



# California Regional Water Quality Control Board San Diego Region



**Linda S. Adams**  
Secretary for  
Environmental Protection

Over 50 Years Serving San Diego, Orange, and Riverside Counties  
Recipient of the 2004 Environmental Award for Outstanding Achievement from USEPA

**Arnold Schwarzenegger**  
Governor

9174 Sky Park Court, Suite 100, San Diego, California 92123-4353  
(858) 467-2952 • Fax (858) 571-6972  
[http:// www.waterboards.ca.gov/sandiego](http://www.waterboards.ca.gov/sandiego)

August 23, 2010

**Certified Mail – Return Receipt Requested**  
Article Number: 7010 1060 0000 4952 5699

Jeff Hitch  
City of Murrieta  
1 Town Square,  
24601 Jefferson Avenue 1420  
Murrieta, CA 92562

**In reply refer to:**  
749459: cloflen

Dear Mr. Hitch:

**Subject:** Action on Request for Clean Water Act Section 401 Water Quality Certification for the **Meadowlark Road from Clinton Keith Road to Baxter Road Construction Project** Water Quality Certification No. **10C-015**

Enclosed find Clean Water Act Section 401 Water Quality Certification for discharge to Waters of the U.S. and acknowledgment of enrollment under State Water Resources Control Board Order No. 2003-017 DWQ for the **Meadowlark Road from Clinton Keith Road to Baxter Road Construction Project** (Project). A description of the project and project location can be found in the project information sheet, location map, and site maps, which are included as Attachments 1 through 6.

Any petition for reconsideration of this Certification must be filed with the State Water Resources Control Board within 30 days of certification action (23 CCR § 3867). If no petition is received, it will be assumed that you have accepted and will comply with all the conditions of this Certification.

Failure to comply with all conditions of this Certification may subject you to enforcement actions by the California Regional Water Quality Control Board, San Diego Region, including administrative enforcement orders requiring you to cease and desist from violations, or to clean up waste and abate existing or threatened conditions of pollution or nuisance; administrative civil liability in amounts of up to \$10,000 per day per violation; referral to the State Attorney General for injunctive relief; and, referral to the District Attorney for criminal prosecution.

**California Environmental Protection Agency**



Jeff Hitch, City of Murrieta  
Meadowlark Road from Clinton Keith Road  
to Baxter Road Construction Project  
Certification No. 10C-015

Page 2 of 2

August 23, 2010

In the subject line of any response, please include the requested **"In reply refer to:"** information located in the heading of this letter. For questions pertaining to the subject matter, please contact Chad Loflen at (858) 467-2727 or cloflen@waterboards.ca.gov.

Respectfully,



DAVID W. GIBSON  
Executive Officer

Enclosures:

Clean Water Act Section 401 Water Quality Certification No. 10C-015 for the Meadowlark Road from Clinton Keith Road to Baxter Road Construction Project, with 7 attachments

cc: Refer to Attachment 2 of Certification 10C-015 for Distribution List.

Tech Staff Info & Use	
File No.	10C-015
WDID	9000002034
Reg. Measure ID	373123
Place ID	749459
Party ID	493370
Person ID	493371



# California Regional Water Quality Control Board San Diego Region



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Action on Request for  
Clean Water Act Section 401 Water Quality Certification  
and Waste Discharge Requirements  
for Discharge of Dredged and/or Fill Materials

**PROJECT: Meadowlark Road from Clinton Keith Road  
to Baxter Road Construction Project,  
Certification Number (10C-015)  
WDID: 9 000002034**

**APPLICANT: Jeff Hitch  
City of Murrieta  
1 Town Square,  
24601 Jefferson Avenue 1420  
Murrieta, CA 92562**

CIWQS Reg. Meas. ID: 373123 Place ID: 749459 Party ID: 493370
--

**ACTION:**

<input type="checkbox"/> Order for Low Impact Certification	<input type="checkbox"/> Order for Denial of Certification
<input checked="" type="checkbox"/> Order for Technically-conditioned Certification	<input type="checkbox"/> Waiver of Waste Discharge Requirements
<input checked="" type="checkbox"/> Enrollment in SWRCB GWDR Order No. 2003-017 DWQ	<input type="checkbox"/> Enrollment in Isolated Waters Order No. 2004-004 DWQ

**PROJECT DESCRIPTION:**

The project will widen the existing paved sections of Meadowlark Road and pave existing unpaved sections beginning at Clinton Keith Road to the south and ending at Baxter Road to the north. The project will result in the expansion of existing box culverts on paved sections to accommodate widening, and the construction of new culvert crossings to accommodate the construction of a paved roadway to replace existing unpaved low-flow crossings. The expansion and construction of culverts will require the placement of fill within 8 jurisdictional features, resulting in 0.10 acres (827 linear feet) of permanent impacts and 0.04 acres (245 linear feet) of temporary impacts.

***California Environmental Protection Agency***

*The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our Web-site at <http://www.swrcb.ca.gov>.*

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**STANDARD CONDITIONS:**

The following three standard conditions apply to all Certification actions, except as noted under Condition 3 for denials (Action 3).

1. This Certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to section 13330 of the California Water Code and section 3867 of Title 23 of the California Code of Regulations (23 CCR).
2. This Certification action is not intended and must not be construed to apply to any discharge from any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license unless the pertinent Certification application was filed pursuant to 23 CCR subsection 3855(b) and the application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.
3. The validity of any non-denial Certification action (Actions 1 and 2) must be conditioned upon total payment of the full fee required under 23 CCR section 3833, unless otherwise stated in writing by the certifying agency.

**ADDITIONAL CONDITIONS:**

In addition to the three standard conditions, the City of Murrieta must satisfy the following:

**A. GENERAL CONDITIONS:**

1. The City of Murrieta must, at all times, fully comply with the engineering plans, specifications and technical reports submitted to the California Regional Water Quality Control Board, San Diego Region (San Diego Water Board), to support this 401 Water Quality Certification (Certification) and all subsequent submittals required as part of this Certification and as described in Attachment 1. The conditions within this Certification must supersede conflicting provisions within such plans submitted prior to the Certification action. Any modifications thereto, would require notification to the San Diego Water Board and reevaluation for individual Waste Discharge Requirements and/or Certification amendment.
2. During construction, the City of Murrieta must maintain a copy of this Certification at the project site so as to be available at all times to site personnel and agencies.

3. The City of Murrieta must permit the San Diego Water Board or its authorized representative at all times, upon presentation of credentials:
  - a. Entry onto project premises, including all areas on which wetland fill or wetland mitigation is located or in which records are kept.
  - b. Access to copy any records required to be kept under the terms and conditions of this Certification.
  - c. Inspection of any treatment equipment, monitoring equipment, or monitoring method required by this Certification.
  - d. Sampling of any discharge or surface water covered by this Order.
4. The City of Murrieta must notify the San Diego Water Board within **24 hours** of any unauthorized discharge, including hazardous or toxic materials, to waters of the U.S. and/or State; measures that were implemented to stop and contain the discharge; measures implemented to clean-up the discharge; the volume and type of materials discharged and recovered; and additional best management practice (BMPs) or other measures that will be implemented to prevent future discharges.
5. The City of Murrieta must, at all times, maintain appropriate types and sufficient quantities of materials onsite to contain any spill or inadvertent release of materials that may cause a condition of pollution or nuisance if the materials reach waters of the U.S. and/or State.
6. This Certification is not transferable in its entirety or in part to any person except after notice to the Executive Officer of the San Diego Water Board in accordance with the following terms.
  - a. Transfer of Property Ownership: The City of Murrieta must notify the San Diego Water Board of any change in ownership of the project area. Notification of change in ownership must include, but not be limited to, a statement that the City of Murrieta has provided the purchaser with a copy of the Section 401 Water Quality Certification and that the purchaser understands and accepts the certification requirements and the obligation to implement them or be subject to liability for failure to do so; the seller and purchaser must sign and date the notification and provide such notification to the Executive officer of the San Diego Water Board within **10 days** of the transfer of ownership.
  - b. Transfer of Mitigation Responsibility: Any notification of transfer of responsibilities to satisfy the mitigation requirements set forth in Section D shall include a signed statement from an authorized representative of the new party (transferee) demonstrating acceptance and understanding of the responsibility to comply with and fully satisfy the mitigation conditions and agreement that failure to comply with the mitigation conditions and associated requirements may subject the transferee to enforcement by the

San Diego Water Board under Water Code section 13385, subdivision (a). Notification of transfer of responsibilities meeting the above conditions must be provided to the San Diego Water Board within **10 days** of the transfer date.

7. In the event of any violation or threatened violation of the conditions of this Certification, the violation or threatened violation must be subject to any remedies, penalties, process or sanctions as provided for under State law. For purposes of section 401(d) of the Clean Water Act, the applicability of any State law authorizing remedies, penalties, process or sanctions for the violation or threatened violation constitutes a limitation necessary to assure compliance with the water quality standards and other pertinent requirements incorporated into this Certification.
8. In response to a suspected violation of any condition of this Certification, the San Diego Water Board may require the holder of any permit or license subject to this Certification to furnish, under penalty of perjury, any technical or monitoring reports the San Diego Water Board deems appropriate, provided that the burden, including costs, of the reports must bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports.
9. In response to any violation of the conditions of this Certification, the San Diego Water Board may add to or modify the conditions of this Certification as appropriate to ensure compliance.
10. The City of Murrieta and successor owners must submit annual progress reports to the San Diego Water Board prior to **August 1** of each year following the issuance of this Certification until the project has reached completion.

**B. PROJECT CONDITIONS:**

1. Prior to the start of the project, and annually thereafter, the City of Murrieta must educate all personnel on the requirements in this Certification, pollution prevention measures, spill response, and BMP implementation and maintenance.
2. The City of Murrieta must comply with the requirements of State Water Resources Control Board Water Quality Order No. 2003-0017-DWQ, Statewide General Waste Discharge Requirements for discharges of dredged or fill material that have received State Water Quality Certification. These General Waste Discharge Requirement are accessible at:  
[http://www.waterboards.ca.gov/water\\_issues/programs/cwa401/docs/general\\_orders/go\\_wdr401regulated\\_projects.pdf](http://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/general_orders/go_wdr401regulated_projects.pdf).

3. The City of Murrieta must notify the San Diego Water Board in writing at least **5 days** prior to the actual commencement of dredge, fill, and discharge activities.
4. The City of Murrieta must comply with the requirements of State Water Resources Control Board Water Quality Order No. 2009-09-DWQ, and any subsequent re-issuance as applicable, the NPDES General Permit for Storm Water Discharges Associated with Construction Activity.
5. The treatment, storage, and disposal of wastewater during the life of the project must be done in accordance with waste discharge requirements established by the San Diego Water Board pursuant to CWC § 13260.
6. Discharges of concentrated flow during construction or after completion must not cause downstream erosion or damage to properties or stream habitat.
7. Water containing mud, silt, or other pollutants from equipment washing or other activities, must not be discharged to waters of the United States and/or the State or placed in locations that may be subjected to storm flows. Pollutants discharged to areas within a stream diversion area must be removed at the end of each work day or sooner if rain is predicted.
8. All surface waters, including ponded waters, must be diverted away from areas undergoing grading, construction, excavation, vegetation removal, and/or any other activity which may result in a discharge to the receiving water. Diversion activities must not result in the degradation of beneficial uses or exceedance of water quality objectives of the receiving waters. Any temporary dam or other artificial obstruction constructed must only be built from materials such as clean gravel which will cause little or no siltation. Normal flows must be restored to the affected stream immediately upon completion of work at that location.
9. Substances hazardous to aquatic life including, but not limited to, petroleum products, raw cement/concrete, asphalt, and coating materials, must be prevented from contaminating the soil and/or entering waters of the United States and/or State. BMPs must be implemented to prevent such discharges during each project activity involving hazardous materials.
10. All areas that will be left in a rough graded state must be revegetated with native species no later than one week after completion of grading. The revegetation palette must not contain any plants listed on the California Invasive Plant Council Invasive Plant Inventory, which can be found online at <http://www.cal-ipc.org/ip/inventory/weedlist.php>.
11. Removal of vegetation must occur by hand, mechanically, or using EPA approved herbicides deployed using applicable BMPs to prevent impacts to

Beneficial Uses of waters of the State. Removal of vegetation must occur outside of the avian nesting season (March 15- August 31).

### **C. POST CONSTRUCTION STORM WATER MANAGEMENT**

1. All storm drain inlet structures within the project boundaries must be stamped and/or stenciled (or equivalent) with appropriate language prohibiting non-storm water discharges.
2. The City of Murrieta must submit a Final Project Specific Water Quality Management Plan for the Meadowlark Road Street Improvements: Meadowlark Road between Clinton Keith Road and Keller Road **prior to commencement of Project construction.**
3. In addition to the BMPs described in the Project Specific Preliminary Water Quality Management Plan for the Meadowlark Road Street Improvements: Meadowlark Road between Clinton Keith Road and Keller Road, prepared by the Albert A. Webb Associates and revised September 8, 2009 (see Attachment 5), the structural BMPs must be sized to comply with the following numeric sizing criteria:
  - a. Volume  
Volume-based BMPs must be designed to mitigate (infiltrate, filter, or treat) either:
    - i. The volume of runoff produced from a 24-hour 85<sup>th</sup> percentile storm event, as determined from the local historical rainfall record (0.6 inch approximate average for the San Diego County area); or
    - ii. The volume of runoff, as determined from the local historical rainfall record, that achieves approximately the same reduction in pollutant loads and flows as achieved by mitigation of the 85<sup>th</sup> percentile 24-hour runoff event; or
  - b. Flow  
Flow-based BMPs must be designed to mitigate (infiltrate, filter, or treat) either:
    - i. The maximum flow rate of runoff produced from a rainfall intensity of 0.2 inch of rainfall per hour; or
    - ii. The maximum flow rate of runoff produced by the 85<sup>th</sup> percentile hourly rainfall intensity, as determined from the local historical rainfall record, multiplied by a factor of two; or
    - iii. The maximum flow rate of runoff, as determined from the same reduction in pollutant loads and flows as achieved by mitigation of the 85<sup>th</sup> percentile hourly rainfall intensity multiplied by a factor of two.
4. Post-construction BMPs must be installed and functional prior to occupancy and/or planned use of development areas.

5. The City of Murrieta must install biofiltration/infiltration BMPs as described in the Project Specific Preliminary Water Quality Management Plan for the Meadowlark Road Street Improvements: Meadowlark Road between Clinton Keith Road and Keller Road, prepared by the Albert A. Webb Associates and revised September 8, 2009.
6. All post-construction structural BMPs must be regularly inspected and maintained by the City of Murrieta or their designated party for the life of the project per the manufacturers' specifications.
7. Treatment BMPs must be inspected prior to the commencement of the rainy season (October 1) and after every storm event exceeding 0.5 inches of precipitation.
8. Records must be kept regarding inspections and maintenance in order to assess the performance of the systems and determine whether adaptations are necessary to protect receiving waters.
9. The City of Murrieta, assumes responsibility for the inspection and maintenance of all post-construction structural BMPs until such responsibility is legally transferred to another entity.
  - a. At the time maintenance responsibility for post-construction BMPs is legally transferred, the City of Murrieta must submit to the San Diego Water Board a copy of such documentation.
  - b. At the time maintenance responsibility for post-construction BMPs is legally transferred, the City of Murrieta must provide the transferee with a copy of a long-term BMP maintenance plan that complies with manufacturer specifications.

**D. COMPENSATORY MITIGATION FOR LOSS OF WATERS OF THE U.S./STATE**

1. Mitigation for permanent discharges to 0.02 acres (112 linear feet) of wetland and 0.08 acres (715 linear feet) of un-vegetated waters of the United States, and temporary discharges to 0.04 acres (245 linear feet) of wetland (0.01 acres) and un-vegetated (0.03 acres) waters of the United States (see Attachment 5) must be achieved as described in Attachment 1 and the Conceptual Habitat Mitigation and Monitoring Plan for Meadowlark Road Between Clinton-Keith Road and Baxter Road Construction Project, prepared by Glenn Lukos Associates and dated April 20, 2010. Mitigation must be achieved at the downstream Warm Springs Creek mitigation site as follows:
  - a. Through the establishment (creation) of 0.54 acres (estimated at a minimum of 730 linear feet) of vegetated and un-vegetated waters of the United

- States. Creation must include, at a minimum, 0.02 acres of wetland waters of the United States.
- b. Through the restoration of 0.18 acres of mulefat scrub (waters of the United States).
  - c. Through the enhancement of 1.31 acres of un-vegetated streambed/riparian habitat (waters of the United States).
2. The City of Murrieta must submit a Final Habitat Mitigation and Monitoring Plan **prior to commencement of** Project construction.
  3. The City of Murrieta must conduct the modified HGM functional assessment described in the Conceptual Habitat Mitigation and Monitoring Plan for Meadowlark Road Between Clinton-Keith Road and Baxter Road Construction Project, or an equivalent functional assessment, to determine the overall success of the mitigation site(s).
  4. The City of Murrieta must restore all areas of temporary impacts and all other areas of temporary disturbance which could result in a discharge or a threatened discharge to waters of the United States/State. Restoration must include grading of disturbed areas to pre-project contours and revegetation with native species. The City of Murrieta must implement all necessary BMPs to control erosion and runoff from areas associated with this project.
  5. The City of Murrieta must notify the San Diego Water Board in writing at least **5 days** prior to the actual commencement of mitigation installation, and completion of mitigation installation.
  6. The City of Murrieta must salvage leaf litter, coarse woody debris, and upper soil horizons from impacted jurisdictional water sites that are relatively free of invasive exotic species for use in on-site mitigation areas.
  7. The City of Murrieta must also salvage large cuttings from appropriate tree species if they exist at the impact site and use them as pole plantings at the mitigation site.
  8. The City of Murrieta must submit an as-built report (including topography maps and planting locations) to the San Diego Water Board within the **first Mitigation and Monitoring Report (see Condition D.13)** following completion of mitigation site preparation and planting, describing the as-built status of the mitigation project.
  9. The construction of proposed mitigation must be concurrent with project grading and completed no later than 9 months following the initial discharge of dredge or fill material into on-site waters. Delays in implementing

mitigation must be compensated for by an increased mitigation implementation of 10 percent of the cumulative compensatory mitigation for each month of delay.

10. Throughout the mitigation monitoring program mitigation areas must be maintained free of perennial exotic plant species including, but not limited to, pampas grass, giant reed, tamarisk, sweet fennel, tree tobacco, castor bean, and pepper tree. Annual exotic plant species must not occupy more than 5 percent of the onsite or offsite mitigation areas.
11. San Diego Water Board acceptance of the mitigation plan applies only to the site and plan that mitigates for the Meadowlark Road from Clinton Keith Road to Baxter Road Construction Project and must not be construed as approval of the mitigation site or plan for use by other current or future projects that are planning to use the Project site for mitigation.
12. If at any time during the implementation and establishment of the mitigation area(s), and prior to verification of meeting success criteria, a catastrophic natural event (e.g., fire, flood) occurs and impacts the mitigation area, the City of Murrieta is responsible for repair and replanting of the damaged area(s).
13. Mitigation monitoring reports must be submitted annually until mitigation has been deemed successful. Annual monitoring reports must be submitted prior to **December 1** of each year. Monitoring reports must include, but not be limited to, the following:
  - a. Names, qualifications, and affiliations of the persons contributing to the report;
  - b. Tables presenting the raw data collected in the field as well as analyses of the physical and biological data, including at a minimum;
  - c. Topographic complexity characteristics at each mitigation site;
  - d. Upstream and downstream habitat and hydrologic connectivity;
  - e. Source of hydrology;
  - f. Width of native vegetation buffer around the entire mitigation site;
  - g. Qualitative and quantitative comparisons of current mitigation conditions with pre-construction conditions and previous mitigation monitoring results;
  - h. Photodocumentation from established reference points;
  - i. A Survey report documenting boundaries of mitigation area; and
  - j. Other items specified in the final mitigation and monitoring plan.
14. For the purpose of determining mitigation credit for the removal of exotic/invasive plant species, only the actual area occupied by exotic/invasive plant species must be quantified to comply with mitigation requirements.

15. For purposes of this Certification, establishment is defined as the creation of vegetated or unvegetated waters of the U.S./State where the resource has never previously existed (e.g. conversion of nonnative grassland to a freshwater marsh). Restoration is divided into two activities, re-establishment and rehabilitation. Re-establishment is defined as the return of natural/historic functions to a site where vegetated or unvegetated waters of the U.S./State previously existed (e.g., removal of fill material to restore a drainage). Rehabilitation is defined as the improvement of the general suite of functions of degraded vegetated or unvegetated waters of the U.S./State (e.g., removal of a heavy infestation or monoculture of exotic plant species from jurisdictional areas and replacing with native species). Enhancement is defined as the improvement to one or two functions of existing vegetated or unvegetated waters of the U.S./State (e.g., removal of small patches of exotic plant species from an area containing predominantly natural plant species). Preservation is defined as the acquisition and legal protection from future impacts in perpetuity of existing vegetated or unvegetated waters of the U.S./State (e.g., conservation easement).

#### **E. STREAM PHOTO DOCUMENTATION PROCEDURE**

1. The City of Murrieta, and its successors, must conduct photo documentation of the project site, including all areas of permanent and temporary impact, prior to and after project construction, and mitigation areas, including all areas of permanent and temporary impact, prior to and after project construction. Photo documentation must be conducted in accordance with the State Water Resources Control Board Standard Operating Procedure 4.2.1.4: Stream Photo Documentation Procedure, included as Attachment Number (7). In addition, photo documentation must include Geographic Positioning System (GPS) coordinates for each of the photo points referenced. The City of Murrieta must submit this information in a photo documentation report to the San Diego Water Board with the **Mitigation and Monitoring reports (see Condition D.13)**. The report must include a compact disc that contains digital files of all the photos (jpeg file type or similar).

#### **F. POST-CONSTRUCTION BEST MANAGEMENT PRACTICES PHOTO DOCUMENTATION PROCEDURE**

1. The City of Murrieta must conduct photo documentation of implemented post-construction BMPs. Photo-documentation must be modeled after the State Water Resources Control Board Standard Operating Procedure 4.2.1.4: Stream Photo Documentation Procedure, included as Attachment 6. In addition, photo documentation must include Global Positioning System (GPS) coordinates for each of the photo points referenced. The City of Murrieta must submit this information in a photo documentation report to the San Diego Water Board with the **Final Project Annual Report (see Condition**

**A.10).** The report must include a compact disc that contains digital files of all the photos (jpeg file type or similar).

**G. GEOGRAPHIC INFORMATION SYSTEM REPORTING**

1. The City of Murrieta must submit Geographic Information System (GIS) shape files of the impact and mitigation areas within the **first Mitigation and Monitoring Report (see Condition D.13)** following mitigation installation. All impact and mitigation areas shapefiles must be polygons. Two GPS readings (points) must be taken on each line of the polygon and the polygon must have a minimum of 10 points. GIS metadata must also be submitted.

**H. REPORTING:**

1. All information requested in this Certification is pursuant to California Water Code (CWC) section 13267. Civil liability may be administratively imposed by the San Diego Water Board for failure to furnish requested information pursuant to CWC section 13268.
2. All reports and information submitted to the San Diego Water Board must be submitted in both hardcopy and electronic format. The preferred electronic format for each report submission is one file in PDF format that is also Optical Character Recognition (OCR) capable.
3. The City of Murrieta must submit an as-built report to the San Diego Water Board within **the Final Project Annual Report (see Condition A.10)** following completion of the project. The report should include as-built drawings no bigger than 11" x 17", and include photos of the completed project.
4. All applications, reports, or information submitted to the San Diego Water Board must be signed and certified as follows:
  - a. For a corporation, by a responsible corporate officer of at least the level of vice president.
  - b. For a partnership or sole proprietorship, by a general partner or proprietor, respectively.
  - c. For a municipality, or a state, federal, or other public agency, by either a principal executive officer or ranking elected official.
5. A duly authorized representative of a person designated in Items 4.a. through 4.c. above may sign documents if:
  - a. The authorization is made in writing by a person described in Items 4.a. through 4.c. above.
  - b. The authorization specifies either an individual or position having responsibility for the overall operation of the regulated activity.

- c. The written authorization is submitted to the San Diego Water Board Executive Officer.
6. All applications, reports, or information submitted to the San Diego Water Board must be signed and certified as follows:

*"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."*

7. The City of Murrieta must submit reports required under this Certification, or other information required by the San Diego Water Board, to:

Executive Officer  
California Regional Water Quality Control Board  
San Diego Region  
Attn: 401 Certification; Project No. 10C-015  
9174 Sky Park Court, Suite 100  
San Diego, California 92123

6. Required Reports: The following list summarizes the reports required per the conditions of this Certification to be submitted to the San Diego Water Board.

<b>Report Topic</b>	<b>Certification Condition</b>	<b>Due Date(s)</b>
Unauthorized Discharge	A.4	Within 24 Hours
Certification Transfer	A.6	Within 10 Days of Transfer
Annual Progress Reports	A.10	August 01 Annually
Commencement of Fill	B.3	5 Days Prior
Final WQMP	C.2	Prior to Construction
Final Mitigation and Monitoring Plan	D.2	Prior to Construction
Mitigation Commencement	D.5	5 days Prior
Mitigation As-Builts	D.8	First Mitigation and Monitoring Report
Mitigation Annual Reports	D.13	December 01 Annually
Stream Photo Documentation	E.1	Mitigation and Monitoring Reports
Post-Construction BMP Photo Documentation	F.1	Final Project Annual Report
GIS Reporting	G.1	First Mitigation and Monitoring Report
Project As-Builts	H.3	Final Project Annual Report

**CEQA FINDINGS:**

1. The City of Murrieta is the lead agency under the California Environmental Quality Act (Public Resources Code section 21000, et seq., (CEQA)), and filed a Notice of Determination on August 04, 2010 for a Mitigated Negative Declaration for the project under CEQA Guidelines Title 14, California Code of Regulations, 15075 (14 CCR § 15075). The City of Murrieta determined the project will not have a significant effect on the environment and mitigation measures were made a condition of the project.
2. The San Diego Water Board has reviewed the lead agency's Mitigated Negative Declaration, and also finds that the project as proposed will not have a significant effect on the environment with conditioned mitigation measures and therefore determines that issuance of this Certification is consistent with the Mitigated Negative Declaration.

**PUBLIC NOTIFICATION OF PROJECT APPLICATION:**

On February 18, 2010, receipt of the project application was posted on the San Diego Water Board web site to serve as appropriate notification to the public. No public comments were received on the project.

**REGIONAL WATER QUALITY CONTROL BOARD CONTACT PERSON:**

Chad Loflen  
California Regional Water Quality Control Board, San Diego Region  
9174 Sky Park Court, Suite 100  
San Diego, CA 92123  
858-467-2727  
cloflen@waterboards.ca.gov

**WATER QUALITY CERTIFICATION:**

I hereby certify that the proposed discharge from the Meadowlark Road from Clinton Keith Road to Baxter Road Construction Project (Project No. 10C-015) will comply with the applicable provisions of sections 301 ("Effluent Limitations"), 302 ("Water Quality Related Effluent Limitations"), 303 ("Water Quality Standards and Implementation Plans"), 306 ("National Standards of Performance"), and 307 ("Toxic and Pretreatment Effluent Standards") of the Clean Water Act. This discharge is also regulated under State Water Board Order No. 2003-0017-DWQ, "Statewide General Waste Discharge Requirements for Dredged or Fill Discharges that have Received State Water Quality Certification (General WDRs)," which requires compliance with all conditions of this Water Quality Certification. Please note that enrollment under Order No. 2003-017 DWQ is conditional and, should new information come to our attention that indicates a water quality problem, the San Diego Water Board may issue waste discharge requirements at that time.

Except insofar as may be modified by any preceding conditions, all Certification actions are contingent on (a) the discharge being limited and all proposed mitigation being completed in strict compliance with the applicants' project description and/or on the attached Project Information Sheet, and (b) on compliance with all applicable requirements of the San Diego Water Board's Water Quality Control Plan (Basin Plan).



\_\_\_\_\_  
DAVID W. GIBSON  
Executive Officer  
Regional Water Quality Control Board

8-23-2010  
Date

- Attachments:
1. Project Information
  2. Distribution List
  3. Location Map
  4. Site Maps
  5. Post-Construction BMP Map
  6. Mitigation Map
  7. Stream Photodocumentation Procedure

**ATTACHMENT 1  
PROJECT INFORMATION**

Applicant: City of Murrieta  
Attention: Jeff Hitch  
1 Town Square,  
24601 Jefferson Avenue 1420  
Murrieta, CA 92562  
Telephone: 951-461-6076  
Facsimile: 951-461-6049  
Email: [jhitch@murrieta.org](mailto:jhitch@murrieta.org)

Applicant  
Representatives: Glenn Lukos Associates.  
Attention: Martin Rasnick  
29 Orchard  
Lake Forest, CA 92630-8300  
Telephone: 949-837-0404 ext. 20  
Facsimile: 949-837-5834  
Email: [mrasnick@wetlandpermitting.com](mailto:mrasnick@wetlandpermitting.com)

Project Name: Road from Clinton Keith Road to Baxter Road  
Construction Project

Project Location: Latitude: 33° 36' 17.9994" N Longitude: 117° 9' 46.7994 W

Type of Project: Transportation Improvement

Need for Project: The Project will provide a needed north-to-south arterial roadway east of I-215. The project is required to improve traffic flow for local residents and provide access to Physician's Hospital of Murrieta, which is currently under construction west of the Meadowlark and Baxter Road intersection.

Project Description: The project will widen the existing paved sections of Meadowlark Road and pave existing unpaved sections beginning at Clinton Keith Road to the south and ending at Baxter Road to the north. The project will result in the expansion of existing box culverts on paved sections to accommodate widening, and the construction of new culvert crossings to accommodate the construction of a paved roadway to replace existing unpaved low-flow crossings. The expansion and construction of culverts will require the placement of fill within 8 jurisdictional features, resulting in 0.10 acres (827 linear feet) of permanent impacts and 0.04 acres (245 linear feet) of temporary impacts.

Federal Agency/Permit: U.S. Army Corps of Engineers §404, NWP 14, ACOE Staff: Richard Van Sant

Other Required Regulatory Approvals: California Department of Fish and Game 1602 Streambed Alteration Agreement, CDFG Staff: Anna Milloy

California Environmental Quality Act (CEQA) Compliance: Initial Study/Mitigated Negative Declaration, Notice of Determination: 08/04/2010, SCH#2010041090, Lead Agency: City of Murrieta

Receiving Water: 8 unnamed streams tributary to Warm Springs Creek, Santa Margarita HU, Murrieta HA, French HAS (902.33)

Affected Waters of the United States: Temporary:  
Wetlands: 0.01 acres  
Un-vegetated Streambed: 0.03 acres

Permanent:  
Wetlands: 0.02 acres  
Un-vegetated Streambed: 0.08 acres

Dredge Volume: n/a

Related Projects Implemented/to be Implemented by the Applicant(s): 07C-110 Clinton-Keith West: A portion of the Clinton-Keith Road West Project (from the I-215 to Meadowlark Road) is located within the City of Murrieta.

The northern portion of Meadowlark Road will be constructed under a separate 401 Certification application (yet to be received), per request from the U.S. Army Corps of Engineers Regulatory.

Compensatory Mitigation: Off-site:  
Establishment: Creation of 0.54 acres of vegetated and un-vegetated waters of the U.S., including at least 0.02 acres of jurisdictional wetlands. It is estimated that 730-1,700 linear feet of establishment will occur (see Attachment 6).

Restoration: Restoration of 0.18 of mulefat scrub.

Enhancement: 1.31 acres of riparian/un-vegetated streambed.

	<p><u>On-site:</u> Restoration of temporary impacts to pre-project condition.</p>
Mitigation Location:	On-site and Off-site. Off-site mitigation will be implemented on a downstream portion of Warm Springs Creek on land owned by the City of Murrieta.
Best Management Practices (BMPs):	<p><u>Construction</u> In accordance with State Water Resources Control Board Water Quality Order No. 2009-09-DWQ and any subsequent re-issuance as applicable.</p> <p><u>Post Construction</u> In accordance with the Project Specific Preliminary Water Quality Management Plan for the Meadowlark Road Street Improvements: Meadowlark Road between Clinton Keith Road and Keller Road, prepared by the Albert A. Webb Associates and revised September 8, 2009. A Final Water Quality Management Plan must be submitted prior to commencement of project construction.</p> <p>The City of Murrieta proposes to utilize biofiltration/infiltration low impact development swales (or equivalent) to treat storm water flows from the project. The infiltration/biofiltration post-construction BMPs proposed will treat 100 percent of new impervious surfaces associated with construction of the project (6.806 acres) and will also treat existing un-treated impervious surfaces (0.65 acres) on Meadowlark Road.</p> <p>An additional 1.494 acres of impervious surfaces associated with the overall construction of Meadowlark Road (intersections) are being constructed and treated by post-construction BMPs under 401 Certifications 07C-024 and 04C-034.</p>
Public Notice:	February 18, 2010
Inspection:	n/a
Fees:	<p>Total Due: \$7,501.00 Total Paid: \$7,501.00 (check No. 85681 and No. 88804)</p>
CIWQS:	<p>Regulatory Measure ID: 373123 Place ID: 749459 Party ID: 493370</p>

**ATTACHMENT 2  
E-MAIL DISTRIBUTION LIST**

Richard Van Sant  
U.S. Army Corps of Engineers, Regulatory Branch  
richard.j.vansant@usace.army.mil

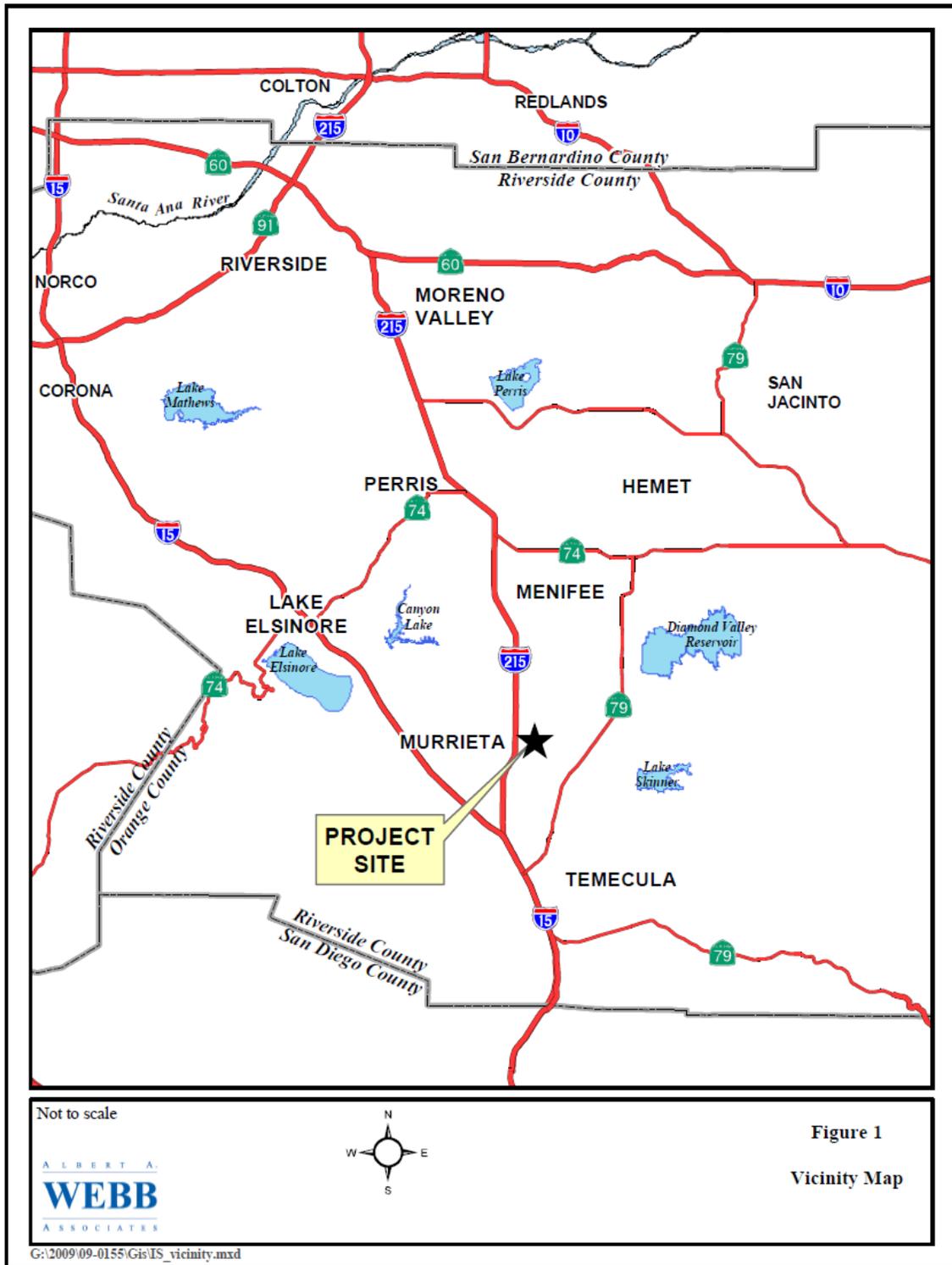
Anna Milloy  
California Department of Fish and Game, Inland Desert Region  
amilloy@dfg.ca.gov

USEPA, Region 9  
R9-WTR8-Mailbox@epa.gov

State Water Resources Control Board, Division of Water Quality  
401 Water Quality Certification and Wetlands Unit  
Stateboard401@waterboards.ca.gov

Martin Rasnick  
Glenn Lukos Associates  
mrasnick@wetlandpermitting.com

### ATTACHMENT 3 PROJECT LOCATION



# ATTACHMENT 4 SITE MAP



Image: Digital Globe, March 2008

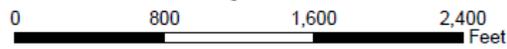
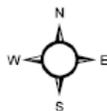
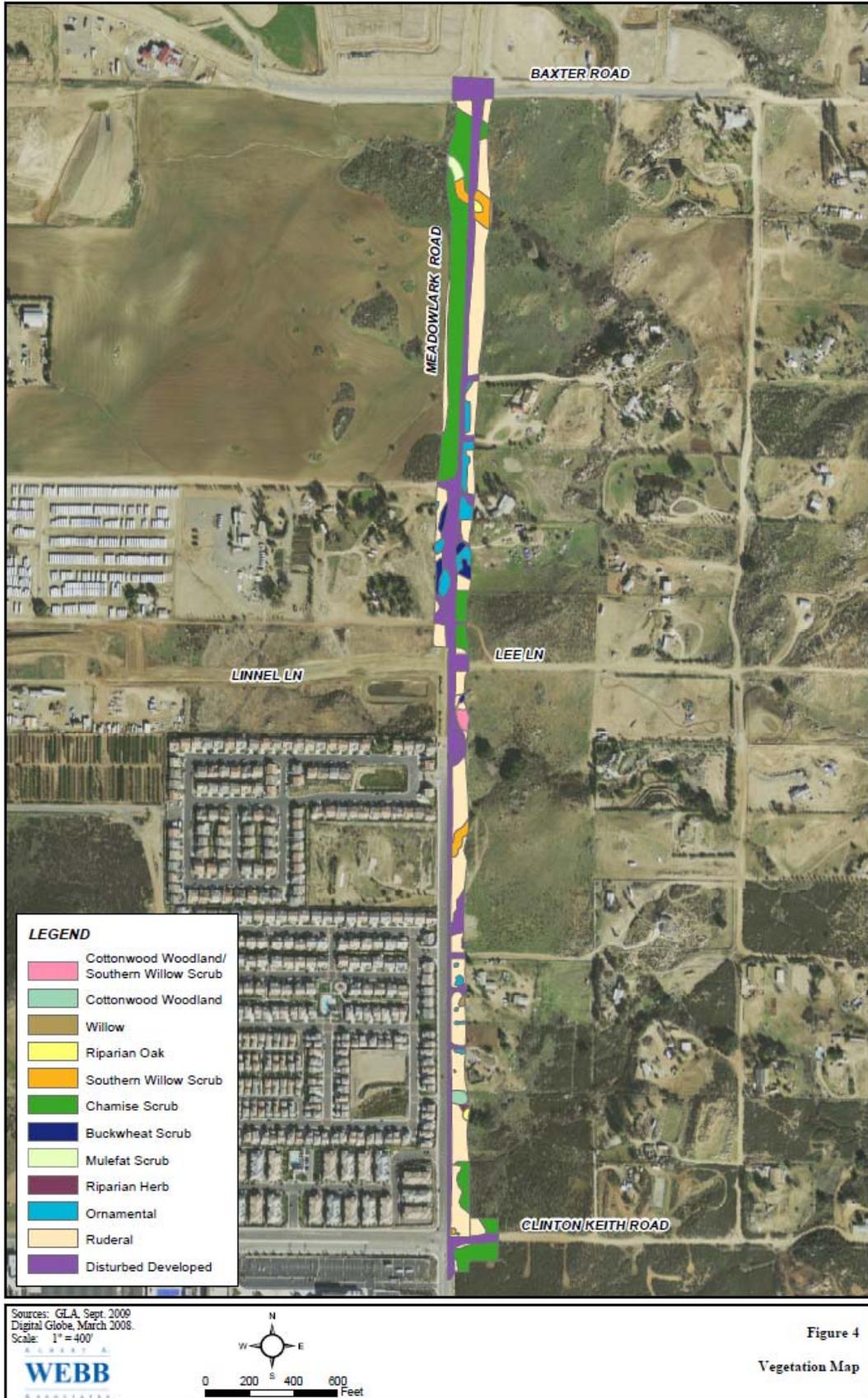


Figure 2  
Project Site

G:\2009-09-0155\Gis\IS\_aerial.mxd



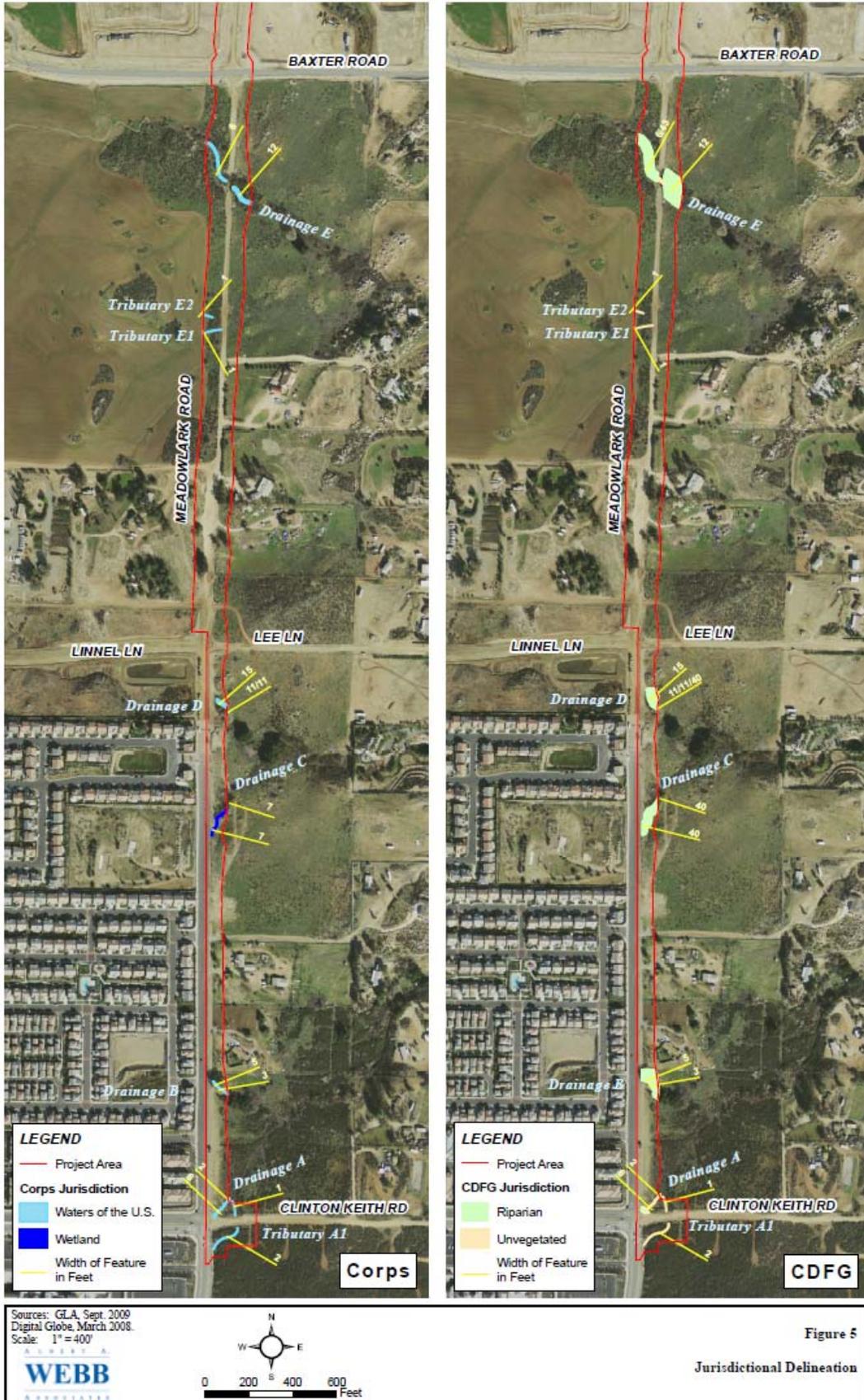
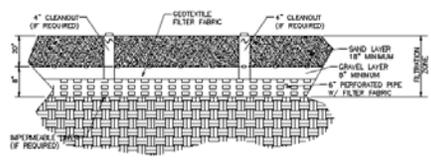
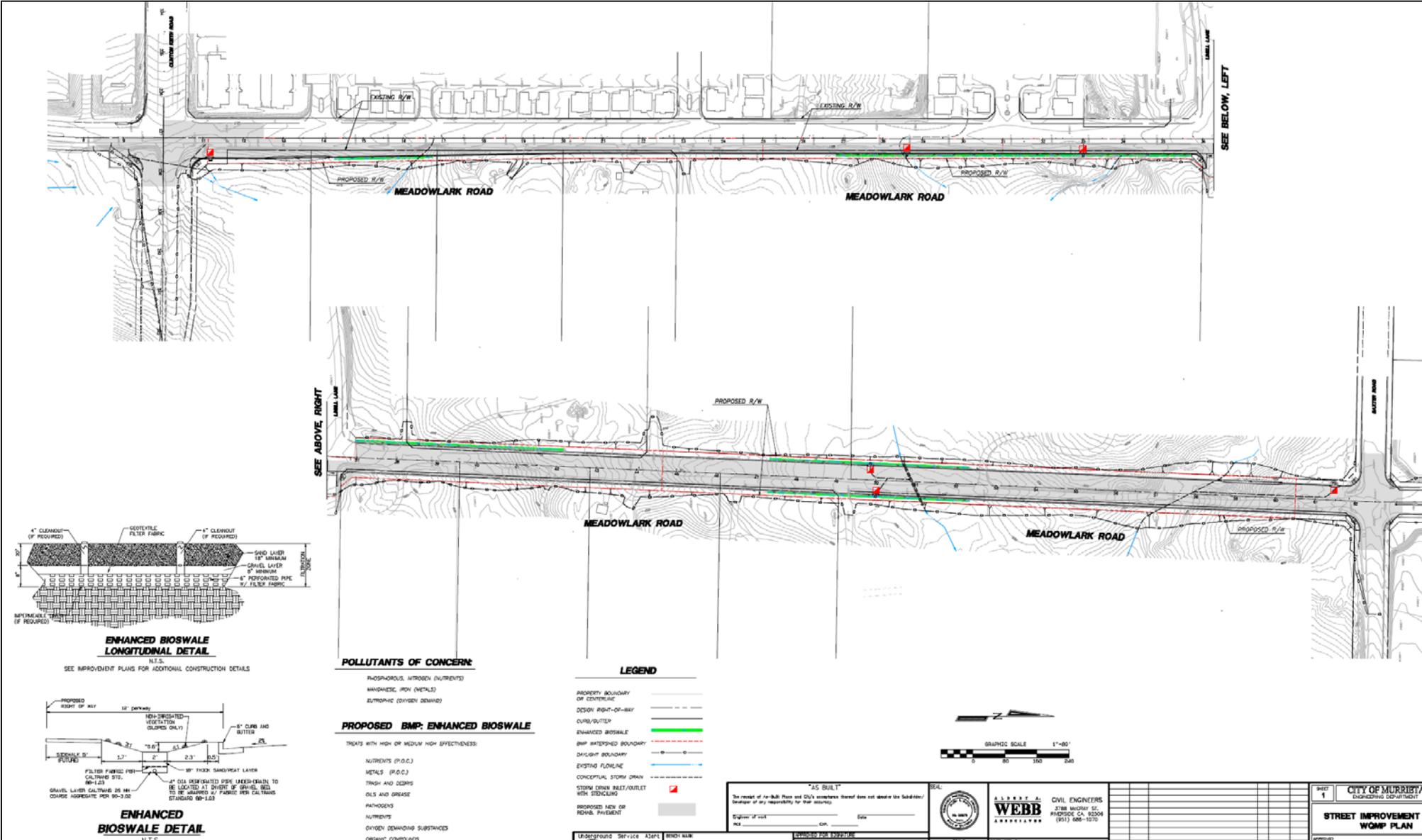


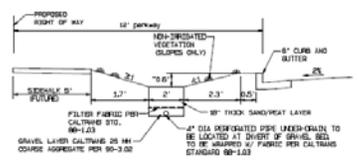
Figure 5  
Jurisdictional Delineation

# ATTACHMENT 5 POST CONSTRUCTION BMP MAP



**ENHANCED BIOSWALE  
LONGITUDINAL DETAIL**

N.T.S.  
SEE IMPROVEMENT PLANS FOR ADDITIONAL CONSTRUCTION DETAILS



**ENHANCED  
BIOSWALE DETAIL**

N.T.S.

**POLLUTANTS OF CONCERN**

- PHOSPHORUS, NITROGEN (NUTRIENTS)
- MANGANESE, IRON (METALS)
- EUTROPHIC (DISSOLV DEMAND)

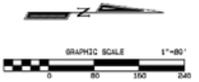
**PROPOSED BMP: ENHANCED BIOSWALE**

TREATS WITH HIGH OR MEDIUM HIGH EFFECTIVENESS:

- NUTRIENTS (P.O.C.)
- METALS (P.O.C.)
- TSS AND OILS
- OILS AND GREASE
- PATHOGENS
- NUTRIENTS
- OXYGEN DEMANDING SUBSTANCES
- ORGANIC COMPOUNDS

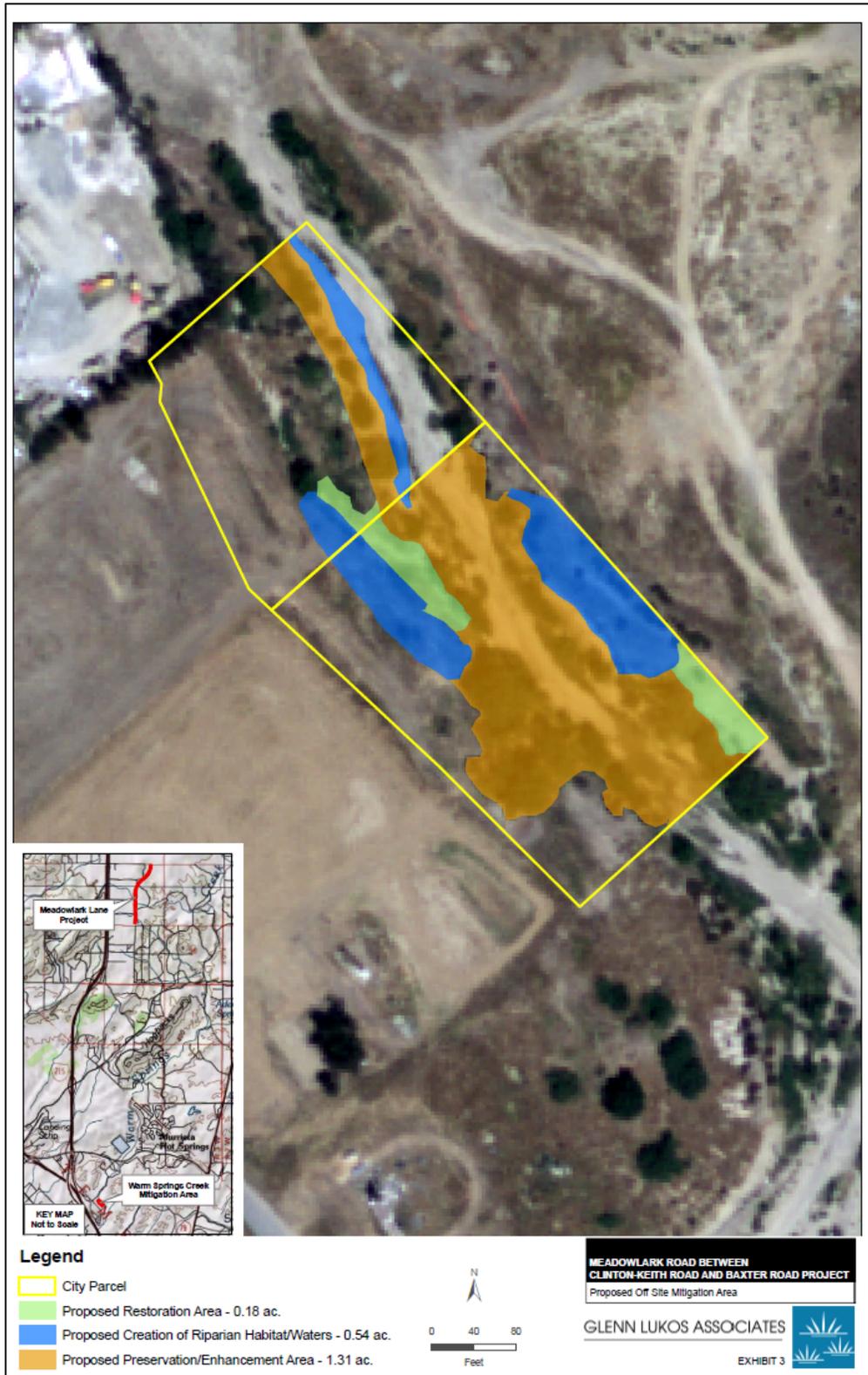
**LEGEND**

- PROPERTY BOUNDARY OR EROSION LINE
- DESIGN RIGHT-OF-WAY
- CURB/OUTLET
- ENHANCED BIOSWALE
- BMP INTERSECTED BOUNDARY
- DAYLIGHT BOUNDARY
- EXISTING FLOODLINE
- CONCEPTUAL STORM DRAIN
- STORM DRAIN INLET/OUTLET WITH STENCILING
- PROPOSED NEW OR REPAIR PAVEMENT



<p>"AS BUILT"</p> <p>The receipt of the "As-Built" Plans and CD's acceptance thereof does not denote the Subdivider/ Developer of any responsibility for their accuracy.</p> <p>Engineer of record: _____ Date: _____</p> <p>Met: _____ Date: _____</p>		<p><b>ALBERT A. WEBB</b> CIVIL ENGINEERS 2788 MADRAC ST. MADRAC, CA 95030 (916) 686-1570</p>	<p>SHEET 1</p>	<p><b>CITY OF MURRISITA</b> ENGINEERING DEPARTMENT</p>
			<p>UNDERGROUND SERVICE ADAPT (RHS) MARK</p>	<p>STREET IMPROVEMENT WOMP PLAN</p>

# ATTACHMENT 6 MITIGATION MAP



## **ATTACHMENT 7 STREAM PHOTO DOCUMENTATION PROCEDURES**

### **Standard Operating Procedure (SOP)**

#### **Stream Photo Documentation Procedure**

(CARCD 2001, Written by TAC Visual Assessments work group)

#### **Introduction:**

Photographs provide a qualitative, and potentially semi-quantitative, record of conditions in a watershed or on a water body. Photographs can be used to document general conditions on a reach of a stream during a stream walk, pollution events or other impacts, assess resource conditions over time, or can be used to document temporal progress for restoration efforts or other projects designed to benefit water quality. Photographic technology is available to anyone and it does not require a large degree of training or expensive equipment. Photos can be used in reports, presentations, or uploaded onto a computer website or GIS program. This approach is useful in providing a visual portrait of water resources to those who may never have the opportunity to actually visit a monitoring site.

#### **Equipment:**

Use the same camera to the extent possible for each photo throughout the duration of the project. Either 35 mm color or digital color cameras are recommended, accompanied by a telephoto lens. If you must change cameras during the program, replace the original camera with a similar one comparable in terms of media (digital vs. 35 mm) and other characteristics. A complete equipment list is suggested as follows:

#### Required:

- Camera and backup camera
- Folder with copies of previous photos (do not carry original photos in the field)
- Topographic and/or road map
- Aerial photos if available
- Compass
- Timepiece
- Extra film or digital disk capacity (whichever is applicable)
- Extra batteries for camera (if applicable)
- Photo-log data sheets or, alternatively, a bound notebook dedicated to the project
- Yellow photo sign form and black marker, or, alternatively, a small black board and chalk

Optional:

- GPS unit
- Stadia rod (for scale on landscape shots)
- Ruler (for scale on close up views of streams and vegetation)
- Steel fence posts for dedicating fixed photo points in the absence of available fixed landmarks

**How to Access Aerial Photographs:**

Aerial Photos can be obtained from the following federal agencies:

USGS Earth Science Information Center  
507 National Center  
12201 Sunrise Valley Drive  
Reston, VA 22092  
800-USA-MAPS

USDA Consolidated Farm Service Agencies  
Aerial Photography Field Office  
222 West 2300 South  
P.O. Box 30010  
Salt Lake City, UT 84103-0010  
801-524-5856

Cartographic and Architectural Branch  
National Archives and Records Administration  
8601 Adelphi Road  
College park, MD 20740-6001  
301-713-7040

**Roles and Duties of Team:**

The team should be comprised of a minimum of two people, and preferably three people for restoration or other water quality improvement projects, as follows:

1. Primary Photographer
2. Subject, target for centering the photo and providing scale
3. Person responsible for determining geographic position and holding the photo sign forms or blackboard.

One of these people is also responsible for taking field notes to describe and record photos and photo points.

## **Safety Concerns:**

Persons involved in photo monitoring should **ALWAYS** put safety first. For safety reasons, always have at least two 2 volunteers for the survey. Make sure that the area(s) you are surveying either are accessible to the public or that you have obtained permission from the landowner prior to the survey.

Some safety concerns that may be encountered during the survey include, but are not limited to:

- Inclement weather
- Flood conditions, fast flowing water, or very cold water
- Poisonous plants (e.g.: poison oak)
- Dangerous insects and animals (e.g.: bees, rattlesnakes, range animals such as cattle, etc.)
- Harmful or hazardous trash (e.g.: broken glass, hypodermic needles, human feces)

We recommend that the volunteer coordinator or leader discuss the potential hazards with all volunteers prior to any fieldwork.

## **General Instructions:**

From the inception of any photo documentation project until it is completed, always take each photo from the same position (photo point), and at the same bearing and vertical angle at that photo point. Photo point positions should be thoroughly documented, including photographs taken of the photo point. Refer to copies of previous photos when arriving at the photo point. Try to maintain a level (horizontal) camera view unless the terrain is sloped. (If the photo can not be horizontal due to the slope, then record the angle for that photo.) When photo points are first being selected, consider the type of project (meadow or stream restoration, vegetation management for fire control, ambient or event monitoring as part of a stream walk, etc.) and refer to the guidance listed on *Suggestions for Photo Points by Type of Project*.

When taking photographs, try to include landscape features that are unlikely to change over several years (buildings, other structures, and landscape features such as peaks, rock outcrops, large trees, etc.) so that repeat photos will be easy to position. Lighting is, of course, a key ingredient so give consideration to the angle of light, cloud cover, background, shadows, and contrasts. Close view photographs taken from the north (i.e., facing south) will minimize shadows. Medium and long view photos are best shot with the sun at the photographer's back. Some artistic expression is encouraged as some photos may be used on websites and in slide shows (early morning and late evening shots may be useful for this purpose). Seasonal changes can be used to advantage as foliage, stream flow, cloud cover, and site access fluctuate. It is often important to

include a ruler, stadia rod, person, farm animal, or automobile in photos to convey the scale of the image. Of particular concern is the angle from which the photo is taken. Oftentimes an overhead or elevated shot from a bridge, cliff, peak, tree, etc. will be instrumental in conveying the full dimensions of the project. Of most importance overall, however, is being aware of the goal(s) of the project and capturing images that clearly demonstrate progress towards achieving those goal(s). Again, reference to *Suggestions for Photo Points by Type of Project* may be helpful.

If possible, try to include a black board or yellow photo sign in the view, marked at a minimum with the location, subject, time and date of the photograph. A blank photo sign form is included in this document.

### **Recording Information:**

Use a systematic method of recording information about each project, photo point, and photo. The following information should be entered on the photo-log forms (blank form included in this document) or in a dedicated notebook:

- Project or group name, and contract number (if applicable, e.g., for funded restoration projects)
- General location (stream, beach, city, etc.), and short narrative description of project's habitat type, goals, etc.
- Photographer and other team members
- Photo number
- Date
- Time (for each photograph)
- Photo point information, including:
  - Name or other unique identifier (abbreviated name and/or ID number)
  - Narrative description of location including proximity to and direction from notable landscape features like roads, fence lines, creeks, rock outcrops, large trees, buildings, previous photo points, etc. – sufficient for future photographers who have never visited the project to locate the photo point
  - Latitude, longitude, and altitude from map or GPS unit
- Magnetic compass bearing from the photo point to the subject
- Specific information about the subject of the photo
- Optional additional information: a true compass bearing (corrected for declination) from photo point to subject, time of sunrise and sunset (check newspaper or almanac), and cloud cover.

For ambient monitoring, the stream and shore walk form should be attached or referenced in the photo-log.

When monitoring the implementation of restoration, fuel reduction, or Best Management Practices (BMP) projects, include or attach to the photo-log a narrative description of observable progress in achieving the goals of the project. Provide supplementary information along with the photo, such as noticeable changes in habitat, wildlife, and water quality and quantity.

Archive all photos, along with the associated photo-log information, in a protected environment.

### **The Photo Point: Establishing Position of Photographer:**

1. Have available a variety of methods for establishing position: maps, aerial photos, GPS, permanent markers and landmarks, etc. If the primary method fails (e.g., a GPS or lost marker post) then have an alternate method (map, aerial photo, copy of an original photograph of the photo-point, etc).
2. Select an existing structure or landmark (mailbox, telephone pole, benchmark, large rock, etc.), identify its latitude and longitude, and choose (and record for future use) the permanent position of the photographer relative to that landmark. Alternatively, choose the procedure described in *Monitoring California's Annual Rangeland Vegetation* (UC/DANR Leaflet 21486, Dec. 1990). This procedure involves placing a permanently marked steel fence post to establish the position of the photographer.
3. For restoration, fuel reduction, and BMP projects, photograph the photo-points and carry copies of those photographs on subsequent field visits.

### **Determining the Compass Bearing:**

1. Select and record the permanent magnetic bearing of the photo center view. You can also record the true compass bearing (corrected for declination) but do not substitute this for the magnetic bearing. Include a prominent landmark in a set position within the view. If possible, have an assistant stand at a fixed distance from both the photographer and the center of the view, holding a stadia rod if available, within the view of the camera; preferably position the stadia rod on one established, consistent side of the view for each photo (right or left side).
2. Alternatively, use the procedure described in *Monitoring California's Annual Rangeland Vegetation* (UC/DANR Leaflet 21486, Dec. 1990). This procedure involves placing a permanently marked steel fence post to establish the position of the focal point (photo center).
3. When performing ambient or event photo monitoring, and when a compass is not available, then refer to a map and record the approximate bearing as north, south, east or west.

## **Suggestions for Photo Points by Type of Project:**

### **Ambient or Event Monitoring, Including Photography Associated with Narrative Visual Assessments:**

1. When first beginning an ambient monitoring program take representative long and/or medium view photos of stream reaches and segments of shoreline being monitored. Show the positions of these photos on a map, preferably on the stream/shore walk form. Subjects to be photographed include a representative view of the stream or shore condition at the beginning and ending positions of the segment being monitored, storm drain outfalls, confluence of tributaries, structures (e.g., bridges, dams, pipelines, etc.).
2. If possible, take a close view photograph of the substrate (streambed), algae, or submerged aquatic vegetation.
3. Time series: Photographs of these subjects at the same photo points should be repeated annually during the same season or month if possible.
4. Event monitoring refers to any unusual or sporadic conditions encountered during a stream or shore walk, such as trash dumps, turbidity events, oil spills, etc. Photograph and record information on your photo-log and on your Stream and Shore Walk Visual Assessment form. Report pollution events to the Regional Board. Report trash dumps to local authorities.

### **All Restoration and Fuel Reduction Projects – Time Series:**

Take photos immediately before and after construction, planting, or vegetation removal. Long term monitoring should allow for at least annual photography for a minimum of three years after the project, and thereafter at 5 years and ten years.

### **Meadow Restoration:**

1. Aerial view (satellite or airplane photography) if available.
2. In the absence of an aerial view, a landscape, long view showing an overlapping sequence of photos illustrating a long reach of stream and meadow (satellite photos, or hill close by, fly-over, etc.)
3. Long view up or down the longitudinal dimension of the creek showing riparian vegetation growth bounded on each side by grasses, sedges, or whatever that is lower in height
4. Long view of conversion of sage and other upland species back to meadow vegetation

5. Long view and medium view of streambed changes (straightened back to meandering, sediment back to gravel, etc.)
6. Medium and close views of structures, plantings, etc. intended to induce these changes

**Stream Restoration/stabilization:**

1. Aerial view (satellite or airplane photography) if available.
2. In the absence of an aerial view, a landscape, long-view showing all or representative sections of the project (bluff, bridge, etc.)
3. Long view up or down the stream (from stream level) showing changes in the stream bank, vegetation, etc.
4. Long view and medium view of streambed changes (thalweg, gravel, meanders, etc.)
5. Medium and close views of structures, plantings, etc. intended to induce these changes.
6. Optional: Use a tape set perpendicular across the stream channel at fixed points and include this tape in your photos described in 3 and 4 above. For specific procedures refer to Harrelson, Cheryl C., C.L. Rawlins, and John P. Potyondy, *Stream Channel Reference Sites: An Illustrated Guide to Field Techniques*, United States Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station, General Technical Report RM-245.

**Vegetation Management for Fire Prevention (“fuel reduction”):**

1. Aerial view (satellite or airplane photography) if available.
2. In the absence of an aerial view, a landscape, long view showing all or representative sections of the project (bluff, bridge, etc.)
3. Long view (wide angle if possible) showing the project area or areas. Preferably these long views should be from an elevated vantage point.
4. Medium view photos showing examples of vegetation changes, and plantings if included in the project. It is recommended that a person (preferably holding a stadia rod) be included in the view for scale

5. To the extent possible include medium and long view photos that include adjacent stream channels.

**Stream Sediment Load or Erosion Monitoring:**

1. Long views from bridge or other elevated position.
2. Medium views of bars and banks, with a person (preferably holding a stadia rod) in view for scale.
3. Close views of streambed with ruler or other common object in the view for scale.
4. Time series: Photograph during the dry season (low flow) once per year or after a significant flood event when streambed is visible. The flood events may be episodic in the south and seasonal in the north.
5. Optional: Use a tape set perpendicular across the stream channel at fixed points and include this tape in your photos described in 1 and 2 above. For specific procedures refer to Harrelson, Cheryl C., C.L. Rawlins, and John P. Potyondy, *Stream Channel Reference Sites: An Illustrated Guide to Field Techniques*, United States Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station, General Technical Report RM-245.



PHOTO SIGN FORM: Print this form on yellow paper. Complete the following information for each photograph. Include in the photographic view so that it will be legible in the finished photo.

Location:

Subject Description:

Date:

Time: