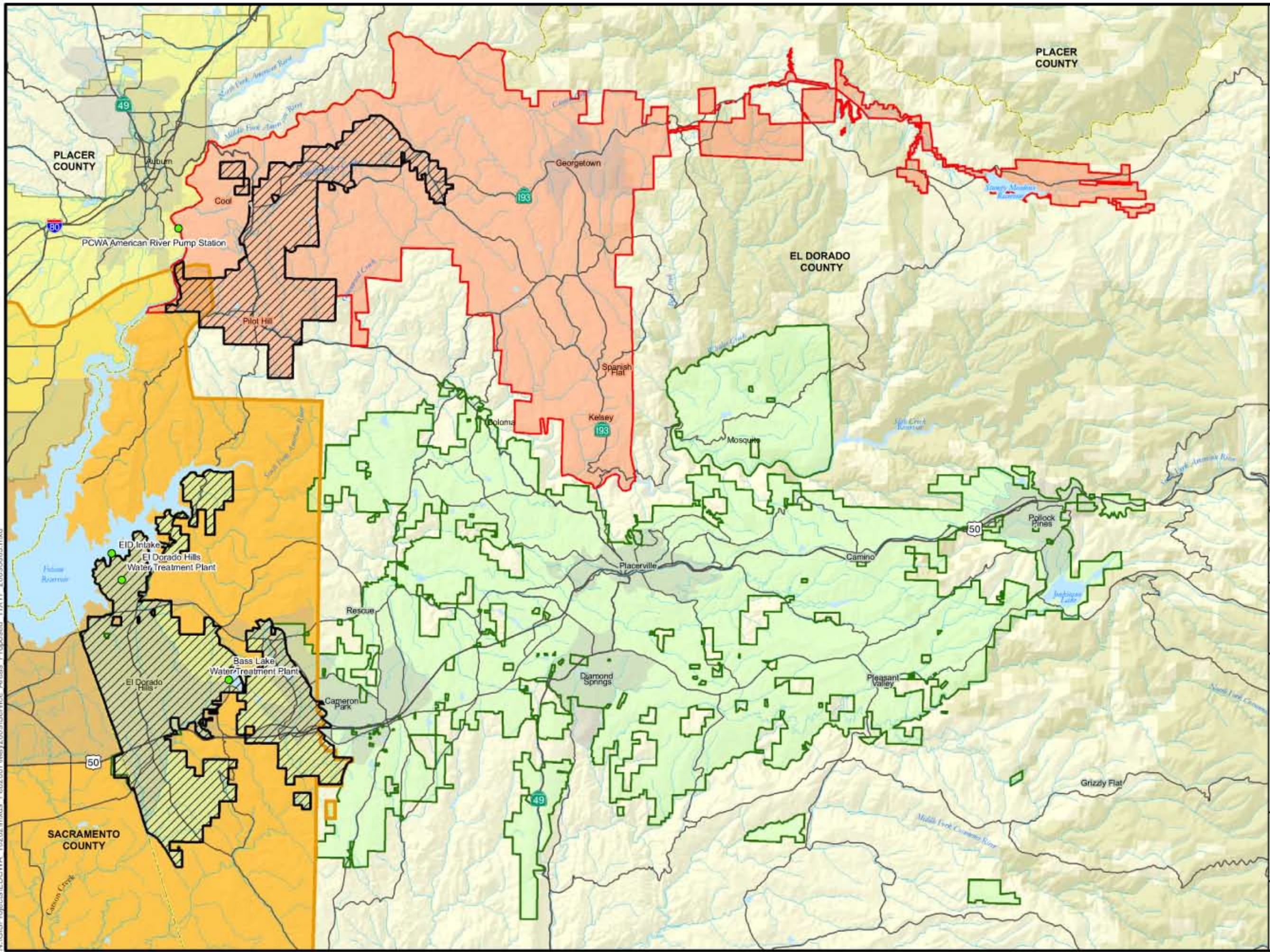
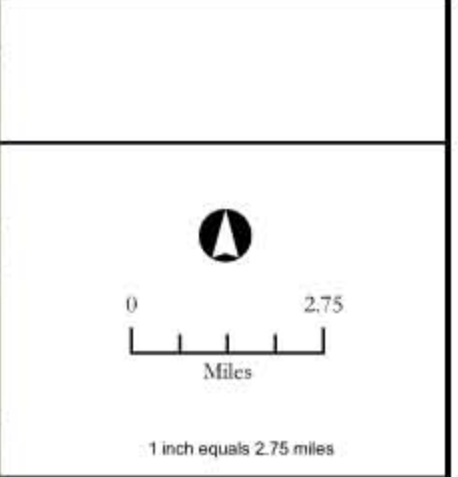
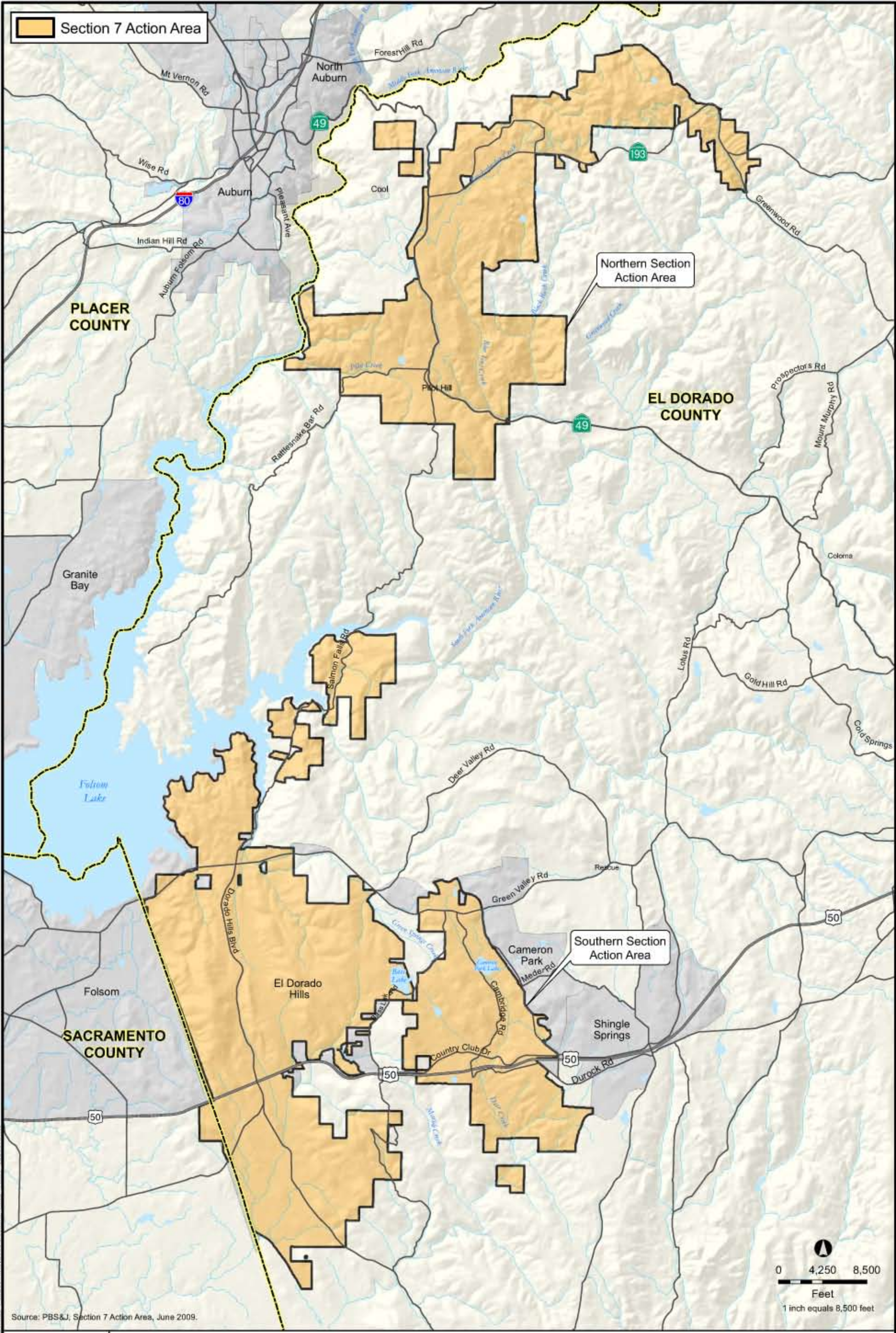


FIGURE 2
EID and GDPUD Service Area Boundaries and Proposed Contractor Service Areas
Section 7 Action Area
Biological Assessment
El Dorado County, CA

- Proposed Contractor Service Area
- Georgetown Divide Public Utility District Boundary
- El Dorado Irrigation District Boundary
- Placer County Water Agency Service Areas
- Consolidated Place of Use USBR Central Valley Project



Source: El Dorado County, GDPUD Boundary, August 2001; EID Boundary, May 2007; USBR & CDWR, PCWA Boundary, Oct. 2003; Consolidated Place of Use Boundary, May 2004.



Source: PBS&J, Section 7 Action Area, June 2009.



Figure 3
Section 7 Action Area

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Section 7 Action Area
Biological Assessment

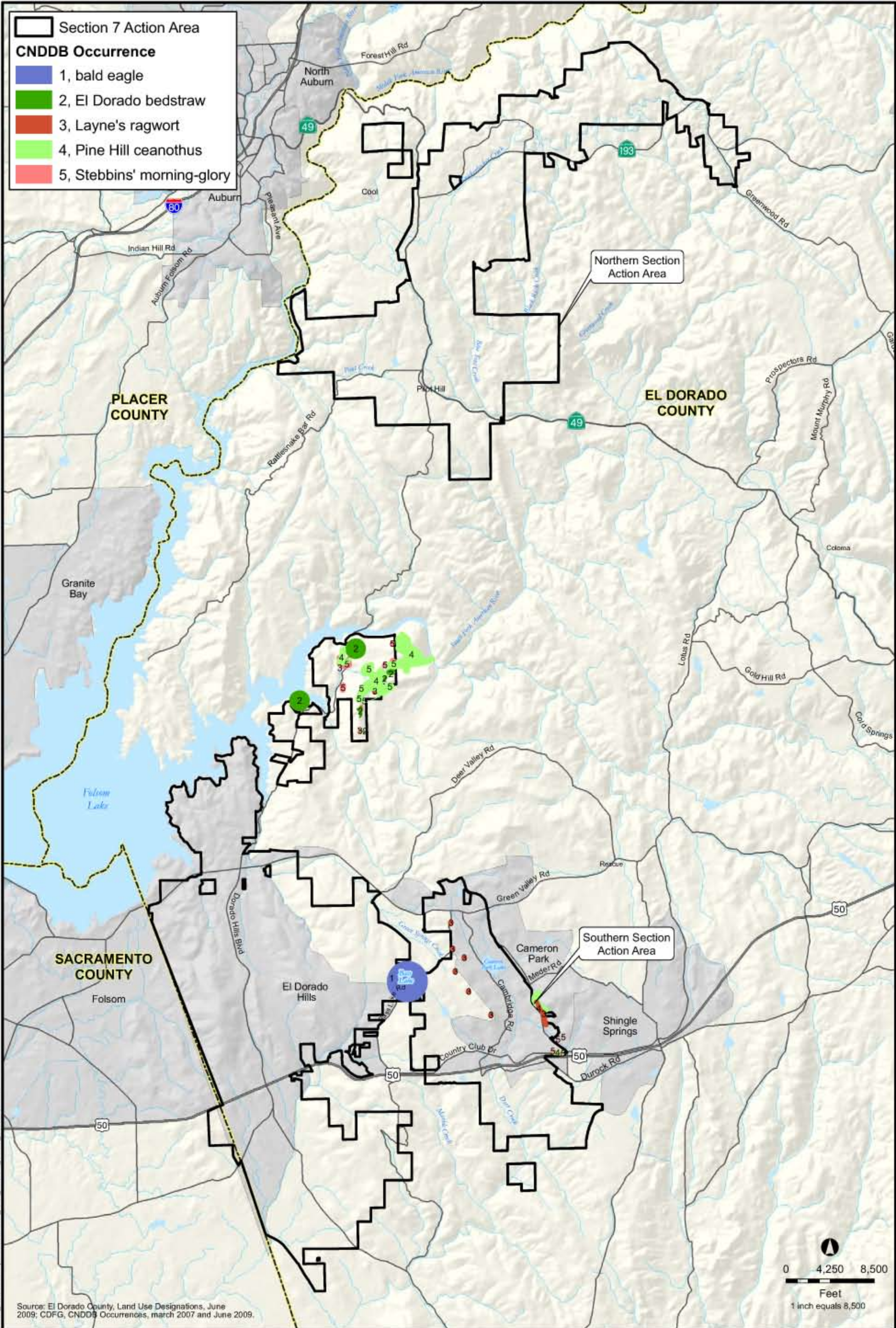


Figure 4
Known Occurrences of Special-status Species
in the Section 7 Action Area

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Section 7 Action Area
 Biological Assessment



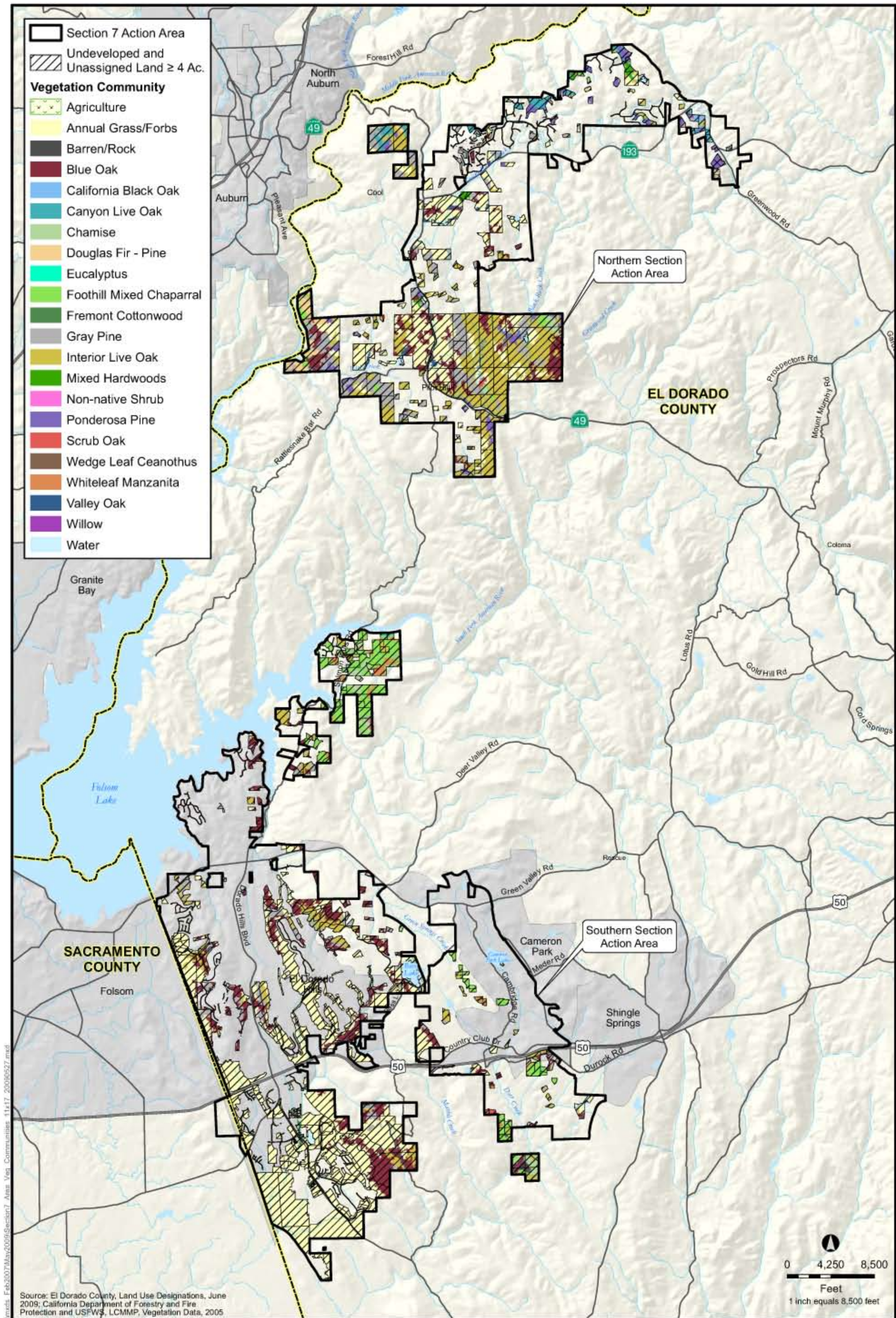
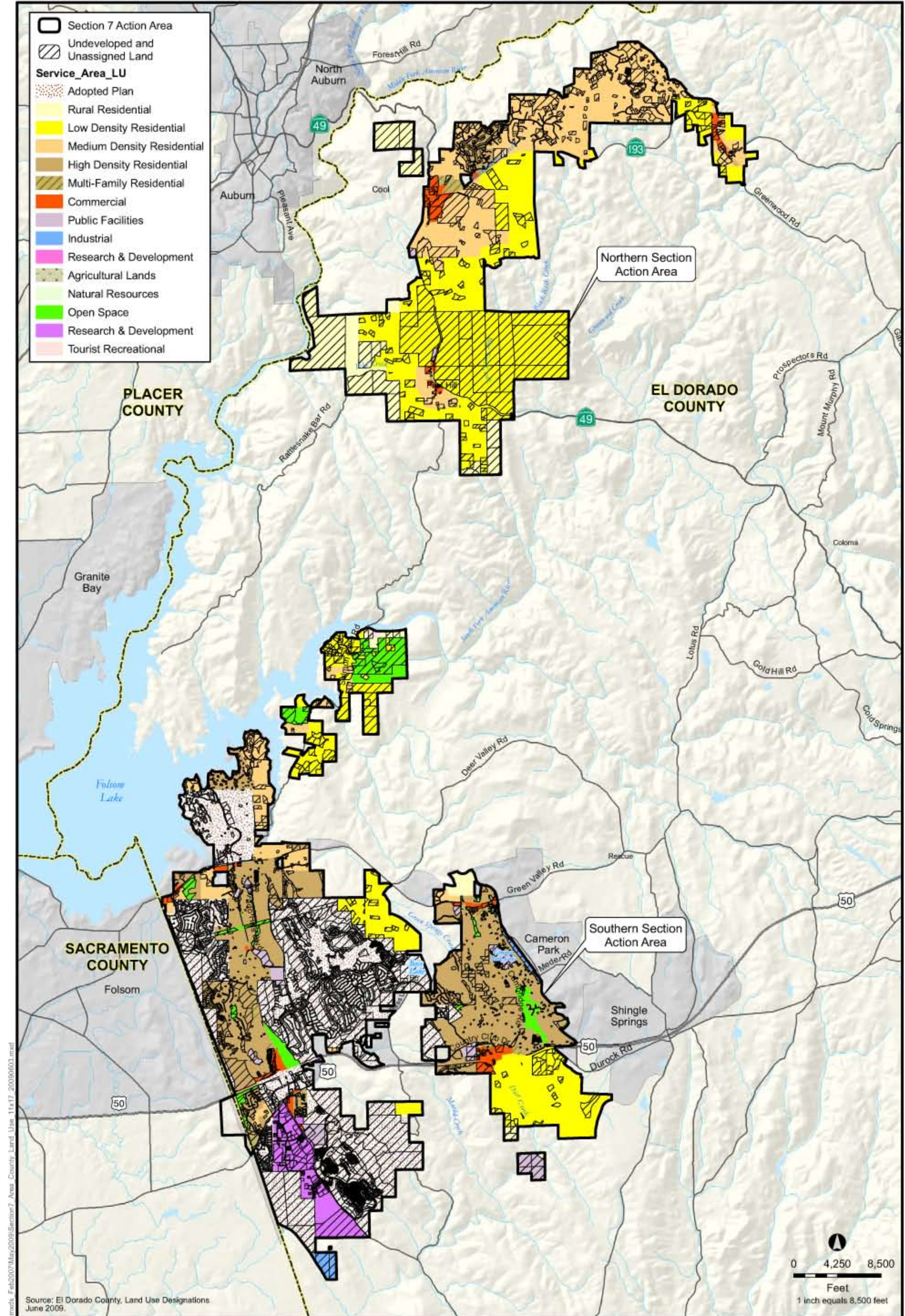


Figure 5
Vegetation Communities within Undeveloped Land
in the Section 7 Action Area

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Section 7 Action Area
Biological Assessment



Source: El Dorado County, Land Use Designations June 2009.

Figure 6
County Land Use Designations within the Section 7 Action Area

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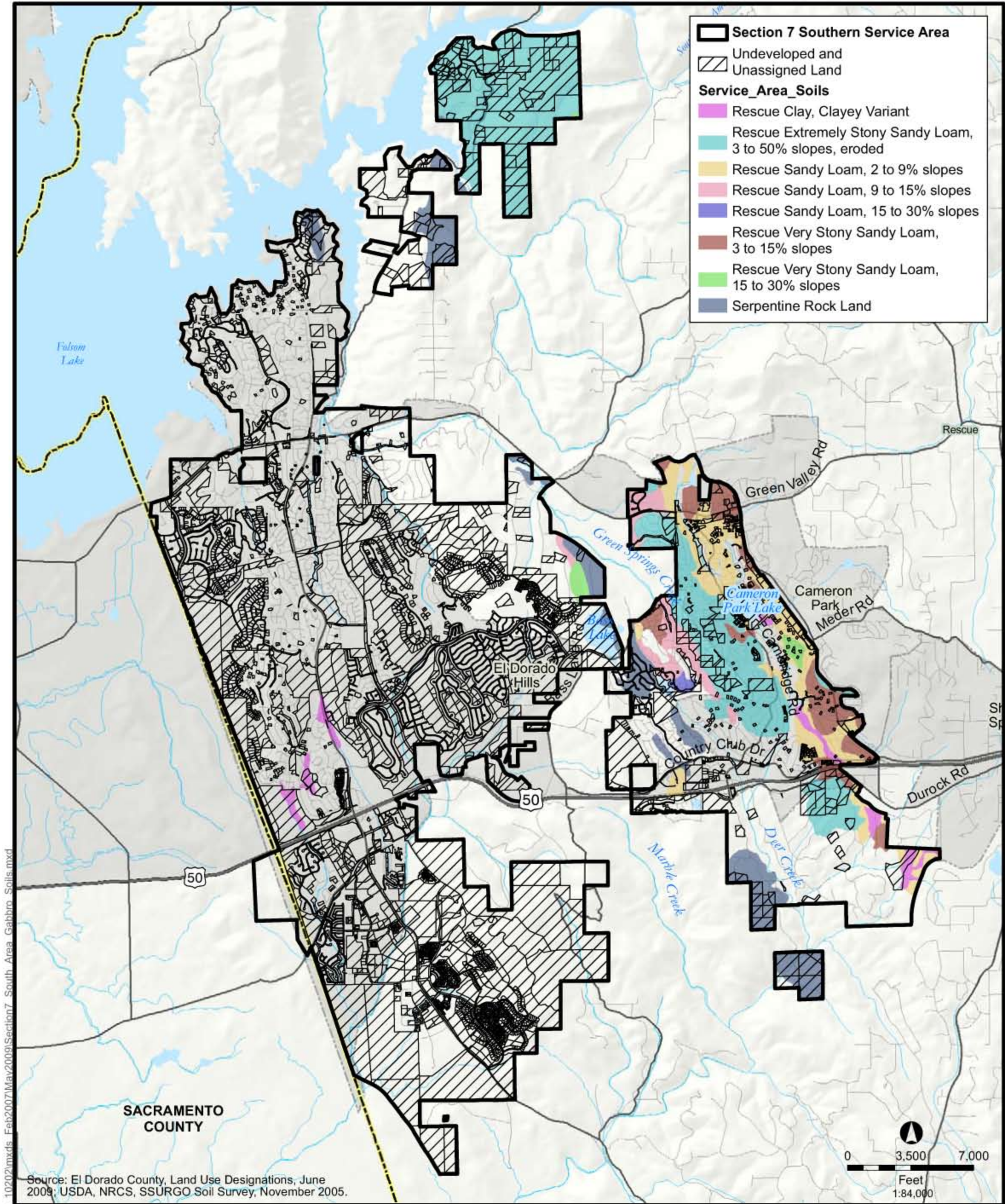


Figure 7
Serpentine- and Gabbro- Derived Soils
in the Southern Portion of the Action Area



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Section 7 Action Area
 Biological Assessment

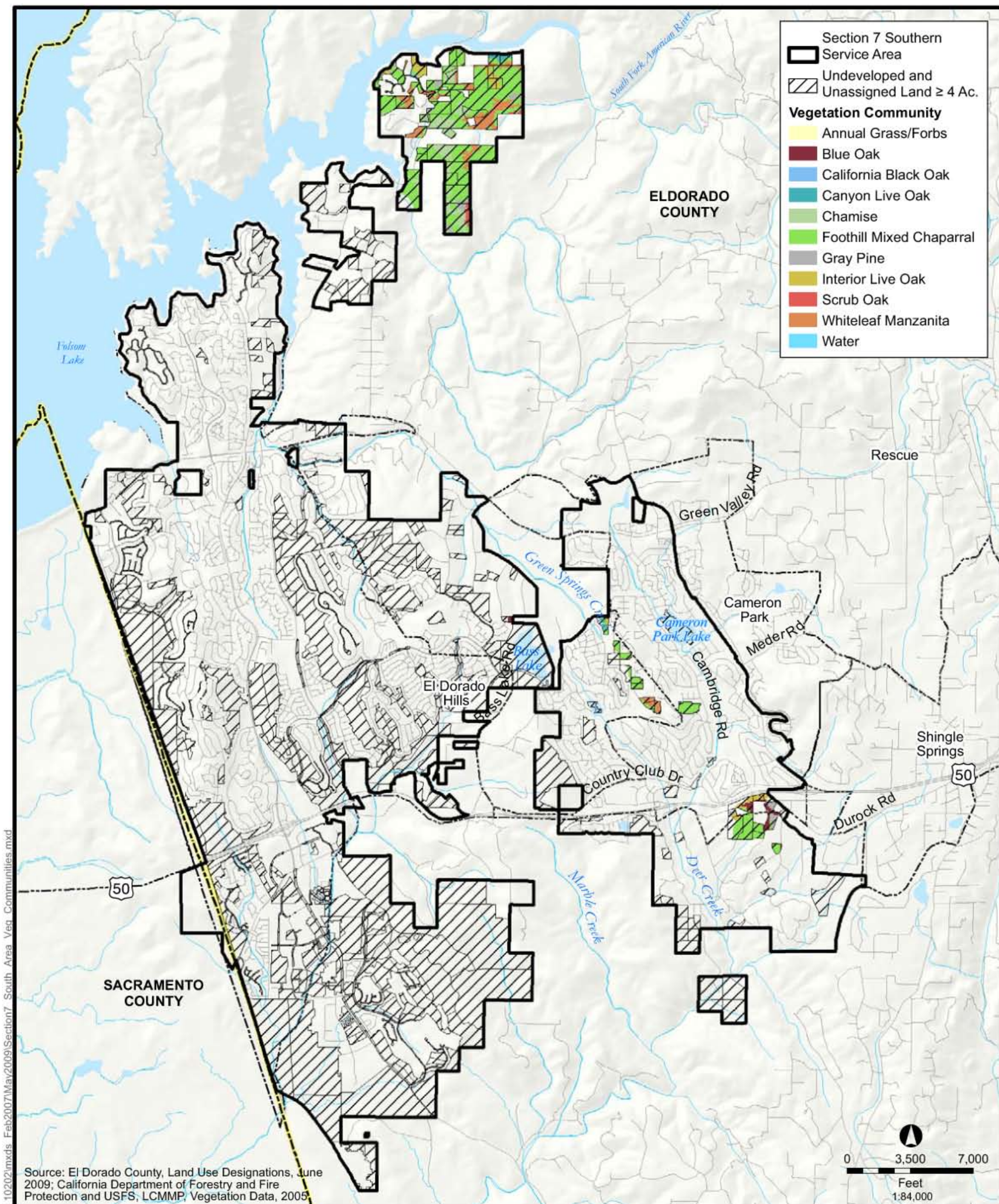


Figure 8
Potential Gabbro Soil Plant Habitat
in the Southern Portion of the Action Area

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Section 7 Action Area
 Biological Assessment

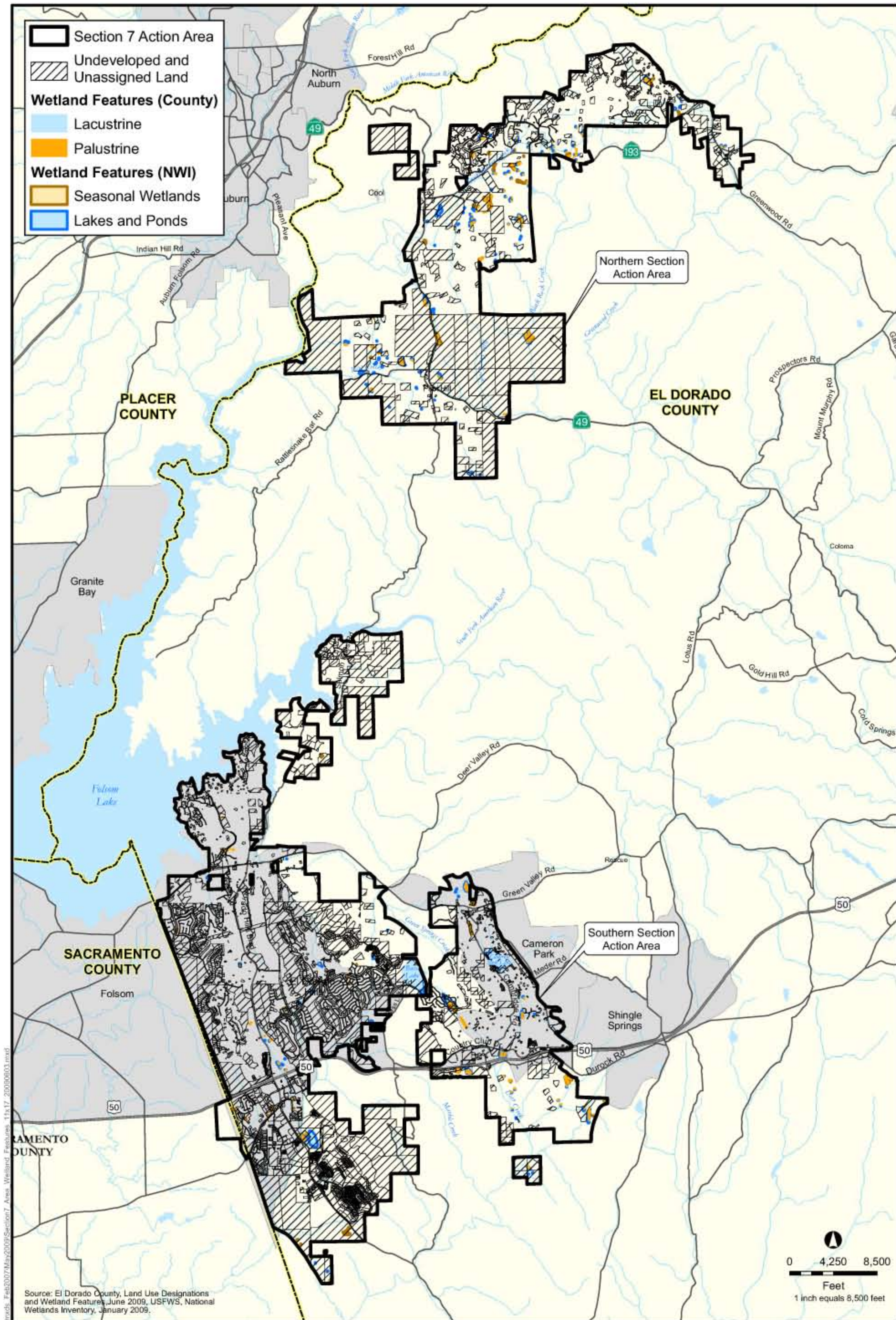
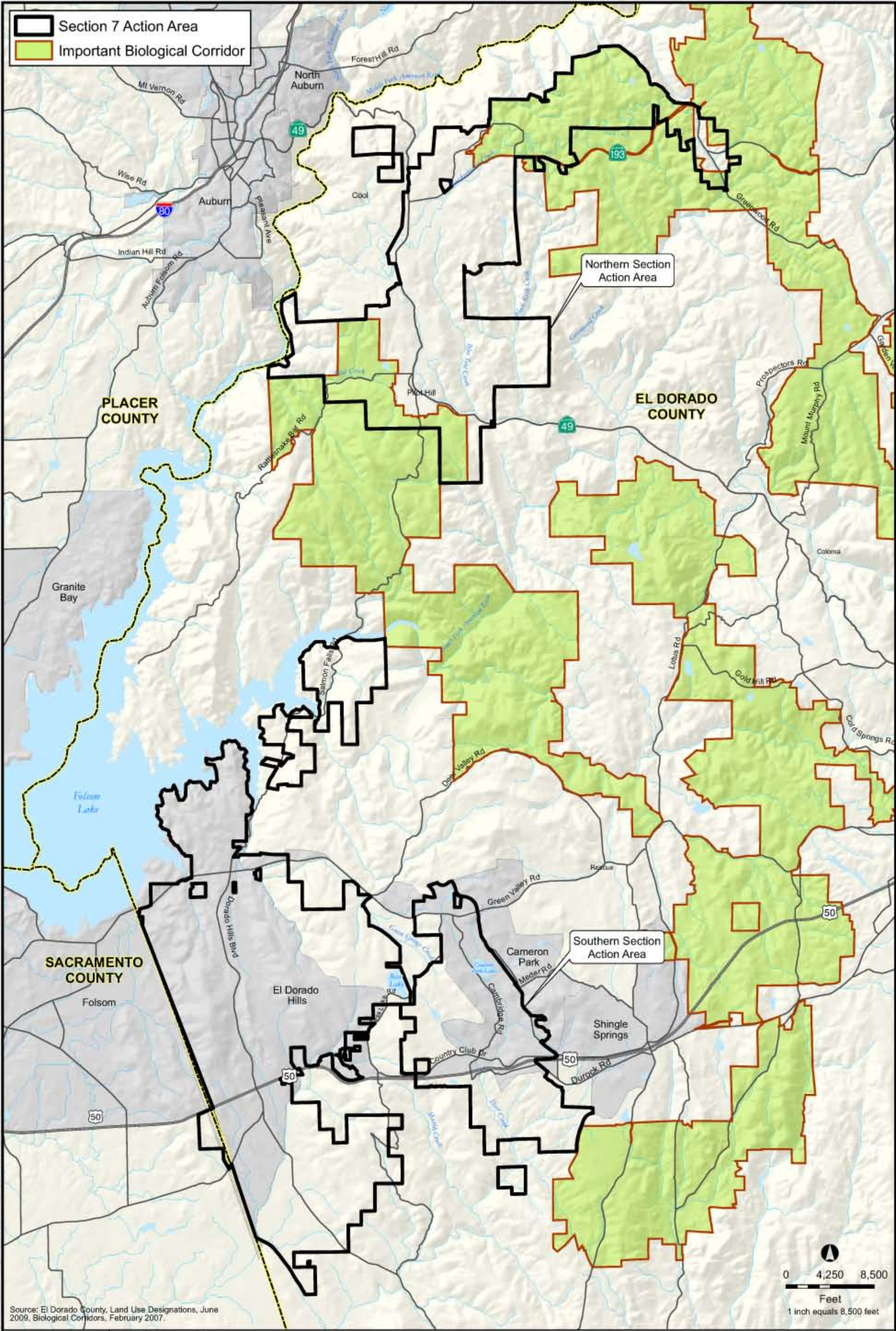
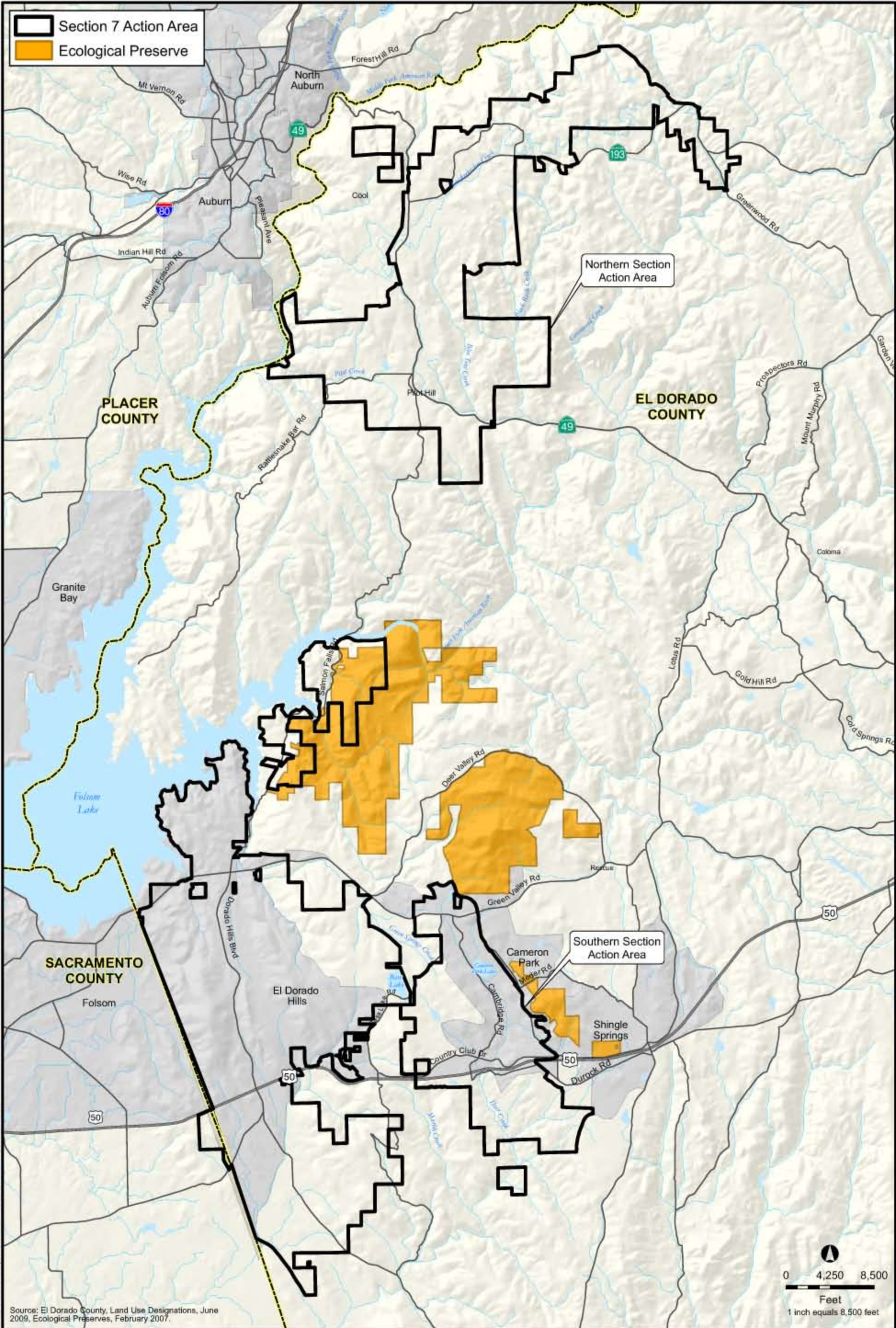


Figure 9
Potential VELB and CRLF Habitat
in the Section 7 Action Area



100009006





Source: El Dorado County, Land Use Designations, June 2009, Ecological Preserves, February 2007.



Figure 11
Ecological Preserves
in the Section 7 Action Area

100009006

APPENDICES

Appendix A



Delta Smelt Consultation

Delta Smelt

Background

The federal action under consultation is a new CVP M&I water service contract between Reclamation and the El Dorado County Water Agency (EDCWA) authorized under P.L.101-514 (Section 206) for up to 15,000 acre-feet per annum (AFA) from the American River basin. In accordance with the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (ESA), the U.S. Bureau of Reclamation (Reclamation) has been informally consulting with the U.S. Fish & Wildlife Service (Service) on the threatened delta smelt (*Hypomesus transpacificus*) and its designated critical habitat. This informal consultation has been ongoing since 2003 with earlier scoping and species listing efforts dating back to 1993. All other contracting actions under P.L.101-514 (Section 206) were completed in 1998.

This pending new CVP contract (and the P.L.101-514 contracts generally) have long been included in the modeling simulations and operational assumptions of the CVP/SWP. Over the years, numerous individual actions including those of the Department of the Interior have accepted and included the P.L.101-514 contracts as part of the future environmental baseline for their environmental analyses. Such analyses have been included in both NEPA and Endangered Species Act documentation. Of particular relevance, the most recent Biological Assessment for the Long-Term Coordinated Operations of the CVP and SWP assumed the inclusion of the P.L.101-514 contracts and, specifically, the Reclamation/EDCWA contract in its future condition baseline.

Additionally, in other recent actions, the Reclamation/EDCWA P.L. 101-514 contract has also been included as part of the future baseline for those environmental analyses. These actions include the Yuba River Accord, the Sacramento River Water Reliability Study, the California Environmental Water Account, the American River Pump Station Project, and the Freeport Regional Water Project, to name but a few. Several Reclamation Warren Act contracting actions in the American River basin have also included, in their future hydrologic modeling baselines, this current P.L.101-514 contract.

It is reasonable to conclude, therefore, that this proposed action (i.e., Reclamation/EDCWA new CVP water service contract) is assumed a part of the future cumulative condition. This assumption is widely accepted by the various federal, State and local resource agencies, affected stakeholders (e.g., Water Forum), and general public.

Reclamation Consultation Context

One of Reclamation's primary ongoing initiatives in California at the present time is the updating of the Long-Term Coordinated Operations of the CVP and SWP, ostensibly their Operations and Criteria Plan (or OCAP). In collaboration with the California Department of Water Resources (DWR), the long-term coordinated operations of the CVP and SWP represents a significant undertaking with wide ranging implications and the potential to adversely affect listed species that rely on its numerous waterbodies and watercourses.

Reclamation recognizes that its ultimate commitments to operate the CVP (together with the DWR's operation of the SWP) will depend on the various Reasonable and Prudent

Alternatives (RPAs), Incidental Take Statements (ITSs) and related terms and conditions and conservation measures associated with the Biological Opinions that have and are being prepared for the Long-Term Coordinated Operations of the CVP and SWP.

Operation of the CVP includes numerous actions involving water contracting, flood control, water quality, hydropower generation, water transfers, refuge supplies, in-Delta pumping, etc. These are long-standing activities that make up the character and operation of the CVP. The consultation on the Long-Term Coordinated Operations of the CVP and SWP will provide the system-wide prescriptions necessary for Reclamation (and DWR) to continue to operate the CVP (and, in DWR's case, the SWP) and avoid adverse effects to listed species as determined by the Service (and, under a separate consultation, NOAA Fisheries).

There is little likelihood that were a subset of the environmental baseline used to assess the potential effects of the Long-Term Coordinated Operations of the CVP and SWP on listed species evaluated separately, that any new information or conclusions would be reached by the Service. As discussed later, the Service provided their final Biological Opinion on delta smelt for the Long-Term Coordinated Operations of the CVP and SWP (on December 16, 2008). The various RPAs, ITS, and related terms and conditions and conservation measures were developed with the view of addressing the collective system-wide potential effects of the CVP/SWP. It included all potentially implemented future water contracting actions including the P.L.101-514 contract.

Reclamation feels that it is redundant to initiate an analysis on a small portion of a larger assessment that has already been completed. The thoroughness, complexity, time, energy and resources that have been expended on the Biological Assessment and Biological Opinion for the Long-Term Coordinated Operations of the CVP and SWP are considerable and noteworthy. In fact, the Biological Opinion specifically references the anticipated increased demands on the American River as part of its findings on the expected long-term reductions in Delta inflow and how these effects are likely to cause increased relative entrainment of adult delta smelt in the winter and spring, and of larval and juvenile delta smelt in the spring.

Accordingly, for the consultation on delta smelt for the P.L.101-514 contract, Reclamation is relying on the ongoing formal Endangered Species Act Section 7 consultation process of the Long-Term Coordinated Operations of the CVP and SWP, and its discussions with the Service in that context. The final commitments to be made by Reclamation as part of that consultative process will cover all anticipated long-term coordinated actions between the CVP and SWP, including those of future anticipated water contracting actions including the P.L.101-514 contract. The following discussions present the context of the Long-Term Coordinated Operations of the CVP and SWP, the Biological Opinion findings of the Service and, broadly, the various mitigative measures set forth by the Service in its RPAs, ITS, and related terms and conditions.

Relationship with Long-Term Coordinated Operations of the CVP/SWP

On May 16, 2008, Reclamation requested formal consultation with the Service on the Long-term Coordinated Operations of the CVP and SWP. Reclamation is the lead federal agency and the California Department of Water Resources is the applicant for that consultation. A revised Biological Assessment was received by the Service from Reclamation on August 20, 2008. The Service provided their final Biological Opinion on

the effects of the coordinated operations of the CVP and SWP to the threatened delta smelt (*Hypomesus transpacificus*) and its designated critical habitat on December 15, 2008.

This culminated a four-year consultation process begun on July 30, 2004, when the Service issued a Biological Opinion addressing *Formal and Early Section 7 Endangered Species Consultation on the Coordinated Operations of the Central Valley Project and State Water Project and the Operations Criteria and Plan to Address Potential Critical Habitat Issues* (Service file # 1-1-04-F-0140). On February 15, 2005, the Department of the Interior was sued on the July 30, 2004 Biological Opinion and on the following day, the Service issued its *Reinitiation of Formal and Early Section 7 Endangered Species Consultation on the Coordinated Operations of the Central Valley Project and State Water Project and the Operational Criteria and Plan to Address Potential Critical Habitat Issues* (Service file # 1-1-05-F-0055). On May 20, 2005, the Department of the Interior was sued on the February 16, 2005 Biological Opinion. From February 2006 through September 2008, staff from the California Department of Fish and Game (DFG), DWR, NOAA Fisheries, Reclamation, and the Service, forming the OCAP Working Team, met monthly to bi-weekly to discuss the development of the Reclamation's revised Biological Assessment.

The Service's current Biological Opinion was based on information provided in Reclamation's Biological Assessment dated August 20, 2008, associated appendices, and input from the various internal and external review processes that the Service has utilized in their consultation. Prior to its release, the Service conducted a comprehensive peer review of their Biological Opinion. An Internal Peer Review Team (IPRT) was formed, which consisted of individuals from throughout the Service who are experts in the development of complex Biological Opinions under the ESA. The IPRT reviewed the Biological Opinion and provided substantive input and comments. Additionally, the Service assembled a team of delta smelt experts from within the Service, DFG, Environmental Protection Agency, Reclamation and other academics to provide scientific and technical expertise into the review of the Biological Assessment and the development of the Biological Opinion.

Jeopardy Opinion of the Service Biological Opinion on Smelt

After reviewing the current status of the delta smelt, the effects of the proposed action and the cumulative effects, it was the Service's biological opinion that the coordinated operations of the CVP and SWP, as proposed, are likely to jeopardize the continued existence of the delta smelt. The Service reached this conclusion based on the following findings, the basis for which is presented in the preceding *Status of the Species/Environmental Baseline, Effects of the Action, and Cumulative Effects* sections of the Biological Opinion. The following findings are taken from the December 15, 2008 Biological Opinion of the Service:

1. Diversions of water from the Delta have increased since 1967 when the SWP began operation in conjunction with the CVP. Past and present CVP/SWP operations have significantly altered hydro-dynamics throughout the Bay-Delta ecosystem. This alteration has resulted in numerous direct and indirect adverse effects on the delta smelt, including:

(a) entrainment of migrating adults, larvae, and juveniles caused by pumping at the Banks and Jones water export facilities;

(b) a reduction in the extent of available rearing and foraging habitat caused by CVP/SWP export of high proportions of Delta inflows that causes net negative flows in the South and Central Delta; and

(c) a reduction in the frequency, duration and magnitude of high Delta outflows that has altered the location of the low-salinity zone (LSZ), which is a crucial component of the delta smelt's habitat, and may have facilitated the invasion of dense populations of exotic species that have significantly changed delta smelt prey dynamics.

Increased pumping at the Banks and Jones export facilities corresponds to the decline of the delta smelt population during the period both prior to and following its listing under the Act.

2. The delta smelt is currently at its lowest level of abundance since monitoring began in 1967. A significant decline in the abundance of the delta smelt and other pelagic fish species began in about the year 2000 in conjunction with the POD. Since 2004, the Fall Mid-Water Trawl (FMWT) index has varied from 26 to 74, but at such low levels that true differences in population abundance cannot be determined. On that basis, the Service has concluded that resilience of the delta smelt population is currently at or near its lowest level since abundance monitoring began in 1967.
3. Under the proposed CVP/SWP operations, inflows to the Delta are likely to be further reduced, as water demands upstream of the Delta increase, most notably on the American River. These effects are likely to cause increased relative entrainment of adult delta smelt in the winter and spring, and of larval and juvenile delta smelt in the spring. Old/Middle River (OMR) flows are expected to become more negative as a result of the proposed action. This is expected to result in higher entrainment of delta smelt, as well as affect the transport of larval and juvenile delta smelt into essential rearing habitat in the Central and South Delta. The full suite of proposed operations will reduce Delta outflows, resulting in chronically lower suitability of delta smelt habitat.
4. Other baseline stressors will continue to adversely affect the delta smelt, such as contaminants, microcystis, aquatic macrophytes, and invasive species. Available information is inconclusive regarding the extent, magnitude and pathways by which delta smelt may be affected by these stressors independent of CVP/SWP operations. However, the operation of the CVP/SWP, as proposed, is likely to reduce or preclude seasonal flushing flows, substantially reduce the natural frequency of upstream and downstream movement of the LSZ, and lengthen upstream shifts of the LSZ to an extent that may increase the magnitude and frequency of adverse effects to the delta smelt from these stressors.
5. To survive and recover, delta smelt need:

- ♦ a substantially more abundant adult population;
- ♦ an increase in the quality and quantity of its spawning, rearing, and migratory habitat with respect to turbidity, temperature, salinity, escape cover, freshwater flow, and prey availability as a result of active or passive management of water and sediment processes in the San Francisco Bay-Delta ecosystem that mimics more natural (i.e., pre-water development) conditions. Improved habitat quality within the Bay-Delta should enhance the reproduction of adult delta smelt and increase the survival of both adults and juveniles;
- ♦ a reduction in the levels of contaminants and other pollutants within its habitat to increase survival of adults, larvae and juveniles;
- ♦ a reduction in exposure to disease and toxic algal blooms to increase survival of adults, larvae, and juveniles; a reduction in entrainment of adult and juvenile delta smelt at CVP/SWP pumping facilities, over and above reductions achieved under the VAMP and the EWA, to increase the abundance of the spawning adult population and the potential for recruitment of juveniles into the adult population;
- ♦ a reduction in entrainment at other water diversion-related structures within the Bay-Delta where delta smelt adults, larvae, or juveniles are known or are likely to be entrained to increase the adult population and the potential for recruitment of juveniles into the adult population;
- ♦ restoration of the structure of the food web in the Bay-Delta to a condition that more closely mimics the natural environment to increase survival of adults and juveniles; and
- ♦ to maximize its population resilience in the face of the potential adverse effects of ongoing climate change that are occurring in Bay-Delta ecosystem.

Relative to these survival and recovery needs, the effects of the proposed action are likely to: decrease the abundance of delta smelt; decrease the quality and quantity of its habitat; maintain or increase high levels of entrainment; contribute to a degraded food web in the Delta; and reduce the population resilience of delta smelt.

6. On the basis of findings (1)-(5) above, the Service concludes that the effects of the proposed action, taken together with cumulative effects, are likely to appreciably reduce the likelihood of both the survival and recovery of delta smelt in the wild by reducing its reproduction, abundance, and distribution.

Adversely Modify Delta Smelt Critical Habitat

After reviewing the current status of delta smelt critical habitat, the effects of the proposed action and the cumulative effects, it was the Service's biological opinion that

the coordinated operations of the CVP and SWP, as proposed, are likely to adversely modify delta smelt critical habitat. The Service reached this conclusion based on the following findings, the basis for which is presented in the *Status of Critical Habitat/Environmental Baseline, Effects of the Action, and Cumulative Effects* sections of the Biological Opinion. The following findings are taken from the December 15, 2008 Biological Opinion of the Service:

1. The conservation role of delta smelt critical habitat is to provide migration, spawning and rearing habitat conditions necessary for successful delta smelt recruitment at levels that will provide for the conservation of the species. Appropriate physical habitat (PCE 1 or, Primary Constituent Element 1), water (PCE 2), river flows (PCE 3), and salinity (PCE 4) are essential for successful delta smelt spawning and survival.
2. The past and present operations of the CVP/SWP have degraded these habitat elements (particularly PCEs 2-4) to the extent that their co-occurrence at the appropriate places and times is insufficient to support successful delta smelt recruitment at levels that will provide for the species' conservation.
3. Implementation of the proposed action is expected to perpetuate the very limited occurrence of PCEs at appropriate places and times by:
 - ♦ altering hydrologic conditions in a manner that adversely affects the distribution of abiotic factors such as turbidity and contaminants;
 - ♦ altering river flows to an extent that increases delta smelt entrainment at Banks and Jones, as well as reduces habitat suitability in the Central and South Delta; and
 - ♦ altering the natural pattern of seasonal upstream movement of the LSZ to an extent that is likely to reduce available habitat for the delta smelt within areas designated as critical habitat.

The proposed action does include a provision for VAMP to address augmentation of river flow but future implementation of this provision is not well defined, making its beneficial effects on the PCEs of delta smelt critical habitat uncertain.

4. On the basis of findings (1)-(3) above, the Service concluded that implementation of the proposed action is likely to prevent delta smelt critical habitat from serving its intended conservation role.

Reasonable and Prudent Alternative

The regulations (50 CFR 402.02) implementing Section 7 of the Endangered Species Act define reasonable and prudent alternatives (RPA) as alternative actions, identified during formal consultation, that: 1) can be implemented in a manner consistent with the intended purpose of the action; 2) can be implemented consistent with the scope of the action agency's (i.e. Reclamation's) legal authority and jurisdiction; 3) are economically and technologically feasible; and, 4) would, the Service believes, avoid the likelihood of

jeopardizing the continued existence of listed species or resulting in the destruction or adverse modification of critical habitat.

The Service has developed the following RPA that includes four components to be implemented using an adaptive approach within specific constraints. The fifth component includes monitoring and reporting requirements. The components presented below are based on the best available scientific information regarding what is necessary to adequately provide for successful delta smelt migration and spawning, and larval and juvenile survival, growth, rearing, and recruitment within the Bay-Delta.

The specific flow requirements, action triggers and monitoring stations prescribed in the RPA will be continuously monitored and evaluated consistent with the adaptive process. As new information becomes available, these action triggers may be modified without necessarily requiring re-consultation on the overall proposed action (i.e. the Long-Term Coordinated Operations of the CVP and SWP). The following actions are necessary to ensure that implementation of these long term operations do not appreciably reduce the likelihood of both the survival and recovery of the delta smelt and do not preclude the intended conservation role of its critical habitat through:

- 1) preventing/reducing entrainment of delta smelt at Jones and Banks;**
- 2) providing adequate habitat conditions that will allow the adult delta smelt to successfully migrate and spawn in the Bay-Delta;**
- 3) providing adequate habitat conditions that will allow larvae and juvenile delta smelt to rear; and,**
- 4) providing suitable habitat conditions that will allow successful recruitment of juvenile delta smelt to adulthood.**

In addition, it is essential to monitor delta smelt abundance and distribution through continued sampling programs through the IEP. Detailed descriptions of the adaptive process, its framework, and the rationale for each of the RPA components are presented in Attachment B to the Biological Opinion.

1. Process for Determining Specific Actions within Components 1 and 2

1. Within one day after the Smelt Working Group (SWG) recommends an action should be initiated, changed, suspended or terminated, the SWG shall provide to the Service a written recommendation and a biological justification. The SWG shall use the process described in Attachments A and B (of the Biological Opinion) to provide a framework for their recommendations. The Service shall determine whether the proposed action should be implemented, modified, or terminated; and the OMR flow needed to achieve the protection. The Service shall present this information to the Water and Operations Management Team (WOMT).
2. The WOMT shall either concur with the recommendation or provide a written alternative to the recommendation to the Service within one calendar day. The Service shall then make a final determination on the proposed action to be implemented, which shall be documented and posted on the Sacramento Fish and Wildlife Service's webpage.

3. Once the Service makes a final determination to initiate a new action, it shall be implemented within two calendar days by Reclamation and DWR, and shall remain in effect until the need for the action ends or the OMR flow is changed, as determined by the Service, consistent with the RPA and described within Attachment B of the Biological Opinion. Data demonstrating the implementation of the action shall be provided by Reclamation to the Service on a weekly basis.
4. If the Service determines that an OMR flow change is required while an action is ongoing, Reclamation and DWR shall adjust operations to manage to the new OMR flow within two days of receipt of the Service's determination. This new OMR flow shall be used until it is adjusted or the action is changed or terminated based on new information, as described in the RPA and Attachment B of the Biological Opinion.

2. RPA Component 1: Protection of the Adult Delta Smelt Life Stage

Delta smelt are entrained at the fish facilities each year. These actions are designed to reduce the delta smelt entrainment losses. The objective of Component 1 (Actions 1 and 2 in Attachment B) is to reduce entrainment of pre-spawning adult delta smelt during December to March by controlling OMR flows during vulnerable periods. Action 1 is designed to protect up-migrating delta smelt. Action 2 is designed to protect adult delta smelt that have migrated upstream and are residing in the Delta prior to spawning. Overall, RPA Component 1 will increase the suitability of spawning habitat for delta smelt by decreasing the amount of Delta habitat affected by the projects' export pumping plants' operations prior to, and during, the critical spawning period.

Beginning in December of each year, the Service shall review data on flow, turbidity, salvage, and other parameters that have historically predicted the timing of delta smelt migration into the Delta. On an ongoing basis, and consistent with the parameters outlined below and in Attachment B, the SWG shall recommend to the Service OMR flows that are expected to minimize entrainment of adult delta smelt. Throughout the implementation of RPA Component 1, the Service will make the final determination as to OMR flows required to protect delta smelt.

OMR flow requirements given below are based on the following understanding: Where a 14-day running average is established, the average daily OMR flow must be no more negative than the required OMR flow. Where a 5-day running average is given, the daily average shall be no more than 25 percent more negative than the requirement. The daily OMR flows used to compute both the 14-day and the 5-day averages shall be the "tidally filtered" values reported by USGS.

Low-entrainment risk period: delta smelt salvage has historically been low between December 1 and December 19, even during periods when first flush conditions (i.e., elevated river inflow and turbidity) occurred. During the low-entrainment risk period, the SWG shall determine if the information generated by physical (i.e. turbidity and river inflow) and biological (e.g., salvage, DFG trawls) monitoring indicates that delta smelt are vulnerable to entrainment or are likely to migrate into a region where future entrainment events may occur. If this occurs, the Service shall require initiation of Action 1 as described in Attachment B. Action 1 shall require the Projects to maintain OMR flows no more negative than -2,000 cfs (14-day average) with a simultaneous 5-day

running average flow no more negative than -2,500 cfs to protect adult delta smelt for 14 days.

High-entrainment risk period: delta smelt have historically been entrained when first flush conditions occur in late December. In order to prevent or minimize such entrainment, Action 1 shall be initiated on or after December 20 if the 3 day average turbidity at Prisoner's Point, Holland Cut, and Victoria Canal exceeds 12 NTU, or if there are three days of delta smelt salvage at either facility or if the cumulative daily salvage count is above the risk threshold based upon the "daily salvage index" approach described in Attachment B (of the Biological Opinion). Action 1 shall require the Projects to maintain OMR flows no more negative than -2,000 cfs (14-day running average) with a simultaneous 5-day running average flow no more negative than -2,500 cfs to protect adult delta smelt for 14 days. However, the SWG can recommend a delayed start or interruption based on other conditions such as delta inflow that may affect vulnerability to entrainment.

Winter protection period: recent analyses indicate that cumulative adult entrainment and salvage are lower when OMR flows are no more negative than -5,000 cfs in the December through March period. Action 2 shall commence immediately after Action 1 ends. If Action 1 is not implemented, the SWG may recommend a start date for the implementation of Action 2 to protect adult delta smelt. OMR flows under Action 2 shall be in the range of -3,500 to -5,000 when turbidity and salvage are low. Based on historic conditions, OMR flow would generally be expected to be in the range of -2,000 cfs to -3,500 cfs given recent salvage events. However, at times when turbidity and flow conditions in the Delta may result in increased salvage, the range may be between -1,250 to -2,000 cfs. During the implementation of Action, the maximum negative flow for OMR shall be determined based on the criteria outlined in Attachment B (of the Biological Opinion). The OMR flow shall be based on a 14-day running average with simultaneous 5-day running average within 25 percent of the required OMR flow. The action may be suspended temporarily if the three day flow average is greater than or equal to 90,000 cfs at the Sacramento River at Rio Vista and 10,000 cfs at the San Joaquin River at Vernalis, because there is low likelihood that delta smelt will be entrained during such high inflow conditions. Suspension of this action due to high flow will end when flow drops below the 90,000 cfs and 10,000 cfs threshold. Action 2 ends when spawning begins as defined for Action 3 implementation (Component 2).

3. RPA Component 2: Protection of Larval and Juvenile Delta Smelt

Delta smelt larvae and juveniles are susceptible to direct mortality by entrainment. Hydrologic conditions resulting from CVP/SWP operations increase the risk of that entrainment. The objective of this RPA component (which corresponds to Action 3 in Attachment B), is to improve flow conditions in the Central and South Delta so that larval and juvenile delta smelt can successfully rear in the Central Delta and move downstream when appropriate.

Upon completion of RPA Component 1 or when Delta water temperatures reach 12°C (based on a 3-station average of daily average water temperature at Mossdale, Antioch, and Rio Vista) or when a spent female delta smelt is detected in the trawls or at the salvage facilities, the projects shall operate to maintain OMR flows no more negative than -1,250 to -5000 cfs based on a 14-day running average with a simultaneous 5-day running average within 25 percent of the applicable 14-day OMR flow requirement.

Depending on the extant conditions, the SWG shall make recommendations for the specific OMR flows within this range from the onset of implementing RPA Component 2 through its termination. The Service shall make the final determination regarding specific OMR flows. This action shall end June 30 or when the 3-day mean water temperature at Clifton Court Forebay reaches 25° C, whichever occurs earlier. The Spring HORB shall be installed only if the Service determines delta smelt entrainment is not a concern (Action 5 from Attachment B of the Biological Opinion).

4. RPA Component 3: Improve Habitat for Delta Smelt Growth and Rearing

The objective of this component is to improve fall habitat for delta smelt through increasing Delta outflow during fall. Increase in fall habitat quality and quantity will both benefit delta smelt. Subject to adaptive management as described below and in Action 4 in Attachment B, during September and October in years when the preceding precipitation and runoff period was wet or above normal as defined by the Sacramento Basin 40-30-30 index, Reclamation and DWR shall provide sufficient Delta outflow to maintain monthly average X2 no greater (more eastward) than 74 km (from the Golden Gate) in Wet WYs and 81 km in Above Normal WYs.

The monthly X2 target will be separately achieved for the months of September and October. During any November when the preceding water year was wet or above normal as defined by the Sacramento Basin 40-30-30 index, all inflow into CVP/SWP reservoirs in the Sacramento Basin shall be added to reservoir releases in November to provide an additional increment of outflow from the Delta to augment Delta outflow up to the fall X2 of 74 km for Wet WYs or 81 km for Above Normal WYs, respectively. In the event there is an increase in storage during any November this action applies, the increase in reservoir storage shall be released in December to augment the December outflow requirements in SWRCB D-1641.

Given the nature of this Action and to align its management more closely with the general plan described by the independent review team, the Service shall oversee and direct the implementation of a formal adaptive management process. The adaptive management process shall include the elements as described in Attachment B of the Biological Opinion. This adaptive management program shall be reviewed and approved by the Service in addition to other studies that are required for delta smelt.

In accordance with the adaptive management plan, the Service will review new scientific information when provided and may make changes to the action when the best available scientific information warrants. For example, there may be other ways to achieve the biological goals of this action, such as a Delta outflow target, that will be evaluated as part of the study. This action may be modified by the Service consistent with the intention of this action based on information provided by the adaptive management program in consideration of the needs of other listed species. Other CVP/SWP obligations may also be considered.

The adaptive management program shall have specific implementation deadlines. The creation of the delta smelt habitat study group, initial habitat conceptual model review, formulation of performance measures, implementation of performance evaluation, and peer review of the performance measures and evaluation that are described in steps (1) through (3) of Attachment B shall be completed before September 2009.

Additional studies addressing elements of the habitat conceptual model shall be formulated as soon as possible, promptly implemented, and reported as soon as complete. The Service shall conduct a comprehensive review of the outcomes of the Action and the effectiveness of the adaptive management program ten years from the signing of the Biological Opinion, or sooner if circumstances warrant. This review shall entail an independent peer review of the Action. The purposes of the review shall be to evaluate the overall benefits of the Action and to evaluate the effectiveness of the adaptive management program. At the end of 10 years or sooner, this action, based on the peer review and Service determination as to its efficacy shall either be continued, modified or terminated.

5. RPA Component 4: Habitat Restoration

This component of the RPA (Action 6 of Attachment B) is intended to provide benefits to delta smelt habitat to supplement the benefits resulting from the flow actions described above. The Department of Water Resources shall implement a program to create or restore a minimum of 8,000 acres of intertidal and associated subtidal habitat in the Delta and Suisun Marsh. These actions may require separate ESA consultations for their effects on federally listed species. The restoration efforts shall begin within 12 months of signature of this Biological Opinion and be completed by the Department of Water Resources (the applicant) within 10 years. The restoration sites and plans shall be reviewed and approved by the Service and be appropriate to improve habitat conditions for delta smelt. Management plans shall be developed for each restoration site with an endowment or other secure financial assurance and easement in place held by a third-party or DFG and approved by the Service. The endowment or other secure financial assurance shall be sufficient to fund the monitoring effort and operation and maintenance of the restoration site.

An overall monitoring program shall be developed to focus on the effectiveness of the restoration actions and provided to the Service for review within six months of signature of this Biological Opinion. The applicant shall finalize the establishment of the funding for the restoration plan within 120 days of final approval of the restoration program by the Service. There is a separate planning effort in Suisun Marsh where the Service is a co-lead with Reclamation on preparation of an Environmental Impact Statement. Restoration actions in Suisun Marsh shall be based on the Suisun Marsh Plan that is currently under development.

6. RPA Component 5: Monitoring and Reporting

Reclamation and DWR shall ensure that information is gathered and reported to ensure:

- 1) proper implementation of these actions,
- 2) that the physical results of these actions are achieved, and
- 3) that information is gathered to evaluate the effectiveness of these actions on the targeted life stages of delta smelt so that the actions can be refined, if needed.

Essential information to evaluate these actions (and the Incidental Take Statement) includes sampling of the FMWT, Spring Kodiak Trawl, 20-mm Survey, TNS and the Environmental Monitoring Program of the IEP. This information shall be provided to the

Service within 14 days of collection. Additional monitoring and research will likely be required, as defined by the adaptive management process.

Information on salvage at Banks and Jones is both an essential trigger for some of these actions and an important performance measure of their effectiveness. In addition, information on OMR flows and concurrent measures of delta smelt distribution and salvage are essential to ensure that actions are implemented effectively. Such information shall be included in an annual report for the WY (October 1 to September 30) to the Service, provided no later than October 15 of each year, starting in 2010.

Reclamation shall implement the RPA based on performance standards, monitoring and evaluation of results from the actions undertaken and adaptive management as described in RPA component 3. RPA component 3 has a robust adaptive management component that requires a separate analysis apart from those required under this component. Some of the data needed for these performance measures are already being collected such as the FMWT abundances and salvage patterns. However, more information on the effect of these actions on smelt survival and the interactions of project operations with other stressors on delta smelt health, fecundity and survival is needed. This information may provide justification for refining these actions to better address the needs of delta smelt.

Studies like those of the IEP's POD work team have provided much useful information on the needs of delta smelt and the stressors affecting them that was integral in the development of these actions.

Avoidance of Jeopardy and Adverse Modification

The conservation needs of the delta smelt at this time are primarily associated with: (1) protective measures for pre-spawning adult delta smelt; (2) improvement of flow conditions in the Central and South Delta so that larval and juvenile delta smelt can successfully rear and move downstream with a minimum entrainment risk; and (3) restoration and enhancement of habitat availability and quality that improves growth and survival of delta smelt.

The RPA components described above and detailed in Attachment B (of the Biological Opinion) specifically address the above factors to the extent provided by the regulatory criteria that define a RPA. Implementation of this RPA will increase the likelihood that delta smelt habitat conditions and attributes for migration, spawning, recruitment, growth, and survival will be provided during the term of the proposed action. For these reasons, the Service found that implementation of the RPA described above is likely to avoid jeopardy to the delta smelt and adverse modification of its critical habitat.

Incidental Take Statement

Section 9 of the ESA and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or

sheltering. Harm is defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by impairing behavioral patterns including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.

Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be a prohibited taking under the ESA, provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are nondiscretionary and must be implemented by Reclamation, working with the Department of Water Resources under the COA and other interagency agreements, in order for the exemption in section 7(o)(2) to apply. Reclamation has a continuing duty to regulate the activities that are covered by this Incidental Take Statement for the life of the proposed action. If Reclamation fails to assume and implement the RPA and terms and conditions or is unable to ensure that DWR adheres to the RPA and terms and conditions of this Incidental Take Statement while jointly operating under the COA and other interagency agreements, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impacts of incidental take, Reclamation must report the progress of the action and its impacts on the delta smelt to the Service as specified in this Incidental Take Statement. [50 CFR §402.14(i)(3)]

The Service developed the following Incidental Take Statement based on the premise that the RPA will be implemented. A detailed description of the rationale for the development of the incidental take statement is in Attachment C of the Biological Opinion. This Incidental Take Statement assumes full implementation of the RPA.

1. Form of Take Anticipated

The Service anticipates that take of the delta smelt is likely to occur in the form of kill, capture (via salvage), wound, harm, and harass as a result of CVP/SWP operations within the action area, inclusive of activities at the NBA and at CCWD facilities, and in conjunction with studies to determine screening criteria and to improve delta smelt handling and survival in the salvage process. The above forms of take will result in the injury or death of delta smelt. The Incidental Take Statement addresses all of the above.

2. Amount or Extent of Take

Take of Delta Smelt at the NBA and CCWD Facilities

The Service anticipates that incidental take of delta smelt at the NBA and at the CCWD diversions will be difficult to detect since no monitoring program samples for entrainment at these facilities on a regular basis. Incidental take is not expected to be high since the other diversions have fish screens and the unscreened Rock Slough diversion is at a dead end slough where delta smelt are not usually present. Due to the difficulty in quantifying the number of delta smelt that will be taken as a result of the proposed action, the Service is quantifying incidental take for the NBA and the CCWD diversion to be all delta smelt inhabiting the water diverted at these facilities under the conditions of 71 TAF per year at the NBA and 195 TAF at the CCWD diversions.

Take of Adult Delta Smelt

The Service anticipates that take of adult delta smelt via entrainment will be minimized when OMR flows are limited to -2,000 cfs during the first winter flush when adult smelt move within the zone of entrainment. OMR flows held between -1,250 and -5,000 cfs following the first flush until the onset of spawning will protect later delta smelt migrants and spawners. During frequent intervals within the timeframe for RPA Component 1, the SWG shall provide specific OMR flow recommendations to the Service; and the Service shall then determine flow requirements using the adaptive process as described in the RPA.

To estimate take with implementation of the RPA, the Service scaled projected salvage to abundance using the estimates provided by the prior year's FMWT Index (further details on the methods used in developing the Incidental Take Statement can be found in Attachment C of the Biological Opinion). The segregation of year types is based upon descriptive statistics comprising quartiles, as expressed in Figure C-1 of Attachment C, and quantified following the approach described below.

The Cumulative Salvage Index (CSI) is calculated as the total year's adult salvage (the aggregate number for expanded salvage at both the Banks and Jones export facilities for the period December through March) divided by the previous year's FMWT Index. Water years 2006 to 2008 were years in which salvage, negative OMR flows, and delta smelt abundance were all lower relative to the historic values. The Service, therefore, believes these years within the historic dataset best approximate expected salvage under RPA Component 1.

The average CSI value for WYs 2006 to 2008 was 7.25. Projecting this average rate of salvage to the years in which CVP/SWP operations will be conducted within the *sideboards* established by the RPA would yield estimates of salvage at 7.25 times the prior year's FMWT Index. The Service used this estimator to predict incidental take levels of adult delta smelt during each year that the RPA's will be in effect. This value, which can be calculated upon release of the final FMWT Index within the current water year, is regarded as the incidental take for adult delta smelt under the RPA.

3. Incidental Take: Cumulative Expanded Salvage = 7.25 * Prior Year's FMWT Index

Delta smelt abundance is critically low, and without habitat quality conditions to appreciably improve juvenile growth and rearing from recent historic levels, is expected to remain so for the foreseeable future. The current population cannot tolerate direct mortality through adult entrainment at levels approaching even "moderate" take as observed through the historic record of recent decades. The method utilized herein to calculate take contains uncertainty within the estimates, and this fact translates into population-level risk. Further, there is a recognized need to provide a quantitative framework so that the Service and CVP/SWP operators have a common analytical methodology for reference and to further guide the adaptive process.

Therefore, the Service is also providing a Concern Level estimate, meant to indicate salvage levels approaching the take threshold, and help guide implementation of the

RPA. Reaching this expanded salvage figure within a given season may require that OMR flows be set to a more restrictive level, unless available data indicate some greater level of exports is possible without increasing entrainment (e.g., there is strong reason to presume the pre-spawning migration has passed). Throughout the water year, as the SWG convenes and reviews daily salvage data, reaching the Concern Level for adult salvage requires an immediate specific recommendation to the Service. The Service believes this Concern Level value should trigger at 75 percent of the calculated adult incidental take, as an indicator that operations may need to be more constrained to avoid exceeding the incidental take.

Reasonable and Prudent Measures

The following reasonable and prudent measures are necessary and appropriate to minimize the effect of the proposed action on the delta smelt:

1. Minimize adverse effects of the operations of the Permanent Operable Gates.
2. Minimize adverse effects of operations of the NBA.
3. Obtain real time data on the abundance and distribution of delta smelt in the Bay-Delta.
4. Minimize adverse effects of Banks and Jones on delta smelt.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, Reclamation shall ensure compliance with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are nondiscretionary.

The following Term and Condition implements Reasonable and Prudent Measures one (1):

1. The Service shall have the final decision on the operations of the Permanent Gates. The members of the GORT can provide suggestions to operate the gates, but the ultimate decision on how to operate the gates to protect delta smelt will be made by the Service.

The following Term and Condition implements Reasonable and Prudent Measures two (2):

1. Annual evaluations shall be conducted for the fish screens at the NBA diversion during January through June. A proposed evaluation study shall be submitted to the Service for approval within 3 months of the issuance of this Biological Opinion. The evaluation shall monitor fish entrained and impinged on the fish screen, the screen approach velocities, cleanliness of the screen and any other pertinent criteria needed to determine the effectiveness of the fish screen.

The following Terms and Conditions implement Reasonable and Prudent Measures three (3):

1. During the months of December through July, when water is being diverted, Reclamation and the Department of Water Resources shall ensure that the frequency of sampling for delta smelt at Banks and Jones will be at least 25 percent of the time.
2. Reclamation and the Department of Water Resources shall develop a methodology for quantitative larval monitoring at Banks and Jones to help refine the triggers for the Actions in the RPA. An interim plan shall be submitted to the Service for approval within 30 days of the issuance of this biological opinion so the monitoring can be implemented this year. A more detailed plan shall be developed and approved by the Service within one year.

The following Term and Condition implements Reasonable and Prudent Measures four (4):

1. Reclamation will develop within 30 days a methodology for dealing with transitions in operations after changes in OMR flow requirements.

Monitoring Requirements

Monitoring requirements in accordance with section 402.14(i)(3) of the implementing regulations for section 7 of the ESA have been included as part of the RPA and must be implemented by Reclamation and the Department of Water Resources.

Reporting Requirements

Reclamation or the Department of Water Resources shall immediately report to the Service any information about take or suspected take of federally-listed species not authorized in this biological opinion. Reclamation or the Department of Water Resources must notify the Service within 24 hours of receiving such information. Notification must include the date, time, and location of the incident or of the finding of a dead or injured delta smelt. Any killed delta smelt that have been taken should be properly preserved in accordance with Natural History Museum of Los Angeles County policy of accessioning (10 percent formalin in quart jar or freezing).

Information concerning how the fish was taken, length of the interval between death and preservation, the water temperature and outflow/tide conditions, and any other relevant information should be written on 100 percent rag content paper with permanent ink and included in the container with the specimen.

Conservation Recommendations

Section 7(a)(1) of the ESA directs federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities that can be implemented to further the purposes of the Act, such as preservation of endangered species habitat, implementation of recovery actions, or development of information and data bases.

The Service requests notification of the implementation of any conservation recommendations in order to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats. They propose the following conservation recommendations:

1. The Service recommends that Reclamation and the Department of Water Resources develop and implement restoration measures consistent with the current Delta Native Species Recovery Plan.
2. The Service recommends that Reclamation and the Department of Water Resources develop procedures that minimize the effects of all other in-water activities that it conducts within the action area on delta smelt.
3. The Service recommends Reclamation work with willing partners to establish and maintain a diverse population of delta smelt for refuge and research purposes, managed to ensure adequate genetic diversity. To be kept informed of actions minimizing or avoiding adverse effects or benefiting listed and proposed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

Re-Initiation-Closing Statement

If the Sacramento Valley Water Year Type Index (40-30-30) February 1, 50 percent exceedance forecast indicates that the water year will be a second consecutive (or more) dry or critically dry year, Reclamation shall reinitiate consultation with the Service. In order to allow the CVP/SWP to provide health and safety needs, critical refuge supplies, and obligation to senior water rights holders, the combined CVP/SWP export rates will not be required to drop below 1,500 cfs in these circumstances. However, in the unlikely event that salvage approaches the incidental take limit at these low export levels, the Service shall assess the on-going risk to delta smelt and will determine if additional reductions in pumping or other actions are necessary to further minimize effects.

If the subsequent 40-30-30 March 1, 50 percent forecast indicates that the water year will no longer be a second consecutive (or more) dry or critically dry year, project operations may resume as described in the RPA. However, if subsequent April or May 75 percent exceedance forecasts move back to a critically dry year, re-initiation will again commence. Forecasts wetter than dry shall result in implementation of actions as described in the RPA.

Appendix B



USFWS Species List

U.S. Fish & Wildlife Service
Sacramento Fish & Wildlife Office
Federal Endangered and Threatened Species that Occur in
or may be Affected by Projects in the Counties and/or
U.S.G.S. 7 1/2 Minute Quads you requested

Document Number: 090623124401

Database Last Updated: January 29, 2009

Quad Lists

Listed Species

Invertebrates

Branchinecta lynchi

vernal pool fairy shrimp (T)

Desmocerus californicus dimorphus

valley elderberry longhorn beetle (T)

Fish

Hypomesus transpacificus

delta smelt (T)

Oncorhynchus mykiss

Central Valley steelhead (T) (NMFS)

Critical habitat, Central Valley steelhead (X) (NMFS)

Oncorhynchus tshawytscha

Central Valley spring-run chinook salmon (T) (NMFS)

winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

Ambystoma californiense

California tiger salamander, central population (T)

Rana aurora draytonii

California red-legged frog (T)

Reptiles

Thamnophis gigas

giant garter snake (T)

Plants

Calystegia stebbinsii

Stebbins's morning-glory (E)

Ceanothus roderickii

Pine Hill ceanothus (E)

Fremontodendron californicum ssp. decumbens

Pine Hill flannelbush (E)

Galium californicum ssp. sierrae

El Dorado bedstraw (E)

Senecio layneae

Layne's butterweed (=ragwort) (T)

Quads Containing Listed, Proposed or Candidate Species:

CLARKSVILLE (511A)

GREENWOOD (526B)

PILOT HILL (527D)

County Lists

No county species lists requested.

Key:

(E) *Endangered* - Listed as being in danger of extinction.

(T) *Threatened* - Listed as likely to become endangered within the foreseeable future.

(P) *Proposed* - Officially proposed in the Federal Register for listing as endangered or threatened.

(NMFS) Species under the Jurisdiction of the [National Oceanic & Atmospheric Administration Fisheries Service](#). Consult with them directly about these species.

Critical Habitat - Area essential to the conservation of a species.

(PX) *Proposed Critical Habitat* - The species is already listed. Critical habitat is being proposed for it.

(C) *Candidate* - Candidate to become a proposed species.

(V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.

(X) *Critical Habitat* designated for this species

Important Information About Your Species List

How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about the size of San Francisco.

The animals on your species list are ones that occur within, **or may be affected by** projects within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.
- Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.
- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

Plants

Any plants on your list are ones that have actually been observed in the area covered by the list. Plants may exist in an area without ever having been detected there. You can find out what's in the surrounding quads through the California Native Plant Society's online [Inventory of Rare and Endangered Plants](#).

Surveying

Some of the species on your list may not be affected by your project. A trained biologist and/or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list. See our [Protocol](#) and [Recovery Permits](#) pages.

For plant surveys, we recommend using the [Guidelines for Conducting and Reporting Botanical Inventories](#). The results of your surveys should be published in any environmental documents prepared for your project.

Your Responsibilities Under the Endangered Species Act

All animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a formal [consultation](#) with the Service.

During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.

- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.

Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our [Map Room](#) page.

Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning

process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

Species of Concern

The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts.

[More info](#)

Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6580.

Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be September 21, 2009.

Appendix C



Special-Status Species known or Potentially Occurring
in the Action Area

Scientific Name	Common Name	Federal Status	State Status	CNPS List	Blooming Period/Fertile	Habitat	Occurrence Notes
Special-status Plants Known to Occur Within Action Area							
<i>Calystegia stebbinisii</i>	Stebbin's morning-glory	FE	CE	1B.1	April-July	Occurs on gabbro- and serpentine-derived soils, in openings in chaparral or cismontane woodlands. Generally restricted to the Pine Hill formation in western El Dorado County, although an isolated occurrence was recorded near Grass Valley in Nevada County. From 600 to 2,400 feet in elevation.	Known to occur within the Project boundaries. Known populations recorded in the following locations: <ul style="list-style-type: none">2 colonies, about 0.35 miles west of Cameron Park Drive Exit, north of the Hwy 50 and the frontage road.Several large populations totaling 300 or more individuals located from Salmon Falls Road to Kanaka Valley, south of the South Fork American River.
<i>Ceanothus roderickii</i>	Pine Hill ceanothus	FE	CR	1B.2	April-June	Endemic to gabbro-derived soils on the Pine Hill formation in western El Dorado County, in opening in chapparal or disturbed areas. From 850 to 2,075 feet in elevation.	Known to occur within the Project boundaries. Known populations recorded in the following locations: <ul style="list-style-type: none">Along Hwy 50 about 3 miles west of Shingle Springs. This population has most likely been extirpated (CNDDDB 2007).Several populations totaling 12,00 individuals located south of the South Fork American River, east of Salmon Falls Road and Folsom Lake.
<i>Galium californicum</i> ssp. <i>sierrae</i>	El Dorado bedstraw	FE	CR	1B.2	May-June	Chaparral, cismontane (pine-oak) woodland and lower montane coniferous forests. Endemic to gabbro-derived soils on the Pine Hill formation in western El Dorado County. From 325 to 1,925 feet in elevation.	Known to occur within the Project boundaries. Known populations recorded in the following locations: <ul style="list-style-type: none">Several colonies located at 0.5 miles and at 2 miles east of the Salmon Falls bridge in a ravine opening into the South Fork American River;A population located near the confluence of Sweetwater Creek and the South Fork American River;Five colonies totaling approximately 150 individuals located east of Folsom Lake between Sweetwater and Cracker creeks.
<i>Senecio layneae</i> (<i>Packera layneae</i>)	Layne's ragwort	FT	CR	1B.2	April–August	Occurs on gabbro- and serpentine-derived soils, in openings in chaparral or cismontane woodlands, often in rocky areas. Generally restricted to the Pine Hill formation in western El Dorado County, although several isolated occurrences have been recorded for Tuolumne and Yuba counties. From 650 to 3,400 feet in elevation.	Known to occur within the Project boundaries. Known populations recorded in the following locations: <ul style="list-style-type: none">On east side of Bass Lake Road, 0.25 mile south of intersection with Green Valley RoadOn east side of Bass Lake Drive, near intersection with Woodleigh LaneWest of Wilkinson Road, about 1 mile ENE of Bass LakeEast of Bass Lake, on Woodleigh CourtAbout 1 air mile due east of Bass Lake, West of Woodeigh LaneNear small reservoir at corner of Woodleigh and Surrey LanesSeveral records for populations located near Salmon Falls Road and the South Fork American River and along Crocker Creek within the Sweetwater Creek Drainage.
Special-status Plants Potentially Occurring Within Action Area							
<i>Fremontodendron californicum</i> ssp. <i>decumbens</i>	Pine Hill flannelbush	FE	CR	1B.2	April-July	Chaparral and black oak woodland. Endemic to gabbro-derived soils on the Pine Hill formation in western El Dorado County, often among rocks and boulders. From 600 to 2,075 feet in elevation.	May occur in appropriate habitat. Project boundaries are within the known geographic and elevational range of this species.

Scientific Name	Common Name	Federal Status	State Status	CNPS List	Blooming Period/Fertile	Habitat	Occurrence Notes
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LEGEND:

Federal Status
FT = Federal Threatened
FE = Federal Endangered
FC = Federal Candidate

State Status
CR = listed by California as Rare
CT = California Threatened
CE = California Endangered

California Native Plant Society (CNPS) Status
1B = rare, threatened or endangered in California and elsewhere.
2 = rare in California but more common elsewhere.
_.1 = Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat)
_.2 = Fairly endangered in California (20-80% occurrences threatened)
_.3 = Not very endangered in California (<20% of occurrences threatened or no current threats known)

Scientific Name	Common Name	Federal Status	State Status	Habitat	Occurrence Notes
Special-status Wildlife Potentially Occurring Within Action Area					
<i>Desmocerus californicus dimorphus</i>	valley elderberry longhorn beetle	FT	—	Elderberry shrubs throughout the Central Valley and foothills below 3,000 feet elevation.	May occur in appropriate habitat. Project boundaries are within the known geographic and elevational range of this species.
<i>Rana aurora draytonii</i>	California red-legged frog	FT	CSC	Breeds in quiet streams and permanent, deep, cool ponds with overhanging and emergent vegetation below 4,000 feet elevation. Known to occur adjacent to breeding habitats in riparian areas and heavily vegetated streamside shorelines, and non-native grasslands. Sierran streams historically supported populations of red-legged frog; however, these populations have been eliminated.	May occur in appropriate habitat. Project boundaries are within the known geographic and elevational range of this species.
<i>Haliaeetus leucocephalus</i>	bald eagle	Former FT	CE CFP	USFWS removed the bald eagle in the lower 48 states from the list of threatened and endangered wildlife on July 9, 2007. Local winter migrant to various California lakes. Most of the breeding population is restricted to more northern counties. Regular winter migrants to the region.	May occur in appropriate habitat. Project boundaries are within the known geographic and elevational range of this species. A CNDDDB report for this species includes occurrences at Bass Lake in the vicinity of El Dorado Hills. Eagles have been observed wintering at this site for the past 40 years. 38.67978° / -121.02259°
Special-status Wildlife Unlikely to Occur Within Action Area					
<i>Branchinecta lynchi</i>	vernal pool fairy shrimp	FT	—	Ephemeral freshwater habitats, such as vernal pools and swales. None are known to occur in running or marine waters or other permanent bodies of water.	Unlikely to occur. Appropriate habitat not present within Project boundaries.
<i>Ambystoma californiense</i>	California tiger salamander	FT (Central California) FE (Sonoma and Santa Barbara Cos. only)	—	Commonly found in annual grassland habitat and also occurs in grassy understory of valley-foothill hardwood habitats. Uncommon along stream courses in valley-foothill riparian habitats. Occurs from 10 to 3,200 feet in elevation Requires vernal pools or other temporary rainwater ponds for breeding	Unlikely to occur. Project boundaries are outside the known geographic and elevational range of this species.
<i>Thamnophis gigas</i>	giant garter snake	FT	CT	Generally quite aquatic preferring marshes and sloughs, less associated with slow-moving creeks and absent from large rivers. Extirpated from much of historic range in the Sacramento and San Joaquin valleys from Butte to Kern County.	Unlikely to occur. Project boundaries are outside the known geographic and elevational range of this species.

LEGEND:

Federal Status
FT = Federal Threatened
FE = Federal Endangered
FC = Federal Candidate

State Status
CR = listed by California as Rare
CT = California Threatened
CE = California Endangered
CSC = California Species of Concern

Appendix D



EID and GDPUD Service Area Boundaries and
Proposed Consultation Documentation



Memorandum

Page 1 of 3

To: File Job No.: D50202-00 5.12

Copy: Brian Deason, USBR
Jan Knight, USFWS
Roberta Gerson, USFWS
Pete Trenham, USFWS
Jim Roberts

From: Jennie Garza, Robert Shibatani

Date: May 30, 2006

Subject: USFWS Informal Section 7 initiation for P.L. 101-514 federal contract

This memo provides a summary of the key points from the informal Section 7 Consultation kick-off meeting on May 25, 2006, from 1 PM to 3:30 PM at the Cottage Way Federal Building, between the USBR and USFWS for the P.L. 101-514 Section 206 "Fazio" water contract.

The meeting was held to introduce the USFWS to the proposed action, consisting of a master federal water contract between the USBR and El Dorado County Water Agency (EDCWA) for 15 TAF of water from the Central Valley Project (CVP), with two sub-contracts with El Dorado Irrigation District (EID) and Georgetown Divide Public Utilities District (GDPUD). Analysis of the diversion's effects is proposed to be done on a project-level for hydrology, but on a programmatic-level for facilities. As the purveyors ultimately responsible for delivering water, EID and GDPUD will be required to complete additional NEPA and CEQA documentation, including Section 7 consultation, for the installation of any new water system infrastructure.

USFWS confirmed that the proposed EIR/EIS document will fulfill the ESA requirements as long as the special-status species impacts are addressed in a separate chapter. The ESA chapter must include all pertinent ESA information from the document so it is not necessary for the service to tease out ESA information from multiple sections.

The master federal contract will include a map of "Contractor service areas". However, because some of the areas have already recently undergone Section 7 consultation, a smaller area will be defined as the "Section 7 action area" for the purpose of ESA consultation with USFWS. The next step for Section 7 consultation will be the delineation of a well-defined "Section 7 consultation area" and the development of a list of potential special-status species in the defined consultation area.

The primary ESA issue under USFWS jurisdiction anticipated for this project is the preservation of special-status plants on Gabbro soils in the Pine Hill area near Cameron Park. USFWS staff acknowledged that a number of factors are making the continued acquisition of gabbro soils lands for the Pine Hill preserve land very difficult. Among these factors are:

- 1) High property prices;
- 2) A lack of willing sellers;
- 3) Difficulty managing preserve areas (e.g., using controlled burns) adjacent to residential land, potentially necessitating the acquisition of “buffer” lands, which cannot be bought using funds designated for preserve land; and
- 4) A small supply of parcels that fit the requirements for connectivity, soils and plant value.

In light of these difficulties, USFWS acknowledged there is potential to consider preservation in areas outside the current Cameron Park preserve area, such as the Salmon Falls area. As a part of the Section 7 consultation, USBR, USFWS and EDCWA plan to resume activities delineating potential lands for the Pine Hill Preserve on a parcel-by-parcel basis. If this analysis shows a lack of viable preserve lands, preservation and land acquisition outside of the proposed “action area” and current Cameron Park preserve area may be considered, to fulfill the objectives of the gabbro soils recovery plan.

Other ESA issues noted by USFWS staff are the potential for California Red-Legged Frog (CRLF) habitat in the Georgetown service area, and the potential for Valley Elderberry Longhorn Beetle (VELB) habitat in portions of the proposed service area. While there is potential in the proposed consultation area for VELB habitat, USFWS acknowledged it is not necessary to address these impacts at the programmatic level during this consultation. Any VELB impacts should be addressed in subsequent project-level consultation for specific infrastructure projects.

For the assessment of CRLF habitat, USFWS suggested the restriction of the proposed Georgetown service area to a smaller area that is likely to receive water when GDPUD constructs infrastructure. A smaller area would be more easily assessed by USFWS for potential RLF habitat, since a limited number of surveys have been conducted in the Georgetown area.

For both gabbro soils preservation and CRLF habitat preservation, there is potential for the issues to be addressed by a county-wide resource management plan. El Dorado County recently issued an RFP for the development of an Integrated Natural Resources Management Plan (INRMP), complying with the County General Plan’s objectives to complete a Habitat Conservation Plan (HCP) and Natural Community Conservation Plan (NCCP). The USFWS acknowledged that this plan could potentially help implement habitat conservation measures laid out during this Section 7 consultation.

Regarding CALSIM II Modeling of the proposed action, USFWS staff affirmed that they consider the CALSIM II assumptions used for the 2005 Delta Smelt B.O. to represent both “current conditions” and the “ESA baseline”. Jan Knight emphasized that the impact analysis should include a side-by-side comparison of the CVP-OCAP base-run and a CVP-OCAP base + proposed action run, as long as the action was not already included in the OCAP base. However, if the full withdrawal of 15 TAF of “Fazio” water was included in previous model base runs, then no side-by-side comparison is needed. Brian Deason of the USBR agreed to investigate whether the full withdrawal of 15 TAF has already been accounted-for in the recent CALSIM II CVP-OCAP analyses.

Pete Trenham will be the USFWS point-person for this consultation. USFWS will be updated as the project progresses, and additional informal consultation meetings will be scheduled when necessary.

Action Items

1. USBR, EDCWA, and EDCWA's consultants will develop a map with a restricted Section 7 consultation area for GDPUD, based on likely use of exchanged Middle Fork Project water (from Placer County Water Agency) diverted at the Auburn Pump Stations. The restricted GDPUD area will be determined in consultation with GDPUD staff, and based on the medium- and high-density residential areas delineated in the 2004 El Dorado County General Plan zoning, likely including Cool and Auburn Lake Trails (ALT). USBR will present the revised map to USFWS service as the next step in informal Section 7 consultation.
2. USBR, EDCWA, and EDCWA's consultants will develop a preliminary list of special-status species within the defined Section 7 action area, based on the California Natural Diversity Database (CNDDB) occurrences documented within the Section 7 consultation area, from Bass Lake to Cameron Park, and in the Cool/ALT area. USBR will present this preliminary list to USFWS personnel for evaluation with the aforementioned map of the consultation area.
3. USBR, EDCWA, and EDCWA's consultants will resume the parcel-by-parcel documentation of land with potential for inclusion into the Pine Hill gabbro soils preserve that was begun during recent EID Section 7 consultation. This process will result in 1) the development of a detailed map showing parcels with potential for inclusion in the Pine Hill preserve, and 2) documentation of EID, EDCWA and USBR activity to-date contributing to the establishment of the Pine Hill preserve. This information will be given to the USFWS to provide background information when assessing feasibility of continued land acquisition in the Pine Hill/Cameron Park gabbro soils area.
4. Brian Deason of the USBR will research whether the full "Fazio" water allotment of 15 TAF was included in the most recent CVP-OCAP CALSIM II simulations. It is anticipated that previous CVP-OCAP simulations would explicitly document the 7,500 AF to be withdrawn by EID, but would represent the 7,500 feet to be withdrawn by GDPUD only as a reduction in inflow to Folsom Reservoir. Assumptions for the proposed modeling runs will reflect the inclusion or exclusion of the 15 TAF proposed diversion. If all or a portion of the 15 TAF proposed diversion was not included in previous simulations, a side-by-side comparison of the CVP-OCAP baseline with the CVP-OCAP base + proposed action will be performed as a part of the modeling studies, per the USFWS request.

From: <Pete_Trenham@fws.gov>
To: "Brian Deason" <BDEASON@mp.usbr.gov>
Date: 7/18/2006 3:32:24 PM
Subject: Fazio meeting followup

Brian - I am writing to follow up on our last Fazio meeting.

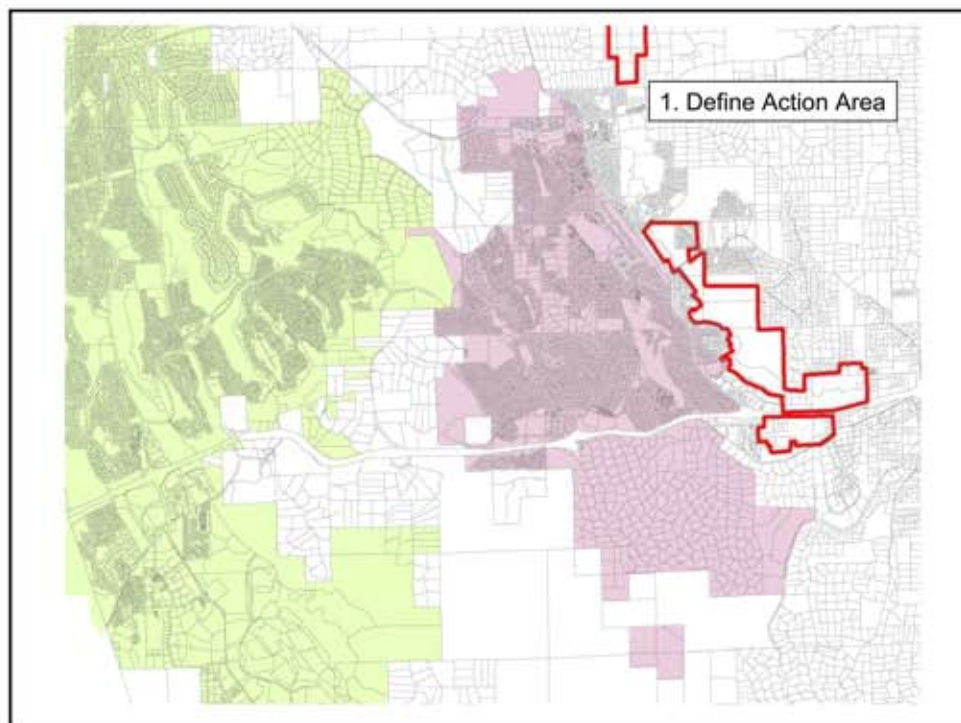
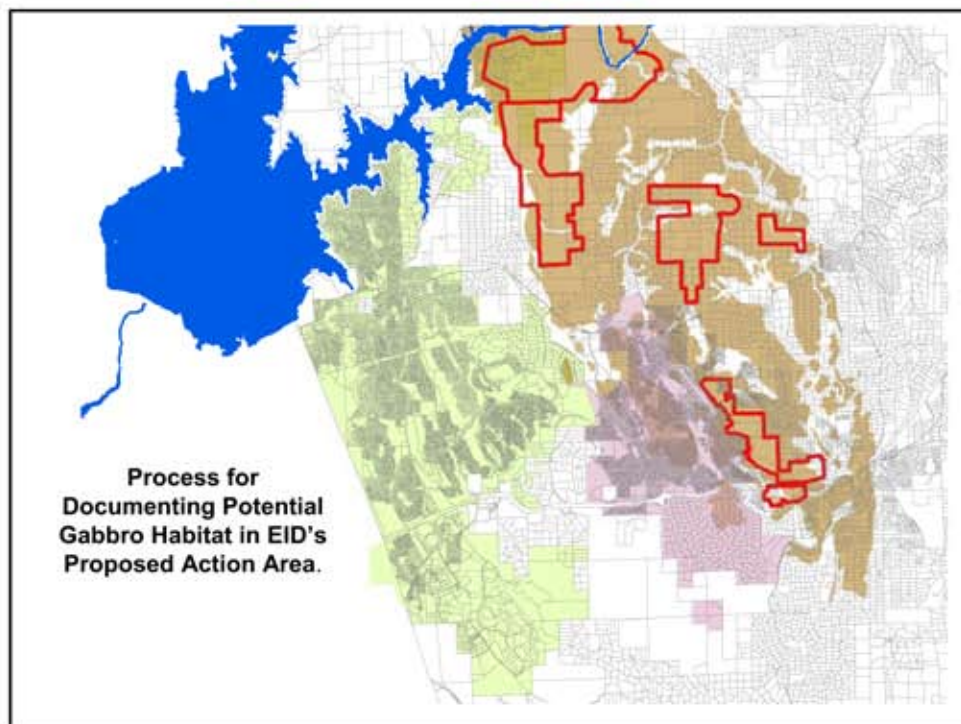
My task was to figure out which additional gabbro lands within the pink service area we would like to know more about. As I mentioned at the meeting, my greatest interest is in the parcels that overlap gabbro soils and which also appear on the aerial photographs to be dominated by chaparral.

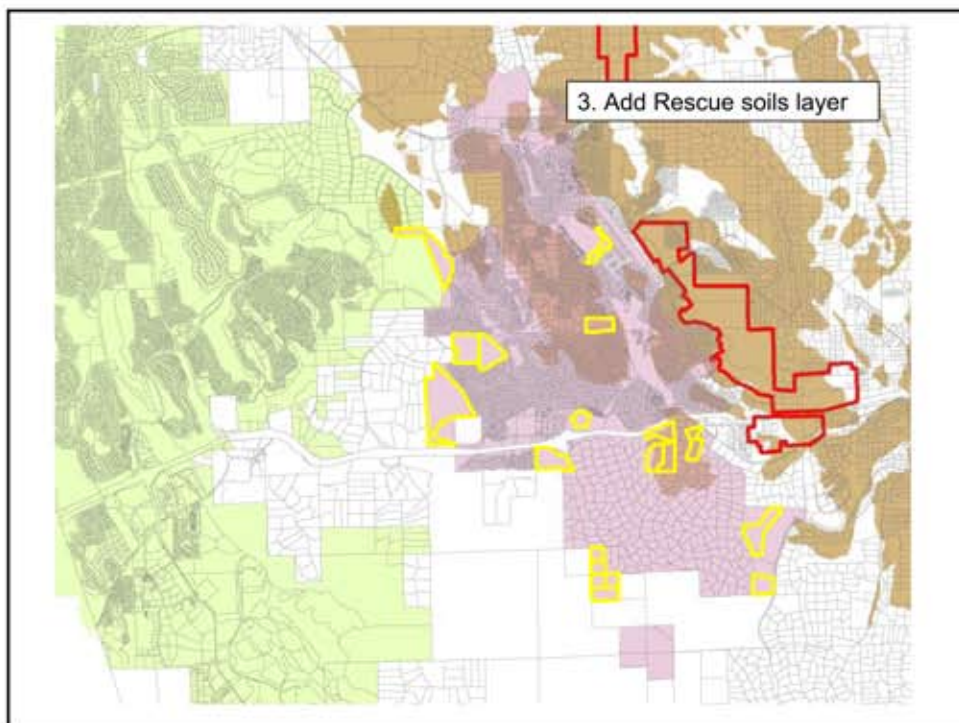
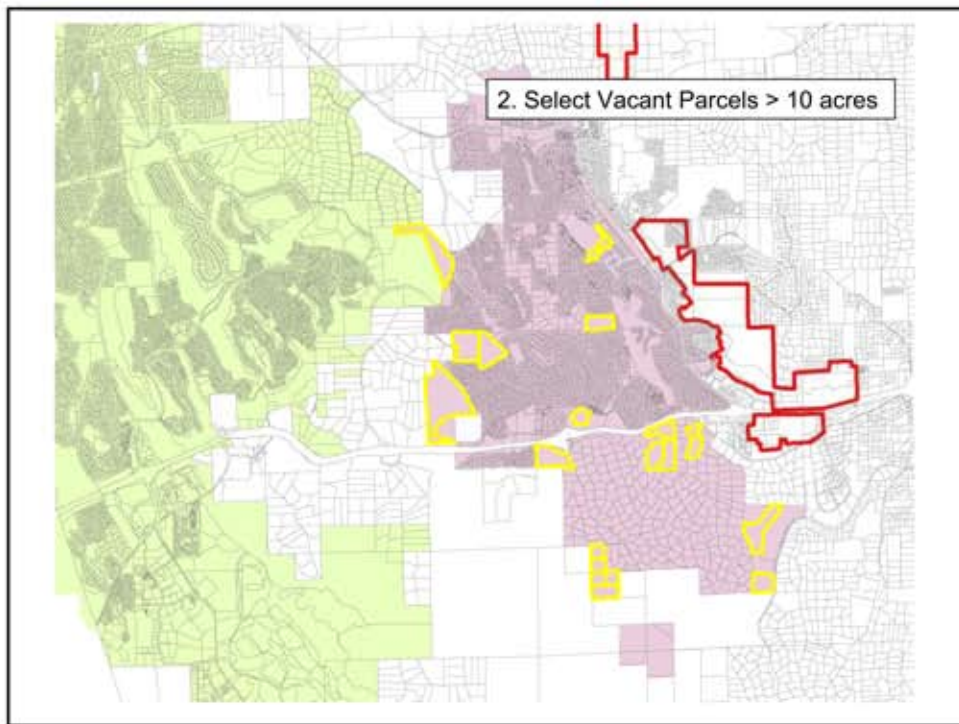
The parcels in which I am most interested are 1) those west and northwest of parcel 11601004 and 2) those between 10925015 and 10925012.

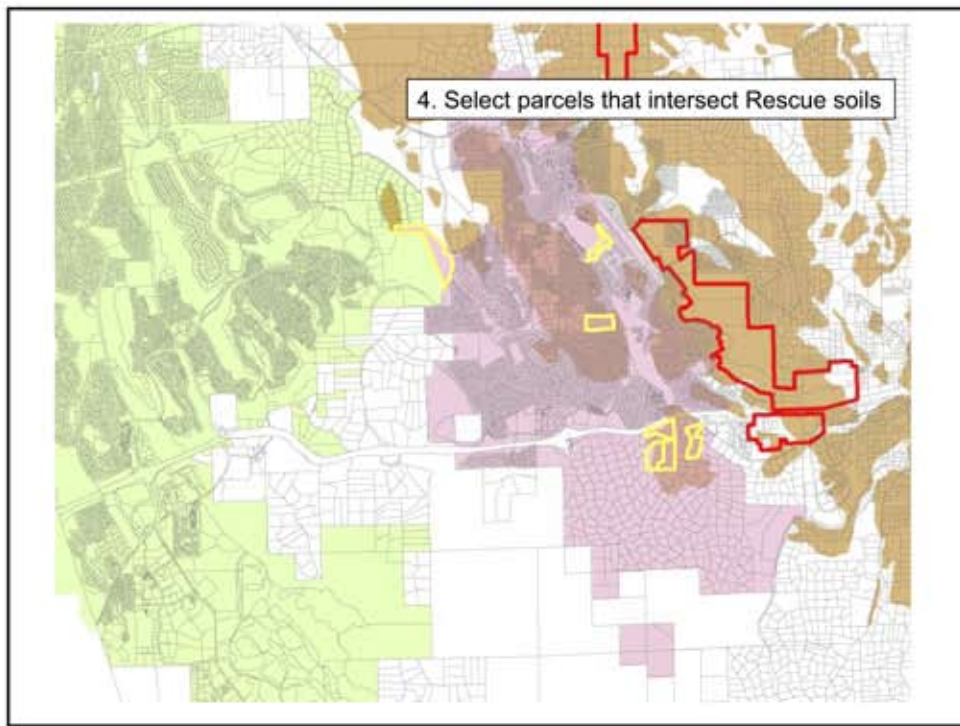
To encompass these large parcels that appear mostly undeveloped I would suggest widening your search parameters to include all parcels >4 acres that overlap gabbro and the service area.

I think it is important to identify all areas likely still supporting the habitat for listed gabbro soils plants. Please feel free to call and discuss if you have any questions or suggestions.

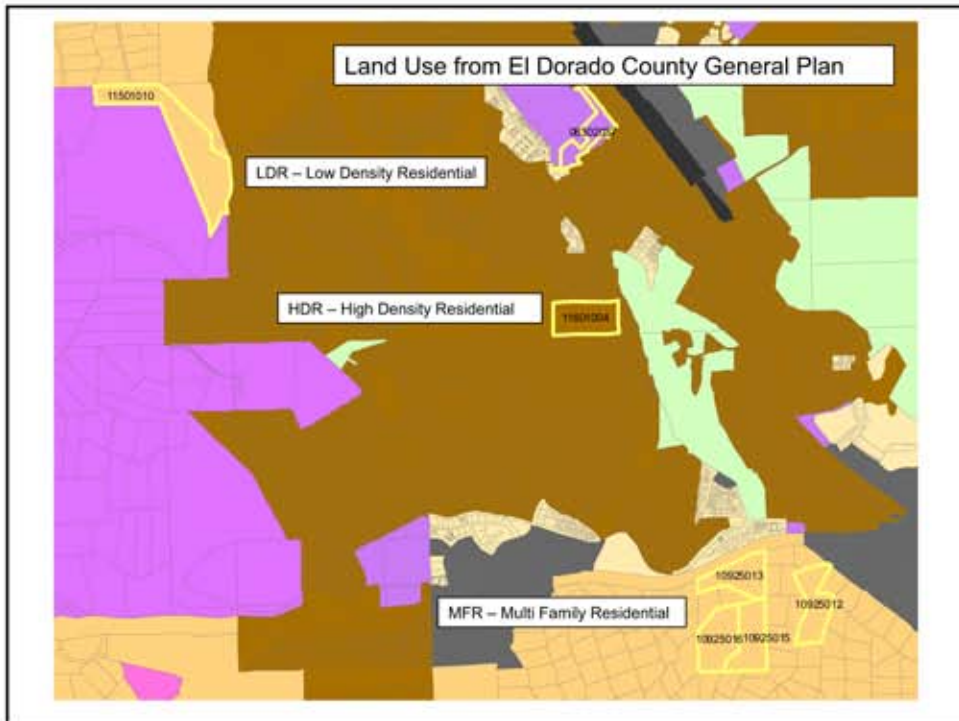
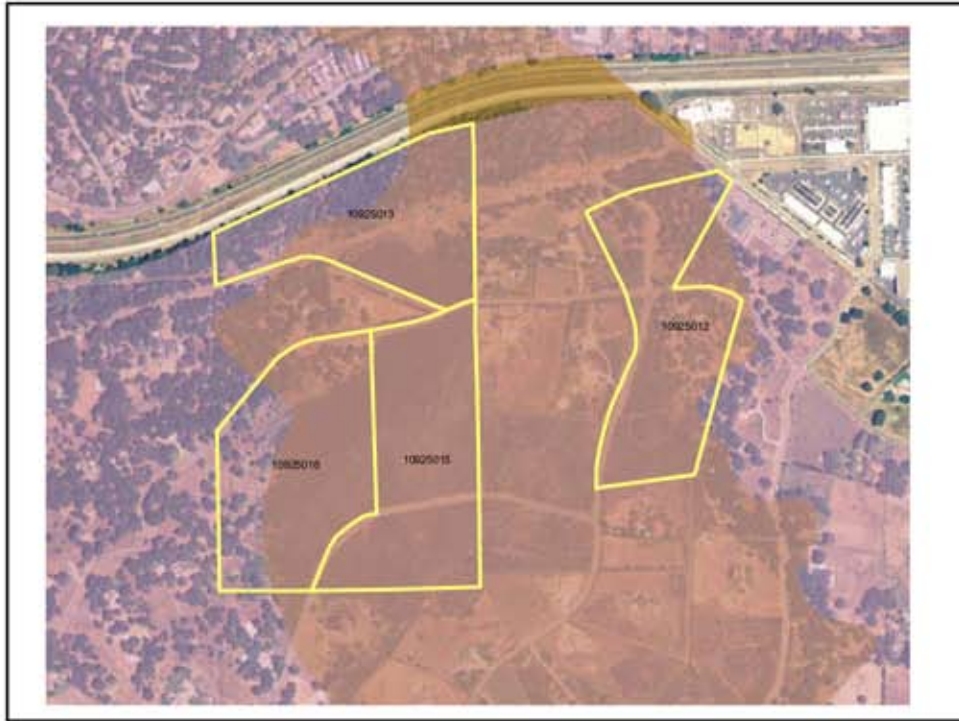
Thanks, Pete

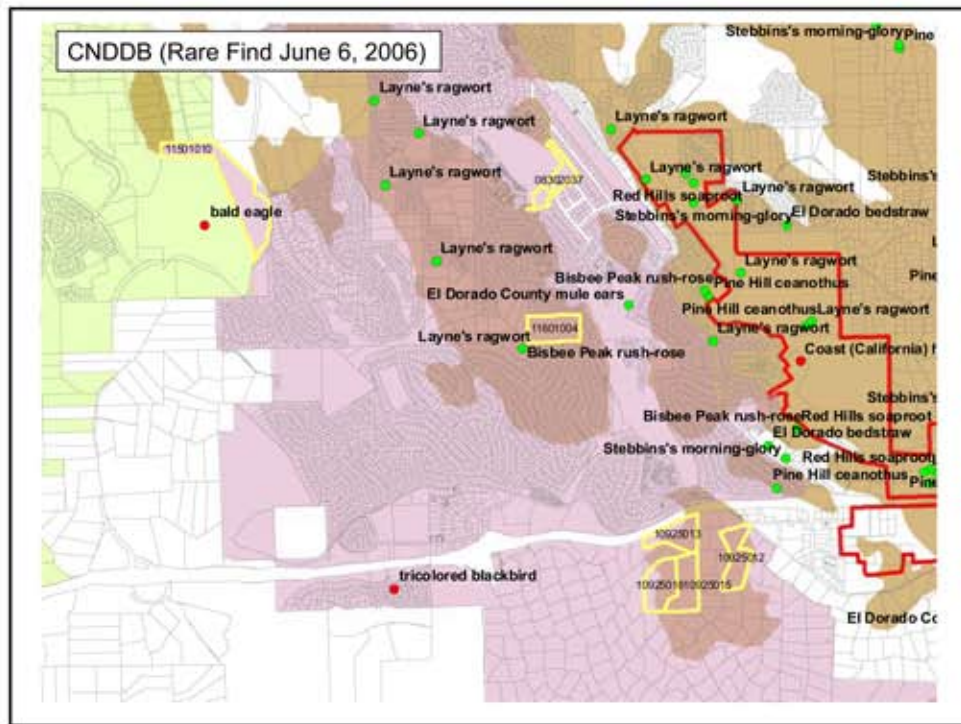












El Dorado County Parcel Data

PRCL_ID	APNSTATLIT	ACREAGE	USECDTYPE
11501010	PUBLIC AGENCY PROPERTY	000041.69	VAC
08302037	PUBLIC AGENCY PROPERTY	000012.60	VAC
11601004	ON ASSESSMENT ROLL AND TAXED	000020.00	VAC
10925013	ON ASSESSMENT ROLL AND TAXED	000017.78	VAC
10925012	ON ASSESSMENT ROLL AND TAXED	000018.73	VAC
10925015	ON ASSESSMENT ROLL AND TAXED	000020.00	VAC
10925016	ON ASSESSMENT ROLL AND TAXED	000020.60	VAC

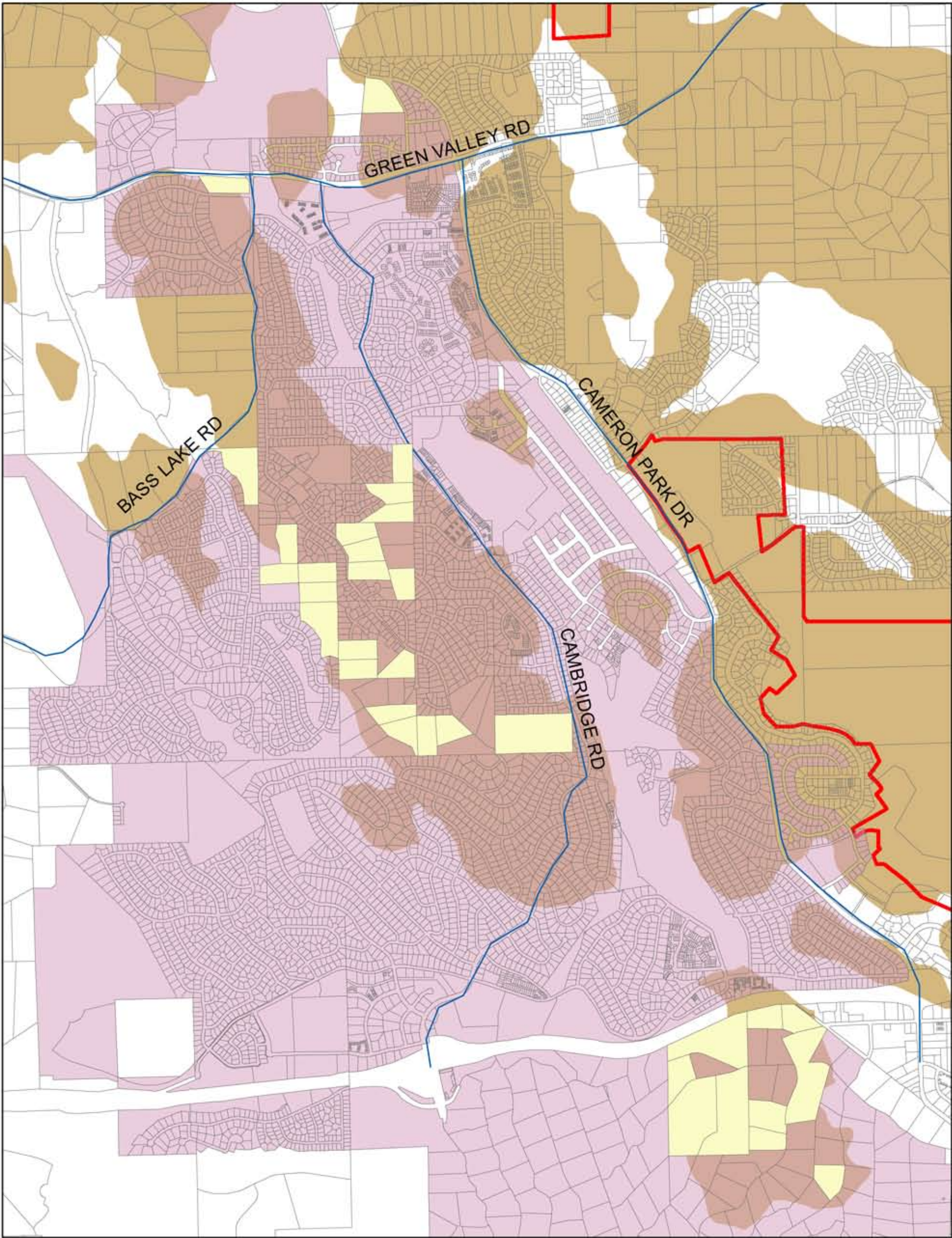
Total vacant land >10 acres that intersects rescue soils = 151.40 acres

Privately owned vacant land >10 acres that intersects rescue soils = 97.11 acres



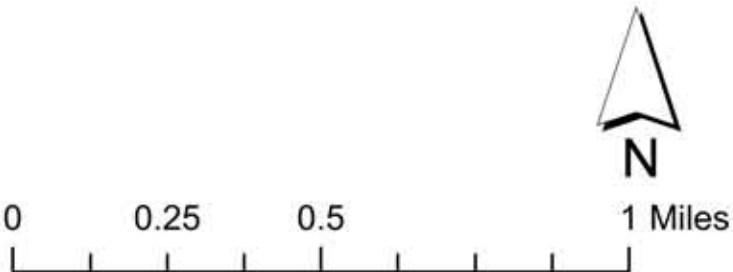
EID Section 7 Action Area Analysis

1. Total area of Vacant parcels >4 acres in Action Area that intersect Gabbro = 253 acres (33 parcels)



- Vacant Parcels >4 acres that intersect Gabbro selection
- EID Section 7 Action Area
- Rescue Soils
- Pine Hill Preserve Recovery Plan Boundary

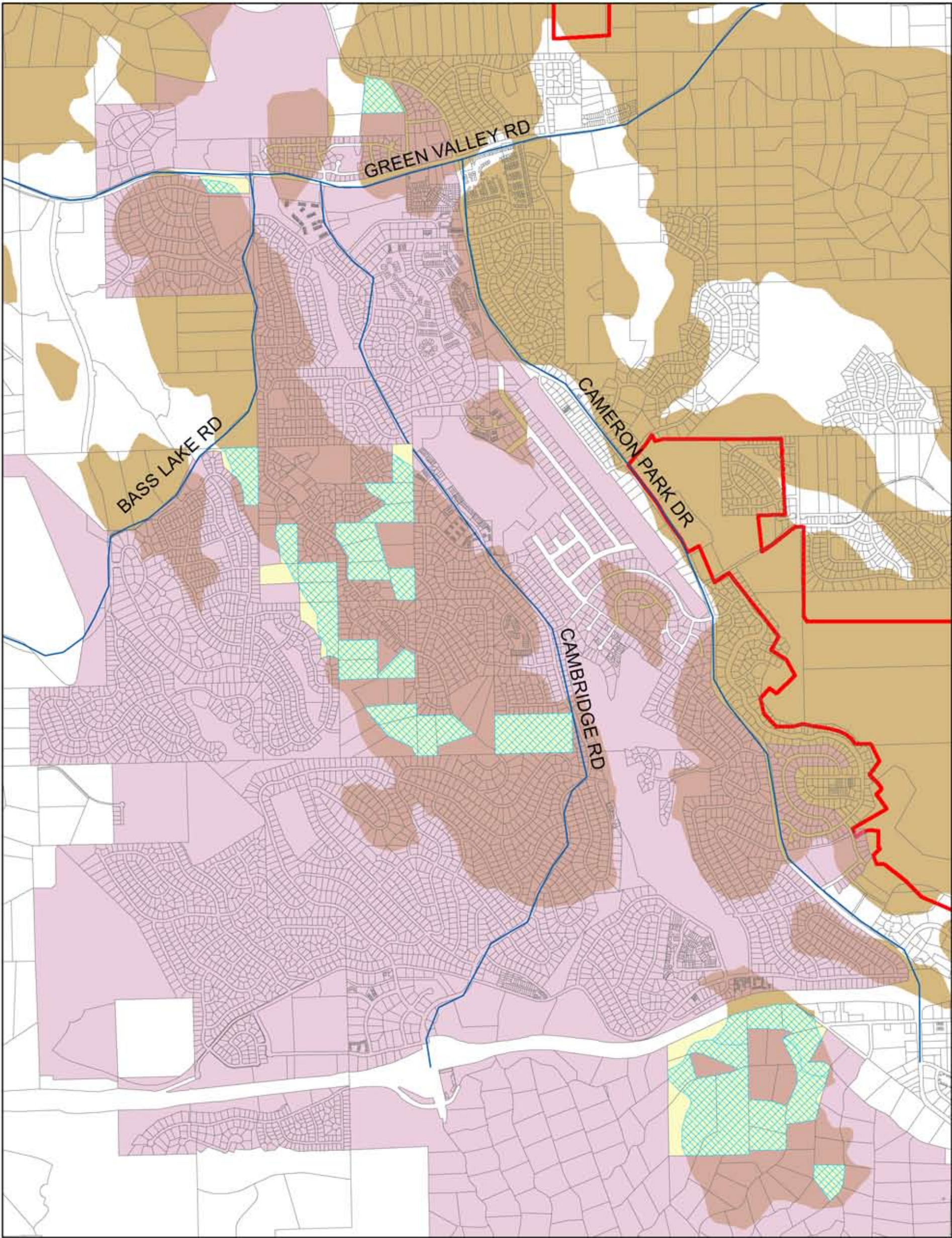
Source data:
EID Federal Service Area and Section 7 Action Area from EIP and Associates July 7, 2006.
Reclamation Geospatial Library data includes: EID Dorado County parcel base, August 2005.
Other data includes Pine Hill Preserve Recovery Plan Boundary and Rescue soils from FWS.
Map Generated by B. Deason CCAO, Sept 15, 2006.





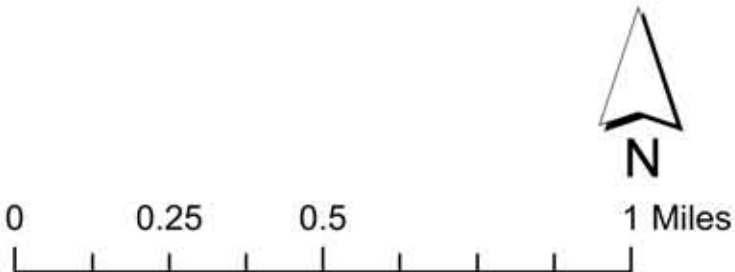
EID Section 7 Action Area Analysis

2. Total area of Gabbro soils on vacant parcels >4 acres in Action Area = 224 acres



- Gabbro_Clip1 selection
- Vacant Parcels >4 acres that intersect Gabbro selection
- EID Section 7 Action Area
- Rescue Soils
- Pine Hill Preserve Recovery Plan Boundary

Source data:
EID Federal Service Area and Section 7 Action Area from EIP and Associates July 7, 2006.
Reclamation Geospatial Library data includes: EID Dorado County parcel base, August 2005.
Other data includes Pine Hill Preserve Recovery Plan Boundary and Rescue soils from FWS.
Map Generated by B.Deason CCAO, Sept 15, 2006.



From: Jeremiah_M_Karuzas@fws.gov [mailto:Jeremiah_M_Karuzas@fws.gov]
Sent: Tuesday, May 12, 2009 4:01 PM
To: Janelle Nolan
Cc: BHetland@co.el-dorado.ca.us; elizabethdyer@mp.usbr.gov; tracey.eden-bishop@edcgov.us
Subject: Sample Language

Attached is the language that was developed for the Georgetown project that we discussed at our meeting. Thanks for meeting to discuss the project and I will do my best to help work through any remaining issues.

Jeremiah

Jeremiah M. Karuzas, Fish and Wildlife Biologist
Forest & Foothills Branch
U.S. Fish and Wildlife Service
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916-414-6736
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6/24/2009

The GDPUD has agreed that it will not provide water service to any lots in a new major subdivision (defined under California law as the creation of five or more lots), or new non-residential discretionary development resulting in building permits in excess of 7,500 square feet within the Greenwood Lake WTP service area without first obtaining proof from the applicant that the applicant has coordinated with the U.S. Fish and Wildlife Service (USFWS) on its project and that the USFWS has determined that the project complies with the ESA [Act]. GDPUD has also agreed to include in its comments on all future notices of preparation (NOPs) pursuant to the California Environmental Quality Act for new major subdivisions, or other new non-residential discretionary development resulting in building permits in excess of 7,500 square feet within the Greenwood Lake WTP service area notification that it will require an applicant for water service in such a subdivision to provide proof of compliance with the ESA before it provides water service. GDPUD will attach the following paragraph in all future responses to NOPs for new major subdivisions within the service area.

EXHIBIT A: Georgetown Divide Public Utility District received federal funds for a portion of the cost of the construction of its Greenwood Lake Water Treatment Plant and as condition of the receipt of those funds has agreed that it will not provide water service to any lots in a new major subdivision or other new non-residential discretionary development resulting in building permits in excess of 7,500 square feet without proof from the applicant that the applicant has coordinated with the U.S. Fish and Wildlife Service (USFWS) on his project and that the USFWS has determined that the project has satisfactorily complied with the Endangered Species Act.

GDPUD has also agreed to send the USFWS a list of the NOP responses in which they have included Exhibit 'A' during the prior calendar year to document implementation of this agreement. This report shall be provided to the Service by January 31 of the following year.



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846



JUN 10 2008

In Reply Refer To:
81420-2008-TA-1452-1

Memorandum

To: Acting Area Manager, Central California Area Office, Bureau of Reclamation,
Folsom, California

From: ~~Folk~~ Acting Field Supervisor, Sacramento Fish and Wildlife Office, Sacramento,
California *Chifon Negro*

Subject: Proposed Central Valley Project (CVP) Water Service Contract Between the
Bureau of Reclamation and the El Dorado County Water Agency (EDCWA)

This is in response to your April 22, 2008 letter (Bureau of Reclamation file # CC-415, ENV-6.00) requesting the Fish and Wildlife Service's (Service) concurrence that the proposed action, the execution of a new long-term CVP water service contract between EDCWA and the Bureau of Reclamation (Reclamation), is not likely to adversely affect any federally listed species. Reclamation is proposing to execute a master water service contract that will provide up to 15,000 acre-feet (AF) of water annually to western El Dorado County. At issue are the potential effects of the proposed project on the endangered Pine Hill ceanothus (*Ceanothus roderickii*), Pine Hill flannelbush (*Fremontodendron decumbens*), Stebbins morning glory (*Calystegia stebbinsii*), El Dorado bedstraw (*Galium californicum* ssp. *sierrae*), the threatened Layne's butterweed (*Packera layneae*), plants found on gabbro-derived soils, threatened valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), and California red-legged frog (*Rana aurora draytonii*)(frog). Our comments and recommendations are issued under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. §1531 *et. seq.*) (Act).

Based on our review of the April 2008, *Draft Biological Assessment: Central Valley Project Water Service Contract Between U.S. Bureau of Reclamation and the El Dorado County Water Agency* (Biological Assessment), we have determined that the information provided is insufficient for the Service to consult on the proposed project, and the following issues should be addressed.

On January 12, 2006, the Service issued a biological opinion (Service File # 1-1-04-F-0489) for the renewal of a long-term water contract that analyzed the delivery of 7,550 AF of CVP water for use by El Dorado Irrigation District (EID) within the CVP Consolidated Place of Use (CPOU). The current Draft Biological Assessment is based on the assumption of an equal division of 15,000 AF between EID and Georgetown Divide Public Utilities District (GPUD) in western El Dorado County, and the expansion of the EID's CPOU. As such, EID would receive an additional 7,500 AF of CVP water which is available for use in an area larger than that

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originally addressed in the Service's 2006 opinion. Because the Service had previously consulted on water use in a smaller CPOU, Reclamation has defined the action area as being the addition to the original CPOU. The Service disagrees with this limited action area.

In an August 24, 2007 meeting between the Service and Brian Deason of Reclamation, the Service provided comments on the July 2007 Draft Biological Assessment. During this meeting the Service voiced concerns that Reclamation did not adequately analyze the effects of the proposed action, as the Biological Assessment did not include the CPOU previously addressed in the 2006 Biological Opinion. It was Reclamation's position that since most of the area had been addressed in the 2006 opinion, it was only necessary to address the additional area to be served by CVP water. However, the 2006 Biological Opinion addressed the loss of listed plants and their habitat that were adjacent to, or within, the Service's recommended Pine Hill preserve system, as described in the 2002 *Recovery Plan for Gabbro Soil Plants of the Central Sierra Nevada Foothills*, and did not address the loss of listed plants and habitat throughout the entire action area. As such, the action area should include the original CPOU, as well as the expanded CPOU, and the indirect effects to listed plants are appropriate analyzed.

During the August 2007 meeting, the Service explained that we did not concur with a not likely to adversely affect determination for Layne's butterweed, as this listed plant would be indirectly affected by the project. We further commented that depending on the outcome of Reclamation's additional analysis of the entire action area, other listed plant species also may be adversely affected. As such, Reclamation should enter into formal consultation with the Service.

It is our understanding that the expansion of the CPOU will allow CVP water to be used in an area currently served by another water source. The area included as an addition to the original CPOU is currently served by water from Sly Park. Because the CVP water will allow the Sly Park water to be diverted to other areas, this diversion is considered an interrelated action, and the effects should be analyzed. During an October 11, 2007, telephone conversation between the Service and Brian Deason of Reclamation; we requested that this information be included in the Biological Assessment for the proposed project, however the current Biological Assessment does not address this concern. As such Reclamation should address the indirect effects on listed species that will result from the shift in non-CVP water to other parts of the County, which may be facilitated by the expanded CPOU.

Until we receive the above requested information incorporated into a Final Biological Assessment, we cannot begin the consultation process for the proposed Central Valley Project (CVP) Water Service Contract.

Additionally, the Central Valley Project Operations Criteria and Plan (OCAP) describes the coordinated operation of the CVP and State Water Project (SWP) by Reclamation and the California Department of Water Resources. As a result of the changes to the operating regime, the OCAP consultation with the Service is re-analyzing the effects of numerous new actions on the threatened delta smelt (*Hypomesus transpacificus*) and its designated critical habitat. The Service's consultations on the long-term water-service contract renewals, and issuance of new contracts, address the diversion of water at prescribed diversion points. It is apparent that the contracts create a demand for CVP water and the OCAP consultation will address how the CVP/SWP projects are operated to meet those demands. While the consultation on the

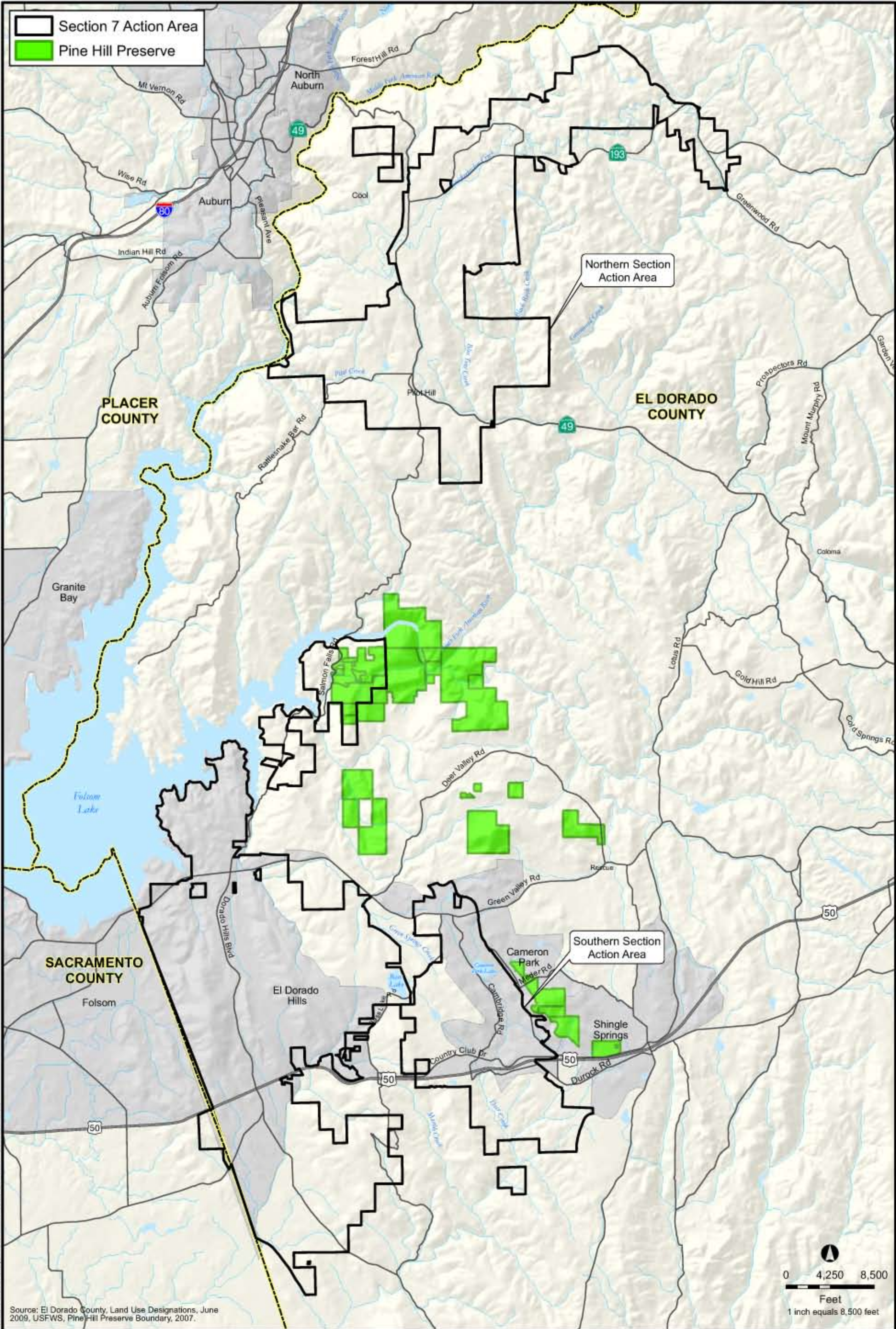
execution of a new long-term CVP water service contract between EDCWA and Reclamation focuses on the listed terrestrial species that may be affected by the action, it would be more appropriate for Reclamation to initiate consultation with the Service once an agreement on OCAP has been reached for and the reissuance OCAP Biological Opinion draws nearer.

Please address any questions or concerns regarding this response to Jeremiah Karuzas, or Amy Fesnock, Forest and Foothills Branch Chief, at (916) 414-6600.

Appendix E



Pine Hill Preserve



Appendix F



El Dorado County General Plan
Applicable Sections of Conservation and Open Space Element

SOIL CONSERVATION

OBJECTIVE 7.1.2: EROSION/SEDIMENTATION

Minimize soil erosion and sedimentation.

Policy 7.1.2.1 Development or disturbance shall be prohibited on slopes exceeding 30 percent unless necessary for access. The County may consider and allow development or disturbance on slopes 30 percent and greater when:

- Reasonable use of the property would otherwise be denied.
- The project is necessary for the repair of existing infrastructure to avoid and mitigate hazards to the public, as determined by a California registered civil engineer or a registered engineering geologist.
- The project is necessary for the repair of existing infrastructure to avoid and mitigate hazards to the public, as determined by a California-registered civil engineer or an engineering geologist.
- Replacement or repair of existing structures would occur in substantially the same footprint.
- The use is a horticultural or grazing use that utilizes “best management practices (BMPs)” recommended by the County Agricultural Commission and adopted by the Board of Supervisors.

Access corridors on slopes 30 percent and greater shall have a site specific review of soil type, vegetation, drainage contour, and site placement to encourage proper site selection and mitigation. Septic systems may only be located on slopes under 30 percent. Roads needed to complete circulation/access and for emergency access may be constructed on such cross slopes if all other standards are met.

Policy 7.1.2.2 Discretionary and ministerial projects that require earthwork and grading, including cut and fill for roads, shall be required to minimize erosion and sedimentation, conform to natural contours, maintain natural drainage patterns, minimize impervious surfaces, and maximize the retention of natural vegetation. Specific standards for minimizing erosion and sedimentation shall be incorporated into the Zoning Ordinance.

- Policy 7.1.2.3 Enforce Grading Ordinance provisions for erosion control on all development projects and adopt provisions for ongoing, applicant-funded monitoring of project grading.

CONSERVATION AND PROTECTION OF WATER RESOURCES

GOAL 7.3: WATER QUALITY AND QUANTITY

Conserve, enhance, and manage water resources and protect their quality from degradation.

OBJECTIVE 7.3.1: WATER RESOURCE PROTECTION

Preserve and protect the supply and quality of the County's water resources including the protection of critical watersheds, riparian zones, and aquifers.

- Policy 7.3.1.1 Encourage the use of Best Management Practices, as identified by the Soil Conservation Service, in watershed lands as a means to prevent erosion, siltation, and flooding.
- Policy 7.3.1.2 Establish water conservation programs that include both drought tolerant landscaping and efficient building design requirements as well as incentives for the conservation and wise use of water.

OBJECTIVE 7.3.2: WATER QUALITY

Maintenance of and, where possible, improvement of the quality of underground and surface water.

- Policy 7.3.2.1 Stream and lake embankments shall be protected from erosion, and streams and lakes shall be protected from excessive turbidity.
- Policy 7.3.2.2 Projects requiring a grading permit shall have an erosion control program approved, where necessary.
- Policy 7.3.2.3 Where practical and when warranted by the size of the project, parking lot storm drainage shall include facilities to separate oils and salts from storm water in accordance with the recommendations of the Storm Water Quality Task Force's California Storm Water Best Management Practices Handbooks (1993).
- Policy 7.3.2.4 The County should evaluate feasible alternatives to the use of salt for ice control on County roads.

OBJECTIVE 7.3.3: WETLANDS

Protection of natural and man-made wetlands, vernal pools, wet meadows, and riparian areas from impacts related to development for their importance to wildlife habitat, water purification, scenic values, and unique and sensitive plant life.

Policy 7.3.3.1 For projects that would result in the discharge of material to or that may affect the function and value of river, stream, lake, pond, or wetland features, the application shall include a delineation of all such features.

For wetlands, the delineation shall be conducted using the U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual

Policy 7.3.3.2 *intentionally blank*

Policy 7.3.3.3 The County shall develop a database of important surface water features, including lake, river, stream, pond, and wetland resources.

Policy 7.3.3.4 The Zoning Ordinance shall be amended to provide buffers and special setbacks for the protection of riparian areas and wetlands. The County shall encourage the incorporation of protected areas into conservation easements or natural resource protection areas.

Exceptions to riparian and wetland buffer and setback requirements shall be provided to permit necessary road and bridge repair and construction, trail construction, and other recreational access structures such as docks and piers, or where such buffers deny reasonable use of the property, but only when appropriate mitigation measures and Best Management Practices are incorporated into the project. Exceptions shall also be provided for horticultural and grazing activities on agriculturally zoned lands that utilize “best management practices (BMPs)” as recommended by the County Agricultural Commission and adopted by the Board of Supervisors.

Until standards for buffers and special setbacks are established in the Zoning Ordinance, the County shall apply a minimum setback of 100 feet from all perennial streams, rivers, lakes, and 50 feet from intermittent streams and wetlands. These interim standards may be modified in a particular instance if more detailed information relating to slope, soil stability, vegetation, habitat, or other site- or project-specific conditions supplied as part of the review for a specific project demonstrates that a different setback

is necessary or would be sufficient to protect the particular riparian area at issue.

For projects where the County allows an exception to wetland and riparian buffers, development in or immediately adjacent to such features shall be planned so that impacts on the resources are minimized. If avoidance and minimization are not feasible, the County shall make findings, based on documentation provided by the project proponent, that avoidance and minimization are infeasible.

- Policy 7.3.3.5 Rivers, streams, lakes and ponds, and wetlands shall be integrated into new development in such a way that they enhance the aesthetic and natural character of the site while disturbance to the resource is avoided or minimized and fragmentation is limited.

OBJECTIVE 7.3.4: DRAINAGE

Protection and utilization of natural drainage patterns.

- Policy 7.3.4.1 Natural watercourses shall be integrated into new development in such a way that they enhance the aesthetic and natural character of the site without disturbance.
- Policy 7.3.4.2 Modification of natural stream beds and flow shall be regulated to ensure that adequate mitigation measures are utilized.

OBJECTIVE 7.3.5: WATER CONSERVATION

Conservation of water resources, encouragement of water conservation, and construction of wastewater disposal systems designed to reclaim and re-use treated wastewater on agricultural crops and for other irrigation and wildlife enhancement projects.

- Policy 7.3.5.1 Drought-tolerant plant species, where feasible, shall be used for landscaping of commercial development. Where the use of drought-tolerant native plant species is feasible, they should be used instead of non-native plant species.
- Policy 7.3.5.2 A list of appropriate local indigenous drought tolerant plant materials shall be maintained by the County Planning Department and made available to the public.

- Policy 7.3.5.3 The County Parks and Recreation Division shall use drought tolerant landscaping for all new parks and park improvement projects.
- Policy 7.3.5.4 Require efficient water conveyance systems in new construction. Establish a program of ongoing conversion of open ditch systems shall be considered for conversion to closed conduits, reclaimed water supplies, or both, as circumstances permit.
- Policy 7.3.5.5 Encourage water reuse programs to conserve raw or potable water supplies consistent with State Law.

CONSERVATION OF BIOLOGICAL RESOURCES

GOAL 7.4: WILDLIFE AND VEGETATION RESOURCES

Identify, conserve, and manage wildlife, wildlife habitat, fisheries, and vegetation resources of significant biological, ecological, and recreational value.

OBJECTIVE 7.4.1: RARE, THREATENED, AND ENDANGERED SPECIES

The County shall protect State and Federally recognized rare, threatened, or endangered species and their habitats consistent with Federal and State laws.

- Policy 7.4.1.1 The County shall continue to provide for the permanent protection of the eight sensitive plant species known as the Pine Hill endemics and their habitat through the establishment and management of ecological preserves consistent with County Code Chapter 17.71 and the USFWS's *Gabbro Soil Plants for the Central Sierra Nevada Foothills Recovery Plan* (USFWS 2002).
- Policy 7.4.1.2 Private land for preserve sites will be purchased only from willing sellers.
- Policy 7.4.1.3 Limit land uses within established preserve areas to activities deemed compatible. Such uses may include passive recreation, research and scientific study, and education. In conjunction with use as passive recreational areas, develop a rare plant educational and interpretive program.
- Policy 7.4.1.4 Proposed rare, threatened, or endangered species preserves, as approved by the County Board of Supervisors, shall be designated Ecological Preserve (-EP) overlay on the General Plan land use map.

Policy 7.4.1.5 Species, habitat, and natural community preservation/conservation strategies shall be prepared to protect special status plant and animal species and natural communities and habitats when discretionary development is proposed on lands with such resources unless it is determined that those resources exist, and either are or can be protected, on public lands or private Natural Resource lands.

Policy 7.4.1.6 All development projects involving discretionary review shall be designed to avoid disturbance or fragmentation of important habitats to the extent reasonably feasible. Where avoidance is not possible, the development shall be required to fully mitigate the effects of important habitat loss and fragmentation. Mitigation shall be defined in the Integrated Natural Resources Management Plan (INRMP) (see Policy 7.4.2.8 and Implementation Measure CO-M).

The County Agricultural Commission, Plant and Wildlife Technical Advisory Committee, representatives of the agricultural community, academia, and other stakeholders shall be involved and consulted in defining the important habitats of the County and in the creation and implementation of the INRMP.

Policy 7.4.1.7 The County shall continue to support the Noxious Weed Management Group in its efforts to reduce and eliminate noxious weed infestations to protect native habitats and to reduce fire hazards.

OBJECTIVE 7.4.2: IDENTIFY AND PROTECT RESOURCES

Identification and protection, where feasible, of critical fish and wildlife habitat including deer winter, summer, and fawning ranges; deer migration routes; stream and river riparian habitat; lake shore habitat; fish spawning areas; wetlands; wildlife corridors; and diverse wildlife habitat.

Policy 7.4.2.1 To the extent feasible in light of other General Plan policies and to the extent permitted by State law, the County of El Dorado will protect identified critical fish and wildlife habitat, as identified on the Important Biological Resources Map maintained at the Planning Department, through any of the following techniques: utilization of open space, Natural Resource land use designation, clustering, large lot design, setbacks, etc.

Policy 7.4.2.2 Where critical wildlife areas and migration corridors are identified during review of projects, the County shall protect the resources from degradation by requiring all portions of the project site that

contain or influence said areas to be retained as non-disturbed natural areas through mandatory clustered development on suitable portions of the project site or other means such as density transfers if clustering cannot be achieved. The setback distance for designated or protected migration corridors shall be determined as part of the project's environmental analysis. The intent and emphasis of the Open Space land use designation and of the non-disturbance policy is to ensure continued viability of contiguous or interdependent habitat areas and the preservation of all movement corridors between related habitats. The intent of mandatory clustering is to provide a mechanism for natural resource protection while allowing appropriate development of private property. Horticultural and grazing projects on agriculturally designated lands are exempt from the restrictions placed on disturbance of natural areas when utilizing "Best Management Practices" (BMPs) recommended by the County Agricultural Commission and adopted by the Board of Supervisors when not subject to Policy 7.1.2.7.

- Policy 7.4.2.3 Consistent with Policy 9.1.3.1 of the Parks and Recreation Element, low impact uses such as trails and linear parks may be provided within river and stream buffers if all applicable mitigation measures are incorporated into the design.
- Policy 7.4.2.4 Establish and manage wildlife habitat corridors within public parks and natural resource protection areas to allow for wildlife use. Recreational uses within these areas shall be limited to those activities that do not require grading or vegetation removal.
- Policy 7.4.2.5 Setbacks from all rivers, streams, and lakes shall be included in the Zoning Ordinance for all ministerial and discretionary development projects.
- Policy 7.4.2.6 El Dorado County Biological Community Conservation Plans shall be required to protect, to the extent feasible, rare, threatened, and endangered plant species only when existing Federal or State plans for non-jurisdictional areas do not provide adequate protection.
- Policy 7.4.2.7 The County shall form a Plant and Wildlife Technical Advisory Committee to advise the Planning Commission and Board of Supervisors on plant and wildlife issues, and the committee should be formed of local experts, including agricultural, fire protection, and forestry representatives, who will consult with other experts with special expertise on various plant and wildlife issues,

including representatives of regulatory agencies. The Committee shall formulate objectives which will be reviewed by the Planning Commission and Board of Supervisors.

Policy 7.4.2.8 Develop within five years and implement an Integrated Natural Resources Management Plan (INRMP) that identifies important habitat in the County and establishes a program for effective habitat preservation and management. The INRMP shall include the following components:

A. Habitat Inventory. This part of the INRMP shall inventory and map the following important habitats in El Dorado County:

1. Habitats that support special status species;
2. Aquatic environments including streams, rivers, and lakes;
3. Wetland and riparian habitat;
4. Important habitat for migratory deer herds; and
5. Large expanses of native vegetation.

The County should update the inventory every three years to identify the amount of important habitat protected, by habitat type, through County programs and the amount of important habitat removed because of new development during that period. The inventory and mapping effort shall be developed with the assistance of the Plant and Wildlife Technical Advisory Committee, CDFG, and USFWS. The inventory shall be maintained and updated by the County Planning Department and shall be publicly accessible.

B. Habitat Protection Strategy. This component shall describe a strategy for protecting important habitats based on coordinated land

acquisitions (see item D below) and management of acquired land. The goal of the strategy shall be to conserve and restore contiguous blocks of important habitat to offset the effects of increased habitat loss and fragmentation elsewhere in the county. The Habitat Protection Strategy should be updated at least once every five years based on the results of the habitat monitoring program (item F below). Consideration of wildlife movement will be given by the County on all future 4- and 6-lane roadway construction projects. When feasible, natural

undercrossings along proposed roadway alignments that could be utilized by terrestrial wildlife for movement will be preserved and enhanced.

C. Mitigation Assistance. This part of the INRMP shall establish a program to facilitate mitigation of impacts to biological resources resulting from projects approved by the County that are unable to avoid impacts on important habitats. The program may include development of mitigation banks, maintenance of lists of potential mitigation options, and incentives for developers and landowner participation in the habitat acquisition and management components of the INRMP.

D. Habitat Acquisition. Based on the Habitat Protection Strategy and in coordination with the Mitigation Assistance program, the INRMP shall include a program for identifying habitat acquisition opportunities involving willing sellers. Acquisition may be by state or federal land management agencies, private land trusts or mitigation banks, the County, or other public or private organizations. Lands may be acquired in fee or protected through acquisition of a conservation easement designed to protect the core habitat values of the land while allowing other uses by the fee owner. The program should identify opportunities for partnerships between the County and other organizations for habitat acquisition and management. In evaluating proposed acquisitions, consideration will be given to site specific features (e.g., condition and threats to habitat, presence of special status species), transaction related features (e.g., level of protection gained, time frame for purchase completion, relative costs), and regional considerations (e.g., connectivity with adjacent protected lands and important habitat, achieves multiple agency and community benefits). Parcels that include important habitat and are located generally to the west of the Eldorado National Forest should be given priority for acquisition. Priority will also be given to parcels that would preserve natural wildlife movement corridors such as crossing under major roadways (e.g., U.S. Highway 50 and across canyons). All land acquired shall be added to the Ecological Preserve overlay area.

E. Habitat Management. Each property or easement acquired through the INRMP should be evaluated to determine whether the biological resources would benefit from restoration or management actions.

Examples of the many types of restoration or management actions that could be undertaken to improve current habitat conditions include: removal of non native plant species, planting native species, repair and rehabilitation of severely grazed riparian and upland habitats, removal of culverts and other structures that impede movement by native fishes, construction of roadway under and overcrossing that would facilitate movement by terrestrial wildlife, and installation of erosion control measures on land adjacent to sensitive wetland and riparian habitat.

F. Monitoring. The INRMP shall include a habitat monitoring program that covers all areas under the Ecological Preserve overlay together with all lands acquired as part of the INRMP. Monitoring results shall be incorporated into future County planning efforts so as to more effectively conserve and restore important habitats. The results of all special status species monitoring shall be reported to the CNDDB. Monitoring results shall be compiled into an annual report to be presented to the Board of Supervisors.

G. Public Participation. The INRMP shall be developed with and include provisions for public participation and informal consultation with local, state, and federal agencies having jurisdiction over natural resources within the county.

H. Funding. The County shall develop a conservation fund to ensure adequate funding of the INRMP, including habitat maintenance and restoration. Funding may be provided from grants, mitigation fees, and the County general fund. The INRMP annual report described under item F above shall include information on current funding levels and shall project anticipated funding needs and anticipated and potential funding sources for the following five years.

Policy 7.4.2.9 The Important Biological Corridor (-IBC) overlay shall apply to lands identified as having high wildlife habitat values because of extent, habitat function, connectivity, and other factors. Lands located within the overlay district shall be subject to the following provisions except that where the overlay is applied to lands that are also subject to the Agricultural District (-A) overlay or that are within the Agricultural Lands (AL) designation, the land use restrictions associated with the -IBC policies will not apply to the extent that the agricultural practices do not interfere with the purposes of the -IBC overlay.

- Increased minimum parcel size;
- Higher canopy-retention standards and/or different mitigation standards/thresholds for oak woodlands;
- Lower thresholds for grading permits;
- Higher wetlands/riparian retention standards and/or more stringent mitigation requirements for wetland/riparian habitat loss;
- Increased riparian corridor and wetland setbacks;
- Greater protection for rare plants (e.g., no disturbance at all or disturbance only as recommended by U.S. Fish and Wildlife Service/California Department of Fish and Game);
- Standards for retention of contiguous areas/large expanses of other (non-oak or non-sensitive) plant communities;
- Building permits discretionary or some other type of “site review” to ensure that canopy is retained;
- More stringent standards for lot coverage, floor area ratio (FAR), and building height; and
- No hindrances to wildlife movement (e.g., no fences that would restrict wildlife movement).

The standards listed above shall be included in the Zoning Ordinance.

Wildland Fire Safe measures are exempt from this policy, except that Fire Safe measures will be designed insofar as possible to be consistent with the objectives of the Important Biological Corridor

OBJECTIVE 7.4.3: COORDINATION WITH APPROPRIATE AGENCIES

Coordination of wildlife and vegetation protection programs with appropriate Federal and State agencies.

MEASURE CO-K

Work cooperatively with the State Department of Fish and Game, U.S. Fish and Wildlife Service, and Bureau of Land Management to implement the gabbro soils rare plant ecological preserve and recovery program and to develop a long-term preserve strategy. Develop implementation measures to incorporate in County development standards for ministerial and discretionary projects, which may include:

- Identification of compatible land uses within preserve sites, which may include passive recreation, research and scientific study, and interpretive education; and
- Fuels management and fire protection plans to reduce fire hazards at the interface between rare plant preserve sites and residential land uses; and

[Policies 7.4.1.1, 7.4.1.2, and 7.4.1.3 and Objective 7.4.3]

Responsibility:	Planning Department
Time Frame:	Ongoing implementation to continue immediately upon General Plan adoption. Development standards to be incorporated into updated Zoning Ordinance and design standards programs.

MEASURE CO-M

Develop and implement an Integrated Natural Resources Management Plan consistent with Policy 7.4.2.8.

Responsibility:	Planning Department
Time Frame:	Develop initial habitat protection strategy; develop and implement mitigation assistance program; and develop and implement conservation fund within two years of General Plan adoption. Develop framework for acquisition strategy and monitoring program within three years of General Plan adoption. Begin actual acquisition after completion of the initial inventory and mapping; develop management strategies as properties are acquired. Adaptive management of the entire program will be ongoing.

MEASURE CO-N

Review and update an Important Biological Corridor (-IBC) Overlay land use designation consistent with Policy 7.4.2.9.

Responsibility:	Planning Department
Time Frame:	Within two years of General Plan adoption.

MEASURE CO-O

Prepare and adopt a riparian setback ordinance. The ordinance, which shall be incorporated into the Zoning Code, should address mitigation standards, including permanent protection mechanisms for protected areas, and exceptions to the setback requirements. The ordinance shall be applied to riparian areas associated with any surface water feature (i.e., rivers, streams, lakes, ponds, and wetlands) and should be prepared in coordination with Measure CO-B. [Policy 7.4.2.5]

Responsibility:	Planning Department
Time Frame:	Within three years of General Plan adoption.

MEASURE CO-U

Mitigation under Policy 7.4.1.6 shall include providing sufficient funding to the County's conservation fund to acquire and protect important habitat at a minimum 2:1 ratio. The cost associated with acquisition, restoration, and management of the habitat protected shall be included in the mitigation fee. For larger development projects (i.e., those that exceed a total of 10 acres), in addition to contributing to the conservation fund at a minimum 2:1 ratio, onsite preservation and/or restoration of important habitat shall be required at a 1:1 ratio. Impacts on important habitat and mitigation requirements shall be addressed in a Biological Resources Study and an Important Habitat Mitigation Program (described below).

- A. Biological Resources Study. The County shall adopt biological resource assessment standards that apply to all discretionary projects that would result in disturbance of soil and native vegetation in areas that include important habitat as defined in the INRMP. The assessment of the project site must be in the form of an independent

Biological Resources Study, and must be completed by a qualified biologist. The evaluation shall quantify the amount of important habitat, by habitat type, as defined in the General Plan and delineated on maps included in the INRMP. The Biological Resources Study shall also address the potential for the project to adversely affect important habitat through conversion or fragmentation. This requirement shall not apply to projects that are on lands that either (1) have already been the subject of a study and for which all

mitigation requirements are being implemented or (2) have been evaluated by the County and found to not possess any important habitat resources.

- B. Important Habitat Mitigation Program. The Biological Resource Study shall include an Important Habitat Mitigation Program that identifies options that would avoid, minimize, or compensate for impacts on important habitats in compliance with the standards of the INRMP and the General Plan. All mitigation programs shall include a monitoring and reporting component requiring reports to the County not less than once each year for a period of not less than 10 years. The report will include a description of the lands included in the mitigation program (including location and size), a summary of the evaluation criteria established at the time the mitigation program was approved, an evaluation of the mitigation program based on those criteria, and recommendations for action during the following year. The County shall adopt standards for evaluating mitigation programs proposed as part of the Biological Resources Study described above. The standards shall ensure that the mitigation reduces direct and cumulative impacts of proposed development on important habitats to less than significant levels in accordance with CEQA thresholds.

Responsibility:	Planning Department
Time Frame:	Refer to Measures CO-L and CO-M as applicable.

Appendix G



Life Histories of Special-Status Species Known
or Potentially Occurring in the Action Area

FEDERALLY LISTED PLANT SPECIES

The five plants described in this section were listed by USFWS on October 18, 1996. The plants, referred to as the “gabbro plants”, are generally restricted to gabbro-derived soils of the Pine Hill formation in western El Dorado County, California, although three of the plants, as described below, are known from several other locations. Gabbro rocks are formed when magma cools deep within the earth. Gabbro-derived soils of the Pine Hill formation, also known as Rescue soils, are stony, loamy, slightly acidic soils with a reddish tint caused when metals within the gabbro are exposed to oxygen. Rescue soils are high in iron and magnesium and contain low concentrations of heavy metals such as cobalt, chromium, and nickel. Many plants cannot tolerate the soil conditions and nutrient levels present in Rescue soils, but the gabbro plants described in this section are specially adapted to this ecological niche. They also have adaptations specific to a Mediterranean climate (hot, dry summers and short, cool winters), and periodic disturbance (e.g., wildfire).

In the Final Rule for the listing of the five gabbro plants, USFWS cites urbanization, habitat fragmentation, road construction and maintenance, herbicide spraying, change in fire regime, and competition from invasive plants as some of the causes that threaten the continued existence of these plants.

Stebbins’ morning-glory (*Calystegia stebbinsii*; FE, CE, CNPS 1B.1)

Stebbins’ morning-glory is a perennial herb in the morning-glory family (Convolvulaceae). Stebbins’ morning-glory has a vine-like (trailing or climbing) habit, with stems up to one meter long (Jepson 1993). It has white trumpet-shaped flowers that are in bloom from April through July (CNPS 2007). The leaves are palmately divided with narrow, linear lobes. The two outermost lobes are divided again, and the middle lobe is longer than the outside lobes.

Stebbins’ morning glory is able to reproduce from rootstock (rhizomatously) or from seed (Nosal 1997, in PHP 2006). It colonizes open areas that have been disturbed by fire or other causes (Baad and Hanna 1987 in USFWS 2002) and dies back when shaded out by other plants (Ayres in litt. 1999 in USFWS 2002). Roots and seeds then remain dormant in the soil until the next disturbance event. Researchers have found that the seeds require heat or scarification (cutting or softening of the seed coat) for germination to occur (Nosal 1997 in USFWS 2002).

Stebbins’ morning glory grows on gabbro- and serpentine-derived soils, within openings in chaparral. There are 19 known occurrences of this species (CNDDDB 2007). There are two population centers of Stebbins’ morning glory in El Dorado County; a northern population in the vicinity of Salmon Falls, and a southern population in the vicinity of Cameron Park. In El Dorado County, this plant is associated with gabbro-derived soils and chaparral dominated by *Arctostaphylos viscida* (whiteleaf manzanita) (CNDDDB 2007). Stebbins’ morning glory was also discovered in Nevada County in 1991, on serpentine-derived soils, in chaparral dominated by *Arctostaphylos* species. It is believed that the Nevada County population may have been transferred from El Dorado County in soil that was then placed in the Nevada County Landfill (USFWS 1996).

At least one-third of the known occurrences have been extirpated by development. Other threats to these populations include off-road vehicle use, grading, dumping, road maintenance, changes in fire frequency, and competition with nonnative plants (USFWS 1996).

Pine Hill ceanothus (*Ceanothus roderickii*; FE, CR, CNPS 1B.2)

Pine Hill ceanothus is an evergreen shrub in the buckthorn family (Rhamnaceae). It is a low-lying (or prostrate) shrub that grows to about 10 feet in diameter. It has small, thick leaves, about .40 inches long, that stand nearly erect from the stipules (small stems that attach the leaf to the branch) (Jepson 1993). The outside edges of the leaf (the margins) are rolled under. Pine Hill ceanothus has clusters of small white or white flowers with a bluish tinge that bloom from April through June (CNPS 2007).

Pine Hill ceanothus appears to be at least somewhat dependent on fire in order to grow and proliferate. Unlike many other chaparral shrub species, Pine Hill ceanothus does not re-sprout from its crown after a fire, but instead re-establishes from seed. Seedling germination rates are greatly increased by fire (Boyd 1987 in USFWS 2002). Pine Hill ceanothus will grow in shade, but flowering and fruiting have been shown to decrease in the absence of full sun (James 1996 in USFWS 2002).

Pine Hill ceanothus is found only on gabbro-derived soils of the Pine Hill formation (also called Rescue soils), in open areas within chaparral. It has also been found growing in chaparral/annual grassland transition zones (PHP 2006).

There are 17 known occurrences of this species (CNDDDB 2007), all of which are in western El Dorado County.

Causes of decline include residential and commercial development, inadequate regulatory mechanisms, off-road vehicle use, road widening, and changes in fire frequency (USFWS 1996).

Pine Hill flannel bush (*Fremontodendron californicum* ssp. *decumbens*; FE, CR, CNPS 1B.2)

Pine Hill flannel bush is an evergreen shrub in the cocoa family (Sterculiaceae). It grows to about 1 meter in height, and is wider than it is tall. It has oval-shaped, palmately lobed leaves with five to seven lobes (Jepson 1993). Its leaves and smaller twigs are covered in dense, star-shaped hairs (a characteristic of the family). Pine Hill flannel bush has showy orange-brown flowers that are in bloom from April through July (CNPS 2007).

Germination of Pine Hill flannel bush seeds is enhanced by fire and by scarification, and the seeds can remain dormant in the soil for many years prior to germination (Boyd and Serafini 1992 in USFWS 2002). Researchers have shown that native bees are required for pollination of this species, and native harvester ants play a role in the dispersal of seed (Boyd 2000 in PHP 2006).

There are 11 known occurrences of this species (CNDDDB 2007). Eight of the occurrences are within western El Dorado County, where Pine Hill flannel bush grows on Rescue soils on rocky areas in chaparral, or in the transition zone between chaparral and woodland.

Three occurrences of Pine Hill flannel bush have been reported in Nevada County. However, it is uncertain whether these plants are *F. californicum* ssp. *decumbens*, *F. californicum* ssp. *californicum* or a hybrid between the two (*decumbens* x *californicum*) (CNDDDB 2007).

The species is vulnerable to the long-term effects of fire suppression due to the species proximity to human population centers and intensive development activities. The species is also susceptible to catastrophic events such as disease or pest outbreak, severe drought or other natural or human caused disasters due to its restricted distribution. Residential and commercial development and trash dumping are also threats (USFWS 1996).

El Dorado bedstraw (*Galium californicum* ssp. *sierrae*; FE, CR, CNPS 1B.2)

El Dorado bedstraw is a perennial herb in the coffee family (Rubiaceae). It has soft hairs that cover the stems and leaves, and the leaves are arranged in sets of four in nodes along the stems. El Dorado has small, pale yellow flowers, in bloom from May to June (CNPS 2007), that are clustered at the end of the stems.

El Dorado bedstraw is generally found in chaparral and oak woodlands on north-facing slopes and is strictly limited to Rescue soils in western El Dorado County. Little is known about the ecology and life history of this species (CDFG 1992 in USFWS 2002).

There are 11 known occurrences of El Dorado bedstraw (CNDDDB 2007), all concentrated within western El Dorado County.

Threats include residential development, road construction, grazing by horses, and irrigation. The species is also susceptible to catastrophic events such as disease or pest outbreak, severe drought, or other natural disasters due to its restricted distribution and limited number of individuals (USFWS 1996).

Layne's ragwort (*Packera layneae*; FT, CR, CNPS 1B.2)

Layne's ragwort is a perennial herb in the aster family (Asteraceae) that sprouts from rootstock. It has long, pointed leaves (3 to 10 inches long) that tend to cluster toward the base of the plant. As is characteristic of this family, Layne's ragwort has composite flowers that consist of a central head composed of many tiny disc flowers, and exterior petal-like ray flowers. Layne's ragwort has yellow disc flowers, and 5 to 8 orange-yellow ray flowers. The flower head is 2 to 3 inches wide and is in bloom from April to August (CNPS 2007).

Layne's ragwort occupies gabbro- and serpentine-derived soils in openings that are left by disturbance (Baad and Hanna 1987 in USFWS 2002). It is most often associated with chaparral or oak woodland, but is also known to grow on patches of annual grassland (PHP 2006). It is eliminated as vegetation grows up around it (Baad and Hanna 1987 in USFWS 2002).

There are 47 known occurrences of Layne's ragwort, most in western El Dorado County. However, there are several known occurrences in Tuolumne and Yuba counties (CNDDDB 2007).

Reasons for decline include residential and commercial development, road maintenance, change in fire frequency, off-road vehicle use, competition with alien vegetation, and excessive horse grazing practices (USFWS 1996).

FEDERALLY LISTED WILDLIFE SPECIES

Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*; FT, FPD)

The valley elderberry longhorn beetle (VELB) was listed as federally threatened by USFWS in 1980 (USFWS 1980), and was proposed for delisting by USFWS in September 2006 (USFWS 2006). The Action Area addressed in this BA does not contain any designated critical habitat for VELB. The nearest critical habitat is located in Sacramento County, along the American River Parkway.

The VELB is found in remnant riparian forests and waterways that support riparian vegetation in the Central Valley from Bakersfield to Redding, to about 3,000 feet in elevation. VELB is completely dependent on its host plant, elderberry (*Sambucus* spp.). Both larvae and adult VELB feed on elderberries. Larvae feed internally on the pith of the trunk and larger branches, while adult beetles appear to feed externally on elderberry flowers and foliage. Prior to metamorphosing into the adult life stage, VELB larvae chew an exit hole in the elderberry trunk, through which the adult beetle later exits the plant. The life cycle takes one or two years to complete. The animal spends most of its life in the larval stage, living within the stems of the elderberry plant. The largest percentage of specimens has been collected in May. During this period the beetles mate, and the females lay eggs on living elderberry plants.

At the time that it was listed in 1980, VELB was considered to be threatened primarily by loss of its native habitat, and secondarily by the lack of regulatory mechanisms in place to help conserve those habitats. In its 5-year review for VELB issued in 2006, USFWS notes that since 1980 approximately 50,000 acres of existing riparian habitat have been protected in the Sacramento and San Joaquin valleys, and an additional 5,000 acres of habitat have been restored for the benefit of the beetle.

There are 2 known occurrences of VELB (CNDDDB 2007) in western El Dorado County.

California Red-legged Frog (*Rana aurora draytonii*; FT, CSC)

The California red-legged frog (CRLF) was listed by USFWS as threatened on June 24, 1996. On March 13, 2001, a final designation of critical habitat was made for the CRLF (USFWS 2001). The Action Area addressed in this BA is within Recovery Unit 1, Sierra Nevada Foothills and Central Valley (USFWS 2002). Additionally, the southern portion of the action area intersects with Core Area 4, Cosumnes River-South Fork American River. The primary constituent elements of critical habitat for CRLF are aquatic and upland areas where suitable breeding and non-breeding habitat is interspersed throughout the landscape and is interconnected by unfragmented dispersal habitat. To be considered to possess the primary constituent elements, an area must include two (or more) suitable breeding locations, a permanent water source, associated uplands surrounding these water bodies up to 300 feet from the water's edge, all within 1.25 miles of one another and connected by a barrier free dispersal habitat that is at least 300 feet wide.

The species is endemic to California and Baja California, Mexico. It has been extirpated from 70 percent of its former range and is currently found primarily in coastal drainages of central California, from Marin County, California, south to northern Baja California and in isolated drainages in the Sierra Nevada, northern Coast, and northern Transverse Ranges (USFWS 2002). The elevational range of CRLF extends from near sea level to about 5,200 feet. The species uses a variety of habitats which include aquatic, riparian, and upland areas. Adults require dense, shrubby, or emergent riparian vegetation closely associated with deep (greater than 2 1/3-foot deep) still or slow moving water. The CRLF breeds from November through April (USFWS 2002).

The CRLF is threatened by a variety of human activities. These include destruction or degradation of habitat by urbanization, agriculture, construction of reservoirs, mining, livestock grazing, timber harvesting, and off-road vehicle use. Predation by introduced species such as bullfrogs (*Rana catesbeiana*), African clawed frog (*Xenopus laevis*), red swamp crayfish (*Procambarus clarkii*), signal crayfish (*Pacifasticus leniusculus*), catfishes (*Ictalurus* spp.), and mosquitofish (*Gambusia affinis*) (Jennings and Hayes 1994). The CRLF is exposed to contaminants such as insecticides and herbicides used in agriculture, heavy metals from mining activities, and ozone and nitrogen oxides in air pollution. Natural threats to the CRLF are predation by raccoons (*Procyon lotor*), and garter snakes, (*Thamnophis* spp.), and diseases.

There are 3 known occurrences of CRLF in El Dorado County (CNDDDB 2007).

Bald Eagle (*Haliaeetus leucocephalus*; Former FT, CE, CFP)

In the late 1940s, bald eagle population numbers in North America plummeted as a result of reproductive failure caused by widespread use of DDT, loss of habitat, and disturbances related to human activities. Bald eagles were listed as endangered under the ESA in 1978 (USFWS 1978). The Pacific Bald Eagle Recovery Plan was published in 1986 (USFWS 1986). Bald eagle populations have been on the rise over the past 25 years. There was a ten-fold increase in population from 1963 to 1999. The number of occupied breeding areas in North America increased by 462 percent from 1974 to 1994 (USFWS 1999a). In California, CDFG has coordinated annual statewide breeding surveys of bald eagles which have shown a long term increase in the population and range since surveys began in 1973. The breeding range increased from eight counties in 1981 to 27 counties currently (CDFG 2002B).

The subsequent increase in bald eagle populations and range resulted in the down-listing of bald eagle to threatened status in July 1995 (USFWS 1995). USFWS proposed to remove the species from listing status in July 1999 (USFWS 1999a). On July 9, 2007, USFWS removed the bald eagle in the lower 48 states from the list of threatened and endangered species (USFWS 2007a). The bald eagle is currently protected at the federal level under the Migratory Bird Treaty Act of 1918 (16 U.S.C. Sections 703-712) and the Bald Eagle Protection Act of 1940 (16 U.S.C. Sections 668-668d). It is also protected under the California Endangered Species Act and is a California Fully Protected Species.

The breeding range of bald eagles formerly included most of the North American Continent, but bald eagles now nest mainly in Alaska, Canada, the Pacific Northwest states, the Great Lake states, Florida, and Chesapeake Bay. The winter range of the bald eagle is

similar to the breeding range, but extends mainly from southern Alaska and southern Canada southward (USFWS 1986). Bald eagles are permanent residents and uncommon winter migrants throughout the state of California. They breed primarily in Butte, Lake, Lassen, Modoc, Plumas, Shasta, Siskiyou, and Trinity counties (CDFG 2002B). The breeding range is primarily in mountainous habitats next to reservoirs, in the Central Coast Range, and on Santa Catalina Island. About half of the wintering population is found in the Klamath Basin (CDFG 2002B). Bald eagles forage near large aquatic ecosystems such as lakes, reservoirs, or free flowing rivers. Bald eagle nests are usually located in uneven-aged stands with old-growth components (USFWS 1986). Nesting usually occurs in large trees along shorelines in relatively remote areas. Breeding occurs February through July, with peak activity occurring in March through June. Average clutch size is two. Incubation lasts approximately 35 days and fledging takes place at 11 to 12 weeks of age. Parental care may extend to 11 weeks after fledging. Bald eagles become sexually mature at 4 to 5 years of age.

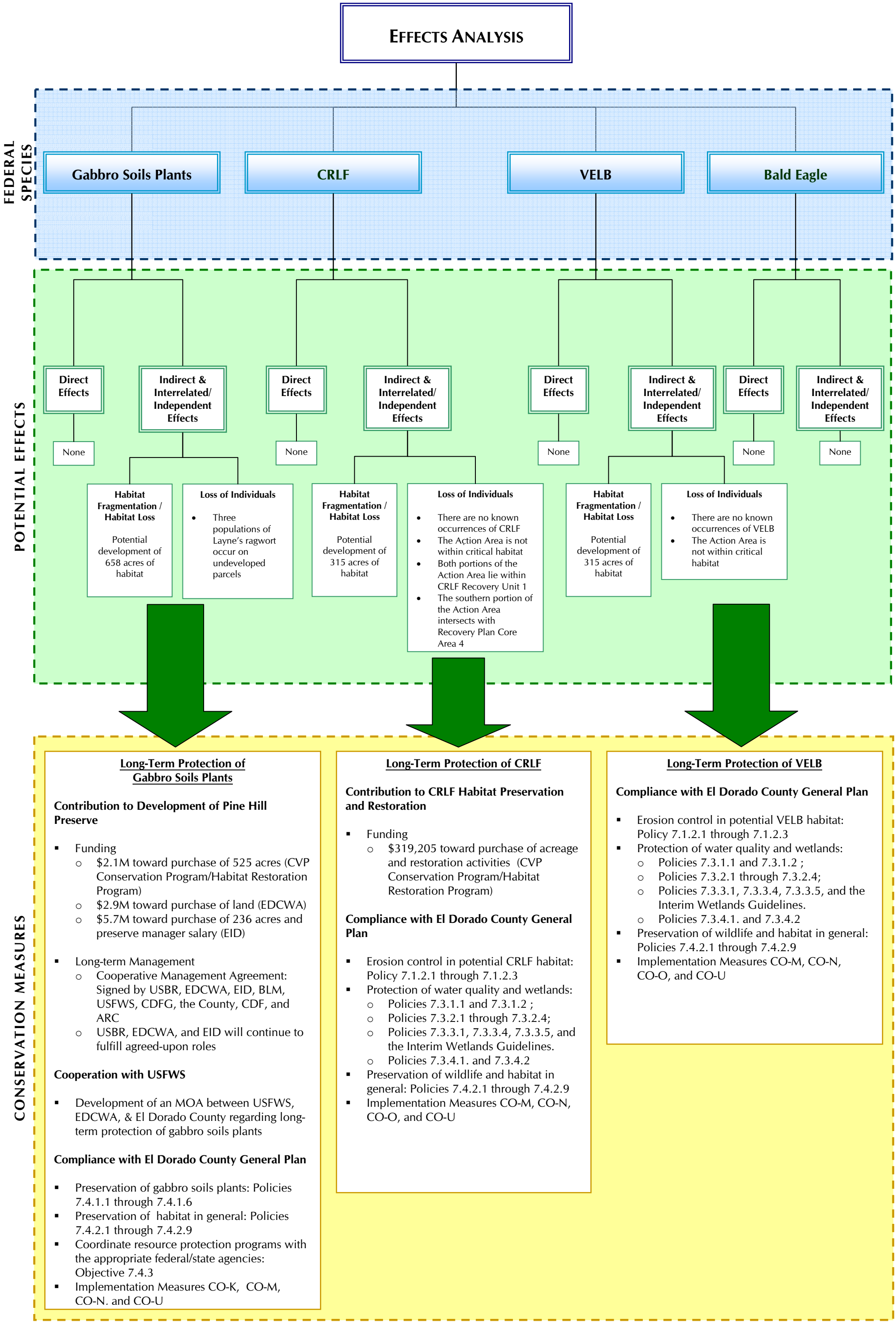
There are 3 known occurrences of bald eagle in El Dorado County (CNDDDB 2007).

Appendix H



Effects Analysis Summary

U.S. BUREAU of RECLAMATION / EL DORADO COUNTY WATER AGENCY
CENTRAL VALLEY PROJECT WATER SERVICE CONTRACT



APPENDIX H – HYDROLOGIC MODELING TECHNICAL MEMORANDUM

**New CVP Water Service Contract
Authorized Under
Public Law 101-514 (Section 206)
Modeling Technical Memorandum**

Prepared for:

EIP|PBS&J

Prepared by:



August 2007

New CVP Water Service Contract
Authorized Under
Public Law 101-514 (Section 206)
Modeling Technical Memorandum

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List of Acronyms

ATSP	Automated Temperature Selection Procedure
BA	Biological Assessment
BO	Biological Opinion
CALSIM II	DWR and Reclamation Simulation Model
CBDA	California Bay-Delta Authority
cfs	cubic feet per second
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
D-1644	SWRCB Decision-1644
DA	Drainage Area
Delta	San Joaquin-Sacramento Delta
DWR	California Department of Water Resources
E/I	export-to-inflow
EID	El Dorado Irrigation District
EIR/EIS	Environmental Impact Report/Environmental Impact Statement
ESA	Endangered Species Act (federal)
EWA	Environmental Water Account
FERC	Federal Energy Regulatory Commission
FMS	Flow Management Standard
FUI	Folsom Unimpaired Inflow
GDPUD	Georgetown Divide Public Utilities District
HEC-3	Corp of Engineers Reservoir System Model HEC-3
LongTermGen	Long Term Generation Model
M&I	municipal and industrial
NMFS	National Marine Fisheries Service
Nodes	logical location in CALSIM II model
OCAP	Operations Criteria and Plan
PCWA	Placer County Water Agency
PEIS	Programmatic Environmental Impact Statement
PL	Public Law
ppt	parts per thousand
Proposed Yuba Accord	Proposed Lower Yuba River Accord
QA/QC	Quality Assurance/Quality Control
Reclamation	Bureau of Reclamation
ROD	Record of Decision
SDIP	South Delta Improvements Program
SRWRS	Sacramento River Water Reliability Study
SV	Starting Value
SWP	State Water Project
SWRCB	State Water Resources Control Board
SWRI	Surface Water Resources, Inc.
TAF	thousand acre-feet
TCD	temperature control device
TU	thermal unit
UARM	Upper American River Model
USFWS	U.S. Fish and Wildlife Service
VAMP	Vernalis Adaptive Management Plan
WQCP	Water Quality Control Plan
WR	Water Right
X2	2 parts per thousand near bottom salinity isohaline

New CVP Water Service Contract Authorized Under Public Law 101-514 (Section 206) Modeling Technical Memorandum

SECTION 1 INTRODUCTION

El Dorado Irrigation District (EID) and Georgetown Divide Public Utility District (GDPUD) are attempting to obtain a new Central Valley Project (CVP) Water Service Contract under Public Law (PL) 101-514 (Section 206). This Modeling Technical Memorandum documents the computer modeling performed to allow analysis of the alternatives being evaluated as a part of this process.

The modeling scope of work includes:

- Finalize modeling assumptions within project team.
- Implement the defined alternatives in operations, temperature, biological, and hydropower models.
- Perform the required alternative simulations.
- Produce a defined set of outputs comparing reservoir storage, stream flow, water temperatures, salmon mortality and hydropower at various locations throughout the CVP and State Water Project (SWP) system.

There are eight pre-defined alternatives consisting of different combinations of EID and GDPUD diversion allocations to be modeled. **Table 1** summarizes the EID and GDPUD diversion allocations, by water type, modeled in each alternative.

Table 1. Annual EID and GDPUD Diversion Allocation Volumes by Diversion Type for Each Alternative Modeled (TAF)

Alternative	EID				GDPUD @ Auburn	
	CVP MI	PL 101-514	WR	Supp WR	PL 101-514	Supp WR
Proposed Action (Base Condition)	7.55					
Proposed Action – Scenario A	7.55	7.5			7.5	
Proposed Action – Scenario B	7.55	15			0	
Proposed Action – Scenario C	7.55	4			11	
Alternative 1 – Reduced Diversion	7.55	3.75			3.75	
Alternative 2 – No Action	7.55		15			
Future – Cumulative	7.55	7.5	15	30	7.5	10
Future C No Action	7.55		15	30		10
TAF = thousand acre-feet WR = water right						

There are eight required comparisons between the eight simulations. **Table 2** lists these comparisons.

Table 2. Simulation Comparisons

Comparison	Base Scenario	Compared Scenario
Proposed Action Evaluation	Proposed Action (Base Condition)	Proposed Action – Scenario A
Proposed Action Evaluation (Max EID)	Proposed Action (Base Condition)	Proposed Action – Scenario B
Proposed Action Evaluation (Max GDPUD)	Proposed Action (Base Condition)	Proposed Action – Scenario C
Reduced Diversion Alternative Evaluation	Proposed Action (Base Condition)	Alternative 1 – Reduced Diversion
No-Action Evaluation	Proposed Action (Base Condition)	Alternative 2 – No Action
Future Cumulative Evaluation	Proposed Action (Base Condition)	Future Cumulative Condition
Proposed Action on Future Cumulative ¹	Future No Action	Future Cumulative Condition
Proposed Action on Future Cumulative ¹	Proposed Action (Base Condition) Vs Future Cumulative Condition Minus Proposed Action (Base Condition) Vs Future No Action	
¹ For increment of Proposed Action on the Future Cumulative Condition, there are two possible evaluations. Both will be prepared.		

This memorandum provides detailed information regarding the modeling tools, primary modeling assumptions, model inputs, and methodologies that were used to perform the simulations and prepare the outputs under the various alternatives.

The scope does not include any analysis of the modeling output other than quality assurance/quality control (QA/QC) activities to ensure that the alternatives are correctly and adequately represented in the simulations.

SECTION 2 MODELING APPROACH

The scenarios to be modeled all involve changes to diversions at the American River Pump Station and/or Folsom Reservoir. These changes have the potential to create impacts to downstream operations, especially to Folsom Reservoir and American River operations, and to a lesser extent to the entire CVP/SWP system.

2.1 TYPES OF MODELING REQUIRED

Simulation of these potential impacts and production of the specified output requires several specific types of modeling:

- CVP/SWP System Operational Modeling – Simulation of the physical operation of the system, the reservoir storages, and river flows expected under each scenario. Folsom Reservoir is a part of the Bureau of Reclamation’s (Reclamation or USBR) CVP. Because the CVP is operated as a single, inter-related system and the CVP and the SWP operate jointly to meet flow and quality requirements in the Sacramento-San Joaquin Delta (Delta), any changes in Folsom Reservoir operations have the potential to impact operations throughout the entire CVP/SWP system.
- Temperature Modeling – Simulation of the temperatures in reservoirs and streams of the system resulting from the physical operation. The temperature modeling on the American River also includes consideration of the operation of the Folsom Reservoir Cold Water Pool to maximize benefits to downstream aquatic resources.
- Salmon Mortality Modeling – Simulation of the salmon mortality in the system resulting from the physical operation and resulting temperatures.

- Hydropower Modeling – Computation of the hydropower generation and pumping energy usage resulting from the physical operation.

2.2 MODELING PROCESS

The modeling will be done by developing two baseline simulations: (1) the Proposed Action (Base Condition) and, (2) the Future No Action scenario. These two simulations are assumed to represent the Existing and Future Level Conditions, without the project under evaluation included. The alternative simulations are developed by adding the appropriate assumptions for each alternative to the appropriate baseline simulation.

2.2.1 *Alternative Simulation Process*

Computer simulation models of water systems provide a means for evaluating changes in system characteristics such as reservoir storage, stream flow, and hydropower generation, as well as the effects of these changes on environmental parameters such as water temperature, water quality, and early life stage Chinook salmon survival. The models and post-processing tools used for this modeling effort include the following:

- CALSIM II – Reclamation and the California Department of Water Resources (DWR) simulation model of integrated CVP and SWP system operations. This model provides a monthly simulation of the CVP and SWP water operations including reservoir inflows, releases, and storage, river flow throughout the system, CVP/SWP pumping and Delta operations.
- USBR Reservoir Temperature Model – Reclamation Trinity, Shasta, Whiskeytown, Oroville, and Folsom reservoir water temperature models. This set of models uses the simulated operational data from the CALSIM II model to simulate the reservoir temperature profiles and release temperatures from each of the modeled reservoirs.
- USBR River Temperature Model – Reclamation Trinity, Sacramento, Feather, and American (with Automated Temperature Selection Procedure [ATSP]) river water temperature models. This set of models uses the simulated reservoir release temperatures and operational results from the CALSIM II model to simulate the river water temperatures throughout the CVP/SWP system.
- USBR Salmon Mortality Model – Reclamation Feather, and Sacramento River early life stage Chinook salmon mortality models. This set of models uses the simulated river temperatures and the operational results from the CALSIM II model to simulate the salmon mortality rates resulting from the flow and temperatures for the scenario.
- LongTermGen Model – This model computes the CVP hydropower generation and pumping energy usage resulting from the simulated physical operation.
- General Purpose Output Generation Tool – This tool extracts, processes and formats data from the outputs of all the above modeling to produce the required results.

These models and related post-processing tools are described in detail in Section 3, Models Used.

2.3 MODELING SCENARIO DEVELOPMENT

CALSIM II modeling undertaken for Reclamation's Operations Criteria and Plan (OCAP) Biological Assessment (BA) was used to provide the foundation for CVP/SWP system-wide baseline conditions simulations used to represent the Proposed Action (Base Condition) and the Future No Action scenarios.

The OCAP_2001D10A_TodayEWA_012104, or OCAP 3 simulation, is an existing level simulation with many of the desired baseline assumptions; however, OCAP 3 did not include the higher Trinity minimum flow requirements of the Record of Decision (ROD) of the Trinity River Main Stem Fishery Restoration Environmental Impact Statement/Environmental Impact Report (EIS/EIR). These new requirements were added, and the results reviewed by Reclamation, in a CALSIM II simulation commonly referred to as OCAP 3a. The Proposed Action (Base Condition) is based on the OCAP 3a simulation.

The Future No Action simulation is based on the OCAP_2020D09D_FutureEWA5a simulation.

These two simulations were modified to include updated inputs for lower Yuba River outflow to the Feather River, lower Yuba River diversions at Daguerre Point Dam, Trinity River instream flow requirements downstream of Lewiston Dam (by use of OCAP 3a), and EID diversion at Folsom Lake as required and run to produce the existing and future level baseline simulations. These baseline simulations were then modified as required to implement the specific project changes to produce each the project modeling scenarios.

The final CALSIM II simulations are then used as the basis for the temperature, salmon mortality, and hydropower modeling to complete the simulation of the individual scenarios.

The required outputs for each alternative comparison were created by an automated process that creates a Microsoft Excel file with all desired output tables for each comparison.

Details on this process are given in the following sections.

SECTION 3 MODELS USED

3.1 CALSIM II MODEL

CALSIM II was jointly developed by Reclamation and DWR for planning studies relating to CVP and SWP operations. The primary purpose of CALSIM II is to evaluate the water supply reliability of the CVP and SWP at current or future levels of development (e.g. 2001, 2020), with and without various assumed future facilities, and with different modes of facility operations. Geographically, the model covers the drainage basin of the Delta, and SWP exports to the San Francisco Bay Area, Central Coast, and Southern California.

CALSIM II uses a mass balance approach to simulate the occurrence, regulation, and movement of water from one river reach (computation point or node) to another. Various physical processes (e.g., surface water inflow or accretion, flow from another node, groundwater accretion or depletion, and diversion) are simulated or assumed at each node as necessary. Operational constraints, such as reservoir size, seasonal storage limits, and minimum flow requirements, also are defined for each node. Accordingly, flows are specified as a mean flow for the month, and reservoir storage volumes are specified as end-of-month values. In addition, modeled X2 (2 parts per thousand [ppt] near bottom salinity isohaline) locations are specified as

end-of-month locations, Delta outflows are specified as mean outflows for each month, and Delta export-to-inflow (E/I) ratios are specified as mean ratios for each month.

CALSIM II typically simulates system operations for a 73-year period using a monthly time-step. The model assumes that facilities, land use, water supply contracts, and regulatory requirements are constant over this period, representing a fixed level of development (e.g., 2001 or 2020). The historical flow record of October 1921 to September 1994, adjusted for the influence of land use change and upstream flow regulation, is used to represent the possible range of water supply conditions. It is assumed that past hydrologic conditions are a good indicator of future hydrologic conditions.

The model simulates one month of operation at a time, with the simulation passing sequentially from one month to the next, and from one year to the next. Each estimate that the model makes regarding stream flow is the result of defined operational priorities (e.g. delivery priorities to water right holders, and water contractors), physical constraints (e.g., storage limitations, available pumping and channel capacities), and regulatory constraints (flood control, minimum instream flow requirements, Delta outflow requirements). Certain decisions, such as the definition of water year type, are triggered once a year, and affect water delivery allocations and specific stream flow requirements. Other decisions, such as specific Delta outflow requirements, vary from month to month. CALSIM II output contains estimated flows and storage conditions at each node for each month of the simulation period. Simulated flows are mean flows for the month, reservoir storage volumes correspond to end-of month storage.

CALSIM II simulates monthly operations of the following water storage and conveyance facilities:

- Trinity, Lewiston, and Whiskeytown reservoirs (CVP);
- Spring Creek and Clear Creek tunnels (CVP);
- Shasta and Keswick reservoirs (CVP);
- Oroville Reservoir and the Thermalito Complex (SWP);
- Folsom Reservoir and Lake Natoma (CVP);
- New Melones Reservoir (CVP);
- Millerton Lake (CVP);
- C.W. Jones (CVP), Contra Costa (CVP) and Harvey O. Banks (SWP) pumping plants; and
- San Luis Reservoir (shared by CVP and SWP).

To varying degrees, nodes also define CVP/SWP conveyance facilities including the Tehama-Colusa, Corning, Folsom-South, and Delta-Mendota canals and the California Aqueduct. Other non-CVP/SWP reservoirs or rivers tributary to the Delta also are modeled in CALSIM II, including:

- New Don Pedro Reservoir;
- Lake McClure; and
- Eastman and Hensley lakes.

3.1.1 *Related Tools*

The CALSIM II model requires an enormous amount of input data in order to perform the complicated routing and operations logic included in the model. This data comes from other

models and variety of input generation tools. Two of these tools, the Demands Spreadsheet and the Upper American River Model (UARM), were used in this project.

3.1.1.1 *Demands Spreadsheet*

This is an Excel-based spreadsheet that allows the user to input the demands for different contractors and generates the required time series input to implement these demands. This spreadsheet works by taking the annual total for each contractor demand, applying any adjustments to the total, creating the monthly time series demand data, and combining the contractor demands as required, creating the total monthly demand at CALSIM nodes for use as input to the CALSIM II model.

The spreadsheet computational procedures from this spreadsheet were used to guide the development of the modified CALSIM II input of the EID and GDPUD demands required to implement the alternatives.

3.1.1.2 *Upper American River Model*

The UARM is a combination of an HEC III model of the reservoir system in the Upper American River Basin and an Excel-based spreadsheet that computes adjustments required to a simulation of the basin to implement the Middle Fork Project coordination with Folsom Reservoir Operations. This model provides CALSIM II input data on Folsom inflows, diversions at the North Fork American River Pump Station, and allowable flood control space in Folsom Reservoir. The UARM is fully described in the report titled: *Upper American River Model, Analysis of Placer County Water Agency's Middle Fork Project* (SWRI 2000).

3.2 BUREAU OF RECLAMATION'S WATER TEMPERATURE MODELS

Reclamation has developed water temperature models for the Trinity, Sacramento, Feather, and American rivers. The models have both reservoir and river components to simulate water temperatures in five major reservoirs (Trinity, Whiskeytown, Shasta, Oroville, and Folsom); four downstream regulating reservoirs (Lewiston, Keswick, Thermalito, and Natoma); and four main river systems (Trinity, Sacramento, Feather, and American).

The following sections provide additional detail regarding the reservoir and river components of the water temperature models, respectively. Additional details regarding Reclamation's water temperature models are well documented in the Central Valley Project Improvement Act (CVPIA) *Draft Programmatic EIS Technical Appendix, Volume Nine* (Reclamation 1997). These water temperature models also are documented in the report titled: *U.S. Bureau of Reclamation Monthly Temperature Model Sacramento River Basin* (Reclamation 1990).

3.2.1 *Bureau of Reclamation's Reservoir Water Temperature Models*

Reclamation's reservoir models simulate monthly water temperature profiles in five major reservoirs: Trinity, Whiskeytown, Shasta, Oroville, and Folsom. The vertical water temperature profile in each reservoir is simulated in one dimension using monthly storage, inflow and outflow water temperatures and flow rates, evaporation, precipitation, solar radiation, and average air temperature. The models also compute the water temperatures of dam releases. Release water temperature control measures in reservoirs, such as the penstock shutters in Folsom Reservoir and the temperature control device (TCD) in Shasta Reservoir, are incorporated into the models.

Reservoir inflows, outflows, and end-of-month storage calculated by CALSIM II and post-processing applications are input into the reservoir water temperature models. Additional input data include meteorological information and monthly water temperature targets that are used by the model to select the level from which reservoir releases are drawn. Water TCDs, such as the outlet control device in Shasta Dam, the temperature curtains in Whiskeytown Dam, and the penstock shutters in Folsom Dam, are incorporated into the simulation. Model output includes reservoir water temperature profiles and water temperatures of the reservoir releases. The reservoir release water temperatures are then used in the downstream river water temperature models, as described in the next section.

3.2.1.1 Automated Temperature Selection Procedure

The ATSP, developed by HDR|SWRI, works with the Folsom Reservoir temperature model to optimize the use of Folsom Reservoir's cold water pool throughout the year for the benefit of downstream aquatic resources. The procedure starts with multiple sets of monthly temperature targets on the American River at Watt Avenue. These targets are designed to provide the optimum biological benefit throughout the year to the downstream aquatic resources for varying levels of cold water availability. The procedure selects a set of targets for each year and runs the Folsom Reservoir temperature model for the period of record. The results are then compared to the targets for each year to see if they were met. If the targets were met, a new set with higher biological benefit is selected; if they are not met, a new set with lower biological benefit is selected. Each year is treated independently, that is, each year has its own set of targets based on the specific characteristics of that year that may be different from any other year. The procedure continues until the selected targets each year represent the highest level of biological benefit that can be met for that year.

3.2.1.2 EID Temperature Control Device

The Folsom Reservoir temperature model does not explicitly model any TCD on the EID diversion; however the model does include a TCD on the main downstream release outlets and at the Folsom Pump Station. The input for the Folsom Reservoir temperature model is generated by a utility that reads flow data from the CALSIM II output and prepares the inputs for the temperature model. To implement an EID TCD, the CALSIM II output is copied and the EID diversion is added to the flow of the Folsom Pump Station then set to 0 to create a "virtual" CALSIM II output that can be read by the utility to generate the Folsom Reservoir Temperature model input. The effect is that the Folsom Temperature model will now route the EID diversion through the Folsom Pump Station TCD as an approximation of a TCD on the EID diversion. The volume of the release to the American River is not changed and the water balance is maintained at Folsom Reservoir.

3.2.2 Bureau of Reclamation's River Water Temperature Models

Reclamation's river water temperature models utilize the calculated temperatures of reservoir releases, much of the same meteorological data used in the reservoir models, and CALSIM II outputs for river flow rates, gains and water diversions. Mean monthly water temperatures are calculated at multiple locations on the Sacramento, Feather, and American rivers.

Reservoir release rates and water temperatures are the boundary conditions for the river water temperature models. The river water temperature models compute water temperatures at 52

locations on the Sacramento River from Keswick Dam to Freeport, and at multiple locations on the Feather and American rivers. The river water temperature models also calculate water temperatures within Lewiston, Keswick, Thermalito, and Natoma reservoirs. The models are used to estimate water temperatures in these reservoirs because they are relatively small bodies of water with short residence times; thereby, on a monthly basis, the reservoirs act as if they have physical characteristics approximating those of riverine environments.

3.3 BUREAU OF RECLAMATION'S EARLY LIFE STAGE CHINOOK SALMON MORTALITY MODELS

Water temperatures calculated for specific reaches of the Sacramento and Feather rivers are used as inputs to Reclamation's Early Life Stage Chinook Salmon Mortality Models (Salmon Mortality Models) to estimate annual mortality rates of Chinook salmon during specific early life stages. For the Sacramento River analyses, the model estimates mortality for each of the four Chinook salmon runs: fall, late fall, winter, and spring. For the Feather River analyses, the model¹ produces estimates of fall-run Chinook salmon mortality. Because hydrologic conditions in the Yuba River are not characterized in Reclamation's current Salmon Mortality Models, it is not possible to estimate changes in early life stage mortality for Chinook salmon in the lower Yuba River.

The Salmon Mortality Models produce a single estimate of early life stage Chinook salmon mortality in each river for each year of the simulation. The overall salmon mortality estimate consolidates estimates of mortality for three separate Chinook salmon early life stages: (1) pre-spawned (in utero) eggs; (2) fertilized eggs; and (3) pre-emergent fry. The mortality estimates are computed using output water temperatures from Reclamation's water temperature models as inputs to the Salmon Mortality Models. Thermal units (TUs), defined as the difference between river water temperatures and 32°F, are used by the Salmon Mortality Models to track life stage development, and are accounted for on a daily basis. For example, incubating eggs exposed to 42°F water for one day would experience 10 TUs. Fertilized eggs are assumed to hatch after exposure to 750 TUs. Fry are assumed to emerge from the gravel after being exposed to an additional 750 TUs following hatching.

Because the models are limited to calculating mortality during early life stages, they do not evaluate potential impacts to later life stages, such as recently emerged fry, juvenile out-migrants, smolts, or adults. Additionally, the models do not consider other factors that may affect early life stage mortality, such as adult pre-spawn mortality, instream flow fluctuations, redd superimposition, and predation. Because the Salmon Mortality Models operate on a daily time-step, a procedure is required to convert the monthly water temperature output from the water temperature models into daily water temperatures. The Salmon Mortality Models compute daily water temperatures based on the assumption that average monthly water temperature occurs on the 15th of each month, and interpolate daily values from mid-month to

¹ For the purposes of improved technical accuracy and analytical rigor, simulated Chinook salmon early life stage survival estimates specific to the Feather River are derived from a revised version of Reclamation's Salmon Mortality Model (2004), which incorporates new data associated with: (1) temporal spawning and pre-spawning distributions; and (2) mean daily water temperature data in the Feather River. Although the updated Feather River information serving as input into the model deviates slightly from that which was used in Reclamation's OCAP BA, both versions of the model are intended for planning purposes only, and thus should not be used as an indication of actual real-time in-river conditions. Because a certain level of bias is inherently incorporated into these types of planning models, such bias is uniformly distributed across all modeled simulations, including both the Project Alternatives and the bases of comparison, regardless of which version of the model is utilized.

mid-month. Output from the Salmon Mortality Models provide estimates of annual (rather than monthly mean) losses of emergent fry from egg potential (i.e., all eggs brought to the river by spawning adults) (Reclamation 2003).

3.3.1 Lower Feather River Early Life Stage Chinook Salmon Mortality Model Revisions

During March 2004, Reclamation's Salmon Mortality Model was revised to include updated information regarding the temporal distribution of Chinook salmon spawning activity in the lower Feather River. The revised Feather River Salmon Mortality Model estimates the water temperature-induced early life stage mortality using updated pre-spawning and spawning temporal distributions, which were derived from estimated daily carcass distributions. Estimated daily carcass distributions were derived from daily observations of Chinook salmon carcasses during the 2002 spawning period. Additional information regarding the use of carcass survey data as a basis for development of pre-spawning and spawning temporal distributions in the Feather River, is described in the Oroville Facilities Relicensing, Federal Energy Regulatory Commission (FERC) Project 2100, Study Plan F-10 - *Task 2C: Evaluation of the timing, magnitude, and frequency of water temperatures and their effects on Chinook salmon egg and alevin survival* (DWR 2004).

While the revised Feather River Salmon Mortality Model utilizes updated pre-spawning and spawning temporal distributions as bases from which to calculate early life stage mortality, the remaining model assumptions, computations, and input variables remain unchanged from Reclamation's Feather River Early Life Stage Chinook Salmon Mortality Model.

3.3.2 Other Salmon Mortality Model Considerations

Three separate reviews of the National Marine Fisheries Service (NMFS) October 2004 Biological Opinion on the Long-Term Central Valley Project and State Water Project OCAP (NMFS 2004) have been conducted to determine whether NMFS (2004) used the best available scientific and commercial information (California Bay-Delta Authority 2005).

McMahon (2006) acknowledged that a lack of information on how water operations related habitat alterations affect Central Valley salmonid populations exists. In this context, McMahon (2006) concluded that, "...the Biological Opinion (BO) appears to be based on best available information with regards to temperature effects on survival of salmonid embryos and early fry in the upper Sacramento River and major tributaries...".

Maguire (2006) reported two general concerns related to the salmon mortality model. First, Maguire (2006) stated, "*The mean monthly temperature may in fact be of little predictive value for mortality estimation without knowing (using) the variability and duration of variability.*" Second, Maguire (2006) suggested that the salmon mortality model is of limited usefulness because it does not evaluate potential impacts on emergent fry, smolts, juvenile emigrants, or adults, and the model only considers water temperature as a source of mortality.

With respect to the application of the salmon early life stage mortality model in NMFS (NMFS 2004), three concerns were reported within the California Bay-Delta Authority (CBDA) report (California Bay-Delta Authority 2005). First, CBDA (2005) questioned the use of water temperature predictions that were developed by linear interpolation between monthly means without accounting for variation. Second, water temperature at the time of spawning was taken

as an index of pre-spawning water temperature exposure, which reportedly may be an unsatisfactory approach for spring-run Chinook salmon, which may hold in the river throughout the summer. Lastly, and reportedly the expert panel's most serious concern, "...the data used to develop the relationships between temperature and mortality on eggs, alevins, and especially gametes was not the best available."

To address these three concerns, the expert panel recommended that NMFS should: (1) perform a thorough analysis of the data, relationships, and calculations of the salmon mortality model; (2) investigate how variation around monthly mean water temperatures would affect salmon mortality model results; and (3) suggest or make improvements to the model. It is uncertain whether NMFS will accept these recommendations and undertake these efforts to address the concerns raised with technical details of the salmon mortality model. At this time, this process has not been undertaken and salmon mortality model improvements have not been identified and incorporated into the model. Therefore, the existing salmon mortality model is the best available model for comparing the potential water temperature related effects of the Proposed Action and alternatives on Chinook salmon early life stages to those of the basis of comparison.

3.4 LONGTERMGEN MODEL

The LongTermGen Model is a CVP power model developed to estimate the CVP power generation, capacity, and project use based on the operations defined by a CALSIM II simulation. Created using Microsoft's Excel spreadsheet with extensive Visual Basic programming, the LongTermGen Model computes monthly generation, capacity, and project use (pumping power demand) for each CVP power facility for each month of the CALSIM II simulation.

The LongTermGen Model does not compute the energy requirement or loads at the EID pumping plant directly. It does compute the pumping power requirements for the diversion at Node 8, which represents several diversions from Folsom Reservoir, including the EID diversion.

3.5 MODEL LIMITATIONS

Reclamation's OCAP BA outlines the limitations of three of the models that were used in the assessment conducted for the most recent Section 7 consultations on the OCAP, which led to NMFS and USFWS Biological Opinions (BOs) for winter-run and spring-run Chinook salmon, steelhead, and delta smelt. These models (i.e., CALSIM II, water temperature, and salmon mortality) are the same models used to conduct the modeling analysis presented in the Draft EIR/EIS for the Proposed Yuba Accord. The following discussion regarding the model limitations used in the modeling analysis is taken directly from the CVP and SWP OCAP BA.

"The main limitation of CALSIM II and the temperature models used in the study is the time-step. Mean monthly flows and temperatures do not define daily variations that could occur in the rivers due to dynamic flow and climatic conditions. However, monthly results are still useful for general comparison of alternatives. The temperature models are also unable to accurately simulate certain aspects of the actual operations strategies used when attempting to meet temperature objectives, especially on the upper Sacramento River. To account for the short-term variability and the operational flexibility of the system to respond to changing conditions, cooler water than that indicated by the model is released in order to avoid exceeding the required downstream temperature target. There is also uncertainty regarding performance characteristics of the Shasta

TCD [temperature control device]. Due to the hydraulic characteristics of the TCD, including leakage, overflow, and performance of the side intakes, the model releases are cooler than can be achieved in real-time operations; therefore, a more conservative approach is taken in real-time operations that is not fully represented by the models.

The salmon model is limited to temperature effects on early life stages of Chinook salmon. It does not evaluate potential direct or indirect temperature impacts on later life stages, such as emergent fry, smolts, juvenile out-migrants, or adults. Also, it does not consider other factors that may affect salmon mortality, such as in-stream flows, gravel sedimentation, diversion structures, predation, ocean harvest, etc. Since the salmon mortality model operates on a daily time-step, a procedure is required to utilize the monthly temperature model output. The salmon model computes daily temperatures based on linear interpolation between the monthly temperatures, which are assumed to occur on the 15th day of the month.

CALSIM II cannot completely capture the policy-oriented operation and coordination the 800,000 of dedicated CVPIA 3406 (B)(2) water and the CALFED EWA. Because the model is set up to run each step of the 3406(B)(2) on an annual basis and because the WQCP and ESA actions are set on a priority basis that can trigger actions using 3406(b)(2) water or EWA assets, the model will exceed the dedicated amount of 3406(b)(2) water that is available. Moreover, the 3406(b)(2) and EWA operations in CALSIM II are just one set of plausible actions aggregated to a monthly representation and modulated by year type. However, they do not fully account for the potential weighing of assets versus cost or the dynamic influence of biological factors on the timing of actions. The monthly time-step of CALSIM II also requires day-weighted monthly averaging to simulate minimum instream flow levels, VAMP actions, export reductions, and X2-based operations that occur within a month. This averaging can either under- or over-estimate the amount of water needed for these actions.

Since CALSIM II uses fixed rules and guidelines results from extended drought periods might not reflect how the SWP and CVP would operate through these times. The allocation process in the modeling is weighted heavily on storage conditions and inflow to the reservoirs that are fed into the curves mentioned previously in the Hydrologic Modeling Methods section beginning on page 8-1 and does not project inflow from contributing streams when making an allocation. This curve based approach does cause some variation in results between studies that would be closer with a more robust approach to the allocation process" (Reclamation 2004).

Model assumptions and results are generally believed to be more reliable for comparative purposes than for absolute predictions of conditions. All of the assumptions are the same for both the with-project and without-project model runs, except assumptions associated with the action itself, and the focus of the analysis is the differences in the results. For example, model outputs for the Proposed Project/Proposed Action can be compared to that of the No Project and No Action simulations. Results from a single simulation may not necessarily correspond to actual system operations for a specific month or year, but are representative of general water supply conditions. Model results are best interpreted using various statistical measures such as long-term and year-type average, and probability of exceedance.

SECTION 4 MODEL SIMULATION DEVELOPMENT

4.1 FOUNDATION SIMULATIONS

In 2004, several CALSIM II simulations were performed to support Reclamation's Long-Term OCAP BA. These simulations represent a consensus on the physical features and regulatory environment that the SWP/CVP system would operate under at that time. Two of these simulations, OCAP_2001D10A_TodayEWA_012104, modified to include the Trinity minimum flow requirements of the ROD of the Trinity River Main Stem Fishery Restoration EIS/EIR (OCAP 3) and OCAP_2020D09D_FutureEWA5a (OCAP 5a), were selected for use as the basis for development of the alternative simulations performed in this study. Detailed information on the assumptions included in these simulations is included in the OCAP BA.

4.2 BASELINE SIMULATIONS

A number of assumptions in the foundation simulations not directly related to the project need modification or updating based on changes since the OCAP foundation simulations were performed. Table 3 summarizes these assumptions.

Table 3. Major Differences in Assumptions Between Foundation and Baseline Simulations

Assumption	OCAP3	Existing Level Baseline	OCAP5a	Future Level Baseline
Level of Demand	Existing	Existing	Future	Future
Trinity ROD	No	Yes	Yes	Yes
Yuba River Operation	Hec-3	D-1644 Interim	HEC-3	Yuba Accord
Water Forum Agreement Cuts (Pl 101 Water)	No	No	Yes	No
Lower American River Flow Management Study	No	No	No	Yes
Banks Pumping Capacity	6,680 cfs	6,680 cfs	6,680 cfs	6,680 cfs
Supplemental Water Rights Project	No	No	No	Yes
EID Temperature Control Device [†]	No	No	No	Yes
Non EID American River Demands	Same	SRWRS	Same	SRWRS
UARM		SRWRS		SRWRS

[†] This is implemented in the temperature modeling. It has no impact on the CALSIM II modeling.

The Existing and Future level baseline simulations will be compared to the foundation simulations to ensure that the assumptions were properly implemented as part of the QA/QC process. The standard set of outputs for all other alternative comparisons will not be prepared for these comparisons. No evaluation will be made of the potential impacts of the changes from the OCAP simulations. The temperature, salmon mortality, and power models will not be run on these simulations.

4.2.1 Existing Level Baseline simulation

Several updates were made to the OCAP 3 simulation for use as the Existing Level baseline simulation in this project.

- Trinity ROD – OCAP 3 did not include the higher Trinity minimum flow requirements of the ROD on the Trinity River Main Stem Fishery Restoration EIS/EIR. These new requirements have been added, and the results reviewed by Reclamation in a CALSIM II simulation, commonly referred to as OCAP3a. The OCAP 3a simulation was adopted as the starting point for this simulation.

- ❑ **River Operation** – The Yuba River is modeled in CALSIM II as an inflow to and diversion from the Daguerre Point Dam at Node 211. In the OCAP 3a simulation these values were based on an existing HEC-3 model of the Upper Yuba River basin and did not include State Water Resources Control Board Decision 1644 (D-1644) flow requirements on the Yuba River. The inflow and diversion at Daguerre Point Dam were updated with values based on D-1644 Interim standards on the River and existing level demands on the diversion developed in support of the Proposed Yuba Accord EIR/EIS.
- ❑ **American River Demands** – The demands on the American River have changed since the OCAP simulations were performed. The modeling performed for the Sacramento River Water Reliability Study (SRWRS) developed new American River demand sets that includes these most recent demand assumptions. The demands from the SRWRS Study 1, the SRWRS Existing Condition Baseline, were selected for use in this simulation. **Figure 1** compares the American River demands between the OCAP 3a foundation study and SRWRS Study 1.

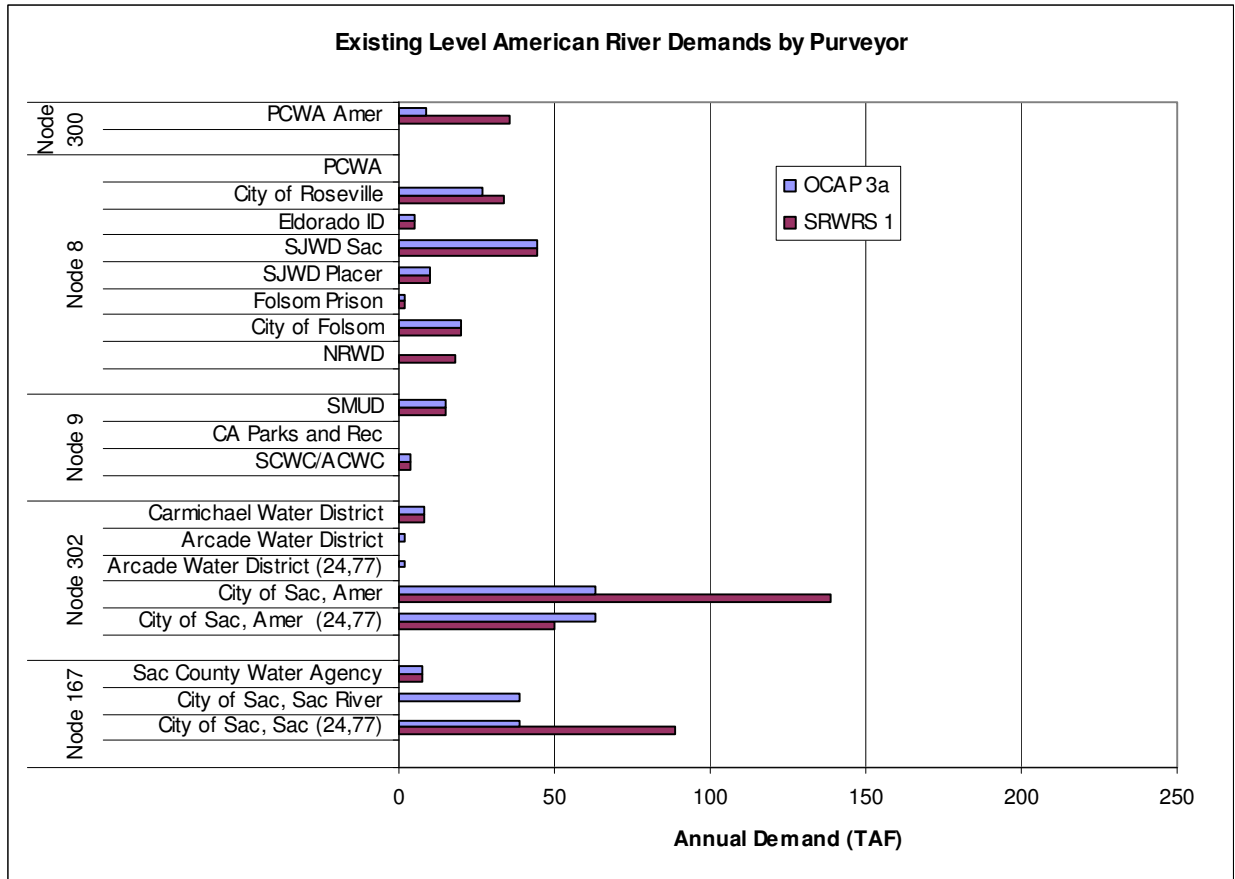


Figure 1. Comparison of OCAP 3a and SRWRS 1 American River Demands

The largest difference between the two simulations is in the way the City of Sacramento demands are modeled. In CALSIM II, the City's demands are imposed at two locations, Node 302 on the American River and Node 167 on the Sacramento River. CALSIM II also imposes the "Hodge" criteria on the City demand. This criteria states that when the flow in the American River becomes low enough, the City of Sacramento will shift some of its

diversion from the American River to the Sacramento River. In the SRWRS 1 demands the City of Sacramento demand is initially shifted to the American River, internally CALSIM will shift the demand back to the Sacramento River when the “Hodge” criteria becomes effective. The extremely dry years 1924 and 1977 do not include this shift.

- ❑ UARM Simulations – Folsom Reservoir’s inflow and flood control reservation are dependant of the operations of reservoirs in the Upper American River. These reservoirs operate for both within-basin requirements, to meet downstream American River demands from the Middle Fork Project and to provide “make up” water for Roseville. The SRWRS modeling included a simulation of the Upper American River model to get the appropriate American River inflows to Folsom Reservoir. The results of these UARM simulations, taken from the SRWRS CALSIM input files, were used in this modeling effort.

4.2.2 *Future Level Baseline Simulation*

Four updates were made to the OCAP 5a simulation for use as the Future Condition Baseline simulation in this project.

- ❑ Yuba River Operation – The Yuba inflow to and diversion from Daguerre Point Dam in the OCAP 5a simulation were based on a HEC-III model of the Upper Yuba River Basin. The inflow and diversion at Daguerre Point Dam were updated with values based on D-1644 standards on the river and Future Level demands on the diversion developed in support of the Proposed Yuba Accord EIR/EIS.
- ❑ Water Forum Agreement Cuts – OCAP 5a included some PL 101 water diversions for EID and GDPUD that were assumed subject to cuts based on the Water Forum Agreement. Neither EID nor GDPUD is a signatory to the Water Forum Agreement at this time. For this project, the assumption was made that they would not become signatories and the diversions would not be subject to the cuts. Any CVP water would still be subject to the CVP North of Delta system cuts computed by CALSIM II. This assumptions means that we could be simulating slightly higher diversions in the driest years (FUI <=400 TAF) which could slightly overestimate impacts in those years.
- ❑ Lower American River Flow Management Standard – The Lower American River Flow Management Standard (FMS) was not included in the OCAP 5a simulation. This standard is intended to benefit fall-run Chinook salmon, steelhead and other fish species in the lower American River. The new recommended minimum flow requirements in the lower American River below Nimbus Dam vary throughout the year in response to the hydrology of the Sacramento and American River basins and based on the various indices. The October 1 through December 31 minimum flow requirements range between 800 and 2,000 cubic feet per second (cfs), the January 1 through Labor Day minimum flow requirements range between 800 and 1,750 cfs and the post-Labor Day through September 30 minimum flow requirements range between 800 and 1,500 cfs. Nimbus Dam releases may drop below 800 cfs to avoid depletion of water storage in Folsom Reservoir when extreme dry or critical hydrologic conditions are forecasted.
- ❑ Banks Pumping Capacity – When the OCAP modeling was performed the South Delta Improvement Program (SDIP) was well underway but not finalized. One of the major components of the SDIP was to increase the allowable Banks Pumping Plant pumping limit to 8,500 cfs instead of the 6,680 cfs limit at that time. Since this would have a major impact

on the CVP/SWP Delta operations the OCAP modeling included the 8,500 cfs capacity in the future level OCAP 5 simulation to allow evaluation of the potential impacts of the project. However, since the project was not finalized and implemented at the time, a second simulation, with Banks Pumping Plant limited to 6,680 cfs was also performed (OCAP 5a).

Currently the SDIP project has not been implemented and is now under a legal challenge that could prevent it from ever being implemented. For this analysis the assumption was made that the SDIP will not be in place in the future and Banks pumping capacity is limited to 6,680 cfs.

- ❑ Supplemental Water Rights Project – The Supplemental Water Rights Project is assumed to be in place for all future level simulations. This diversion was not included in the OCAP 5a simulation. Table 1 identifies the new diversions for EID and GDPUD under this proposed project.
- ❑ American River Demands – As in the Existing Condition, the American River Demands were taken from the SRWRS modeling. The demands from the SRWRS Study 6, the SRWRS No Action alternative, were selected for use in this simulation. **Figure 2** compares the American River demands between the OCAP 5a foundation study and the SRWRS Study 6.

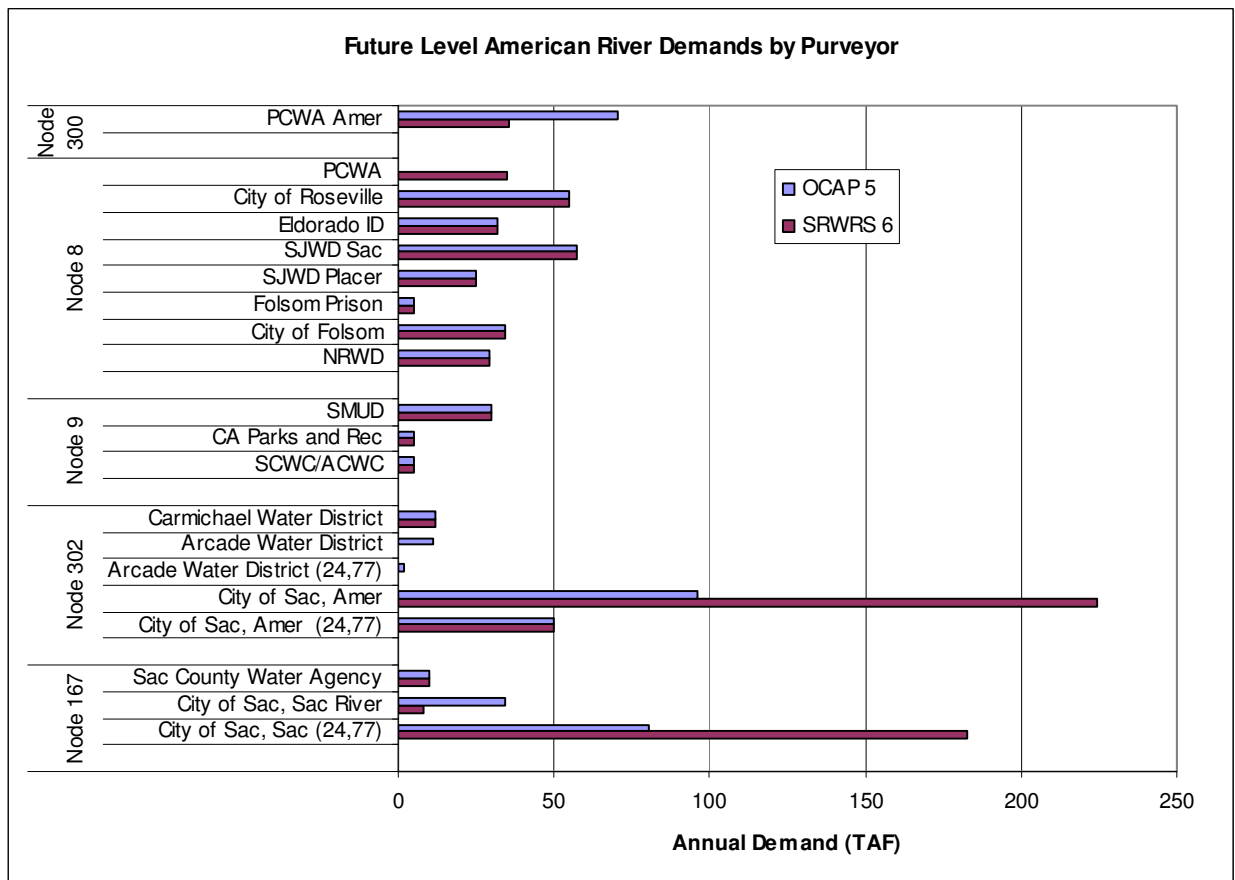


Figure 2. Comparison of OCAP 5 and SRWRS 6 American River Demands

The same shift of the City of Sacramento demands from the Sacramento River to the American River is present as in the existing condition simulation. The Placer County Water

Agency (PCWA) diversion has also been split from all at Node 300, the American River Pump Station upstream of Folsom Reservoir, to about half there and half from Folsom Reservoir.

- ❑ UARM Simulations – Similar to the Non-EID American River Demands, these have been updated in the Common Assumptions process. The result of the updates is very small and probably has little or no effect on the impacts of the alternatives, but is included for consistency within the American River Basin.
- ❑ EID Temperature Control Device – EID plans to construct a TCD on the Folsom Reservoir Intake to allow them to make withdrawals from the reservoir at different elevations to preserve the Cold Water Pool in Folsom Reservoir. CALSIM II only models water operations, not temperature, so this assumption does not impact the CALSIM II simulations. The TCD will be implemented in the temperature modeling for all future level simulations.

4.2.3 *Modeling Scenario Development*

4.2.3.1 *Alternative Implementation and Simulation*

The project scenarios to be modeled are defined in Table 1. These alternatives are different combinations of new or additional diversions to EID and/or GDPUD up to an annual total of 15 TAF. For each project alternative scenario the appropriate level baseline simulation will be selected and the EID and GDPUD diversion changes implemented to produce a CALSIM II simulation that represents the alternative.

CALSIM II divides the system into a number of Drainage Areas (DA) that represent different hydrologic basins. The Lower American River basin is represented by DA 70. Each DA is assumed to have a consumptive use demand based on the land use within the basin. This is computed outside the CALSIM II model using the Consumptive Use model. During the CALSIM II simulation, the total diversion at all nodes within the basin is computed and compared to this consumptive use demand each month. If the total diversion is greater than the demand for the DA, then the diversion at each node in the DA is reduced proportionally so that the total diversion equals the total demand for the DA.

This project is assumed to be for an additional diversion to meet a new consumptive demand that was not included in the consumptive use analysis (pers. comm., M. Preszler, 2007). This implies that the alternative diversion should also be added to DA 70 consumptive use to maintain the water balance for the DA. The new annual diversions were converted to monthly CALSIM II diversion and consumptive use demand inputs using the procedures from the Demand Spreadsheet.

The Demand Spreadsheet assigns the annual diversion to the monthly CALSIM II diversion and demands using a different process for each, resulting in a different monthly distribution of each variable. During the monthly simulation this can lead to differences in the water balance process, and impacts to the diversions that are then distributed to all the Nodes in DA 70 by CALSIM II. Because of the difference in the monthly distributions there may be times where the monthly water balance shows a demand less than the monthly diversion and the monthly diversion is reduced even though the annual water balance is maintained. Also since any diversion shortages are spread over all Nodes in the DA, other nodes, where the input diversion did not change, may also show a reduction.

Reclamation is aware of this issue, but has no plans to change it in the near future and will use the existing model in the new OCAP simulations that are now in progress (pers. comm., R. Fields 2007). This operation was not changed for the modeling simulations for this project.

4.2.4 EID Diversion Simulation

The EID diversion is modeled at Node 8, Folsom Reservoir, in CALSIM II. The CALSIM II diversion at this node represents a number of diversions from Folsom Reservoir including the EID diversion. The CALSIM II input for this diversion, both for the diversion and for the contribution to the total DA consumptive demand, was computed using methods from the Demand Spreadsheet, and stored in the CALSIM II Starting Value (SV) input database. CALSIM II also requires input of the annual total CVP and Water Rights portion of the total EID annual demand.

Internally CALSIM II then applies any CVP North of Delta allocation shortages to the CVP portion of the EID demand and adds these final demands to the other contractor demands at CALSIM II Node 8 for use in the CALSIM operational simulation. CALSIM only outputs the final, total diversion at Node 8, it does not produce separate output for the EID portion.

4.2.5 GDPUD Diversion Simulation

The GDPUD diversion is modeled in the UARM and in the CALSIM model. In the UARM, the GDPUD demand is split between an upstream diversion point below Stumpy Meadows Reservoir, and a diversion at the North Fork American River Pump Station. This diversion also includes a diversion to PCWA. The final UARM diversion at the North Fork American River Pump Station is included in the CALSIM model in the inflow to and diversion from Node 300, Auburn Reservoir Site.

The GDPUD diversion will be implemented in the CALSIM II at Node 300 by adding the appropriate GDPUD diversion for each alternative. The GDPUD diversion at this location is not directly served by the upstream reservoirs in the GDPUD; however, there is a minimum flow criterion below the diversion location that must be maintained. If the diversion increases enough to cause violation of the minimum flow requirement, the UARM model will be re-run to get the new CALSIM II inputs for use in the simulation.

SECTION 5 MODEL OUTPUTS

5.1 MODELING COMPARISONS

There are 8 modeling comparisons to be performed as presented in Table 2.

5.2 MODELING OUTPUTS

Results from the CALSIM II, temperature, Salmon Mortality and LongTermGen Model will be put together in tables for following outputs:

Folsom Reservoir

- End-of-Month Storage

- Mean Monthly Water Surface Elevation

- Mean Monthly Water Surface Area

- Number of Months Water Surface Elevation below 412 Feet (May through September)

Lower American River

- Mean Monthly Flows below Nimbus
- Mean Monthly Flows at Watt
- Mean Monthly Flows at H Street
- Mean Monthly Flows at Mouth
- Number of Months Flows Below 1,750 cfs (May through September)
- Backwater Recharge at H Street
 - # Years in Optimal Range (2,700-4,000 cfs)
 - # Years in Min/Optimal Range (1,300-4,000 cfs)
 - % Years within Min/Optional Range
- Backwater Recharge Below Nimbus
 - # Years in Optimal Range (2,700-4,000 cfs)
 - # Years in Min/Optimal Range (1,300-4,000 cfs)
 - % Years within Min/Optimal Range

Upper American River

- Mean Monthly Flows Above Auburn Dam
- Mean Monthly Flows Below Auburn Dam

Shasta Reservoir

- End-of-Month Storage
- Mean Monthly Water Surface Elevation
- Mean Monthly Water Surface Area

Trinity Reservoir

- End-of-Month Storage
- Mean Monthly Water Surface Elevation

Sacramento River

- Mean Monthly Flow Releases from Keswick
- Mean Monthly Flow at Freeport

Delta

- Mean Monthly Delta Outflow
- Mean Monthly X2 Position
- Export/Import Ratio

Water Supply

- Differences in Allocation to SWP Contractors
- Differences in Allocation to CVP M&I Contractors (North of Delta, non American River)
- Differences in Allocation to CVP Ag Contractors (North of Delta)
- Differences in Allocation to CVP M&I Contractors (South of Delta)
- Differences in Allocation to CVP Ag Contractors (South of Delta)
- Differences in CALSIM II Annual Diversion at Node 300 (Pump Station)
- Differences in CALSIM II Annual Diversion at Node 8 (Folsom Res)
- Differences in CALSIM II Annual Diversion at Node 167 (Sacramento River)
- Differences in CALSIM II Annual Diversion at Node 302 (American River)

Hydropower*

Differences in Annual CVP Generation at Tracy (12 months)

Differences in CVP Capacity at Tracy (12 months)

Mean Monthly Energy Requirements for Pumping at EID and Folsom Pumping Plants

Sacramento River

Mean Monthly Water Temperatures at Keswick

Mean Monthly Water Temperatures at Bend Bridge

Mean Monthly Water Temperature at Freeport

Average Annual Early-Life Stage Survival

Fall-Run

Late-fall Run

Winter-Run

Spring-Run

American River

Mean Monthly Water Temperatures at Nimbus

Mean Monthly Water Temperatures at Watt

Mean Monthly Water Temperatures at H Street

Mean Monthly Water Temperatures at the Mouth

Average Annual Early-Life Stage Survival

Fall-Run

Late-fall Run – Not Computed

Winter-Run – Not Computed

Spring-Run – Not Computed

An example output table is provided in **Table 4**. All the numbers in the table are examples only; they are not actual comparison numbers.

Table 4. Output Table Example – Folsom Reservoir End-of-Month Storage for Simulation 1 vs. Simulation 2

Folsom Reservoir Storage					
October					
Water Year	Water Year Type	Proposed Action	Proposed Action -Scenario A	Absolute Difference	Relative Difference (%) ¹
		Storage (AF)	Storage (AF)		
1922	AN	488158.5	486761.8	-1396.7	-0.3
1923	BN	630335.6	611931.4	-18404.1	-2.9
1924	C	600000.0	628492.3	28492.3	4.7
1925	D	227452.5	206845.8	-20606.7	-9.1
1926	D	561738.1	549721.9	-12016.2	-2.1
1927	W	281436.8	276598.2	-4838.6	-1.7
1928	AN	710678.8	699071.6	-11607.1	-1.6
1929	C	421478.1	407178.9	-14299.2	-3.4
1930	D	330751.7	326032.6	-4719.1	-1.4
1931	C	391476.0	378804.2	-12671.8	-3.2
1932	D	206577.8	169983.0	-36594.8	-17.7
1933	C	514603.2	497584.4	-17018.8	-3.3
1934	C	305745.7	294152.3	-11593.3	-3.8
1935	BN	163827.1	146406.2	-17420.9	-10.6
1936	BN	578137.9	535528.7	-42609.3	-7.4
1937	BN	585822.3	548534.9	-37287.4	-6.4
1938	W	500630.2	500964.9	334.7	0.1
1939	D	716054.5	706923.8	-9130.8	-1.3
1940	AN	369873.3	330939.3	-38934.1	-10.5
1941	W	633884.2	590614.4	-43269.8	-6.8
1942	W	649506.6	631784.1	-17722.6	-2.7
1943	W	744867.1	725567.2	-19299.9	-2.6
1944	D	643305.7	632891.9	-10413.8	-1.6
1945	BN	476488.8	471424.8	-5064.1	-1.1
1946	BN	621505.3	613394.9	-8110.4	-1.3
1947	D	553046.0	561294.9	8248.9	1.5
1948	BN	390312.9	385706.4	-4606.4	-1.2
1949	D	671718.0	659580.4	-12137.6	-1.8
1950	BN	502333.2	424873.6	-77459.5	-15.4
1951	AN	602259.1	600000.0	-2259.1	-0.4
1952	W	631582.0	609510.1	-22071.9	-3.5
1953	W	752500.0	743009.6	-9490.4	-1.3
1954	AN	665791.2	668844.6	3053.4	0.5
1955	D	440583.7	407799.8	-32783.8	-7.4
1956	W	449726.4	434937.5	-14788.9	-3.3
1957	AN	752500.0	752500.0	0.0	0.0
1958	W	513421.2	506244.3	-7176.8	-1.4
1959	BN	752500.0	752500.0	0.0	0.0
1960	D	335896.6	317564.4	-18332.2	-5.5
1961	D	368123.8	359425.9	-8697.9	-2.4
1962	BN	273344.6	200152.6	-73192.0	-26.8
1963	W	752500.0	752500.0	0.0	0.0
1964	D	625237.7	601307.1	-23930.6	-3.8
1965	W	300000.0	300000.0	0.0	0.0
1966	BN	671806.4	686057.9	14251.5	2.1
1967	W	328470.9	308613.3	-19857.7	-6.0
1968	BN	752500.0	752500.0	0.0	0.0
1969	W	396808.0	374166.8	-22641.3	-5.7
1970	W	628120.1	608537.7	-19582.4	-3.1
1971	W	452997.5	413404.7	-39592.8	-8.7
1972	BN	713032.8	700621.6	-12411.2	-1.7
1973	AN	442984.6	444675.3	1690.7	0.4
1974	W	576118.4	559012.4	-17105.9	-3.0
1975	W	752500.0	752500.0	0.0	0.0
1976	C	752500.0	752500.0	0.0	0.0
1977	C	337632.2	312064.7	-25567.5	-7.6
1978	AN	90000.0	90000.0	0.0	0.0
1979	BN	518130.4	508446.7	-9683.7	-1.9
1980	AN	569696.8	556235.5	-13461.3	-2.4
1981	D	752500.0	752500.0	0.0	0.0
1982	W	378386.9	361418.2	-16968.7	-4.5
1983	W	745125.0	745125.0	0.0	0.0
1984	W	727625.0	727625.0	0.0	0.0
1985	D	694836.3	673446.6	-21389.6	-3.1
1986	W	300248.0	308878.3	8630.3	2.9
1987	D	657862.4	642316.3	-15546.1	-2.4
1988	C	379807.9	356581.1	-23226.8	-6.1
1989	D	285350.9	256211.1	-29139.8	-10.2
1990	C	433511.5	406193.3	-27318.3	-6.3
1991	C	322300.7	297780.1	-24520.7	-7.6
1992	C	377552.3	328321.8	-49230.6	-13.0
1993	AN	203386.3	179641.2	-23745.1	-11.7
	Mean:	-902.0	-902.0	-14836.7	-3.7
	Median:	516366.8	507345.5	-12541.5	-2.4
	Min:	90000.0	90000.0	-77459.5	-26.8
	Max:	752500.0	752500.0	28492.3	4.7

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