

State of California  
Department of Water Resources



NEW MANAGEMENT TOOLS FOR THE  
FLOODPLAIN MAPPING PROGRAM

Prepared for the  
**California Department of Water Resources  
Division of Flood Management  
Floodplain Management Branch**

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## **APPENDICES**

### **A - Prioritization Results and Meeting Notes**

This appendix includes a tab for each county with the following information:

(DATA GROUPED BY CATEGORY, NOT BY COUNTY FOR THIS APPENDIX)

- Stream prioritization figure
- Stream prioritization figure with an overlay of FEMA Q3, Awareness Mapping, and county areas of interest
- First visit meeting notes (NOT INCLUDED IN THIS BUSINESS PLAN)
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## **1.0 Introduction**

Floods cause loss of life, property, and economic activity. In January 1997, California experienced one of the most geographically extensive and costly floods in the State's history. Of the State's 58 counties, 48 were declared disaster areas. Nine people were killed, 120,000 people were evacuated from their homes, and 300 square miles were flooded. Damages approached \$2 billion, and floods impacted over 23,000 homes as well as numerous businesses, agricultural lands, bridges, roads, and floodwater management infrastructures. Estimated indirect costs associated with the disruption of the State's economy exceeded \$5 billion. The 1997 State of California Flood Emergency Action Team (FEAT) report emphasized the need for increased support for responsible floodplain management.

The State's goal is to provide public safety through the identification of potential flood hazard areas within the next 10 years. This will enable each community to provide better protection for its citizens against loss of life and loss of property during a flood event and to reduce community costs for emergency response needs. To accomplish this, DWR is focusing on the following areas:

- Continue and promote the efforts of the Statewide Awareness Floodplain Mapping Program (AFMP), including an equitable prioritization methodology using Geographic Information System (GIS) for California streams to be studied through the AFMP;
- Support of FEMA's Map Modernization Plan; and
- Improved Community Outreach.

### **1.1 *Awareness Floodplain Mapping Program***

With California's population expected to increase an estimated 40 to 50 percent over the next 25 years, about one-third of California's stream reaches will be experiencing development pressures. In 2001, DWR focused its attention on these flood prone areas

by initiating the statewide AFMP where floodplains were analyzed using approximate methods. Mapping all floodplains to FEMA standards would be a formidable task as well as cost prohibitive. DWR's priority is to identify potential flood hazard areas by producing quality maps that maximizes the extent of coverage and makes the most efficient use of funding. Awareness Floodplain Mapping is a cost-effective solution to mapping areas currently not mapped by FEMA. A goal of the State's AFMP is to compliment FEMA's mapping program and not supersede it. The AFMP will only study streams located outside of existing FEMA floodplains

To better capture the State's awareness floodplain mapping needs a fair and impartial stream rating process was developed. The stream rating process evaluates and prioritizes all unmapped streams that have a potential for some degree of development within the next 25 years. A GIS-based prioritization methodology was developed providing a recommended sequence in which streams should be studied. The methodology and final results were ultimately presented to 55 of 58 counties, 5 cities, and 1 flood control agency. San Francisco, San Mateo, and Siskiyou counties did not participate in this program. The participating cities were: Manteca, Poway, San Bernardino, and San Fernando. The participating flood control agency was the Fresno Metropolitan Flood Control District. These results are presented in Section 2.0.

## **1.2            *Support of FEMA Map Modernization Plan***

FEMA will begin implementing their Map Modernization Plan in FY 2003 with the objectives of reducing the average age of the maps to 6 years, producing digital mapping products with up-to-date flood hazard data for the highest priority areas, and developing flood maps for half of the unmapped, flood prone communities. As development takes place and floodplain characteristics change, flood maps need to be updated to ensure communities have a useful tool for floodplain management and that flood insurance policies are rated properly. To prioritize the Map Modernization Plan, FEMA is using their Mapping Needs Update Support System (MNUSS) assessment tool. The Mapping Needs Assessment Process was established to identify and prioritize floodplain map update needs for communities in accordance with the National Flood Insurance Reform

Act of 1994. Information regarding a community's mapping needs are collected by FEMA in the MNUSS database. DWR is a leading supporter of this effort by promoting the Map Modernization Plan and helping to develop California's priority list for new detailed flood insurance studies. Section 3.0 discusses the support efforts.

### **1.3            *Improved Community Outreach***

DWR's Floodplain Management Program has always aided local governments to develop sound land use practices and to adopt floodplain management regulations to meet the minimum requirements of the National Flood Insurance Program. However, DWR wants to develop a more effective coordination process that improves on their mapping program. Current coordination practices are incomplete primarily due to budget limitations. The communities have a need and are very interested in understanding and improving DWR's support for mapping. The input received from the communities regarding ways to improve communication with DWR is included in Section 4.0.

## **2.0 Awareness Floodplain Mapping Program**

### **2.1 Introduction**

California is expected to witness an increase in its population by an estimated 40 to 50 percent over the next 25 years, leading to development pressures on floodplains that have not been mapped. The intent of the AFMP is to map potential flood hazard areas for these floodplains within the next 10 years. This will enable California communities to better protect its citizens and their properties.

To meet the goal of identifying potential flood hazard areas, it was necessary to use approximate assessments and awareness to identify these unmapped floodplains for both riverine and alluvial fan conditions. The final mapping product of the AFMP includes a base map and the delineation of approximate floodplain boundaries. These data are provided to communities and made available for reference on the Internet through the DWR Web site. It is important to note that awareness mapping is not a FEMA product. It is intended for use as an advisory tool rather than as a regulatory one. However, communities can choose to benefit further using this mapping data by requesting FEMA to include this information on their Flood Insurance Rate Maps (FIRMs).

In accomplishing this mapping effort, DWR is being assisted by its districts, the United States Army Corps of Engineers (USACE), the Natural Resources Conservation Service (NRCS), and URS Group (URS). To better capture the communities' floodplain mapping needs, DWR tasked URS to develop a fair and impartial stream rating process to evaluate all unmapped streams in California that have a potential for some degree of development within the next 25 years. A prioritization methodology using a Geographic Information System (GIS) was developed to help determine the sequence in which streams should be studied. URS presented the preliminary methodology and final results to 55 of 58 California counties, 5 cities, and 1 flood control agency selected by DWR. Their input, comments, and concerns received during two series of visits were incorporated. Three counties (San Francisco, San Mateo and Siskiyou) did not to participate. The figures used in the presentations are in Appendix B.

## 2.2 *Rational*

Given the significant number of unmapped stream miles and the importance of using available funding effectively, a process was developed to identify streams with the highest priority for study in the next phase of mapping. The prioritization methodology established a hierarchy for California streams based on four major elements:

- Proximity to a transportation corridor (i.e., the closer a stream is to a road or highway the higher the priority)
- Proximity to populated places (i.e., the closer a stream is to a populated place the higher the priority)
- Location within an area of positive population growth.
- Location within an area open for development according to the Growth Area Potential (GAP) status.

The rationale behind using these four elements was to evaluate the direction future development is likely to follow and to keep this development out of high flood-risk areas. The main goal of the AFMP is to provide an advisory tool that can be used to minimize loss of human life and property.

The prioritization methodology for future awareness floodplain mapping efforts uses existing digital databases and shapefiles and the ArcView GIS interface. Sources for the digital data include the California Spatial Information Library, the United States Environmental Protection Agency's (EPA) BASINS database, Environmental Systems Research Institute (ESRI), FEMA, DWR, and URS. The following section elaborates on the data sources and their relevancy to the prioritization of California streams.

## 2.3 *Data Sources*

Data files used in the prioritization methodology include the following:

- ***Stream Lines:*** The Reach File 3 (RF3) database, which is a set of all major stream lines depicted on United States Geologic Survey (USGS) 1:100,000 quadrangle maps, was used. The Web site address of

(<http://www.epa.gov/region02/gis/atlas/rf3.htm>) provides the following description for the database:

*Reach File 3 (RF3) is a national hydrologic database containing 3.2 million networked reaches. It is based upon the 1988 USGS Digital Line Graph 1:100,000 scale linework for national surface water features. This database has evolved over several released versions: RF1, RF2, and RF3. This change over time has focused on going from 1:250,000 to 1:100,000 scale and a correspondingly denser network of 3.2 million vs 68,000 reaches. The Geographic Names Information System (GNIS) was also incorporated.*

- **Road Networks:** Shape files representing the road networks throughout the state were obtained through ESRI's Census Data site. The Web site address of (<http://mapserver4.esri.com/adol/tiger/>) provides the following description of the database:

*The TIGER/Line files are a digital database of geographic features, such as roads, railroads, rivers, lakes, political boundaries, census statistical boundaries, etc. covering the entire United States. The data base contains information about these features such as their location in latitude and longitude, the name, the type of feature, address ranges for most streets, the geographic relationship to other features, and other related information. They are the public product created from the Census Bureau's TIGER® (Topologically Integrated Geographic Encoding and Referencing) database of geographic information.*

*In order for others to use the information in the Census TIGER database in a geographic information system (GIS), the Census Bureau releases periodic extracts of the database, including the TIGER/Line Files, to the public. Through ArcData Online, you may now access TIGER/Line 1995. TIGER/Line 1995 include files for all counties and statistically equivalent entities in the United States. The data sets are being delivered in industry-standard shapefile format so they are easily accessible with GIS software products, such as ArcView and ArcExplorer.*

- **Populated Places:** A database of populated places throughout California was obtained from the California Spatial Information Library. The Web site address of ([http://www.gis.ca.gov/data\\_index.epl](http://www.gis.ca.gov/data_index.epl)) provides the following data description:

*The 'PLACES' layer contains the locations and names of populated places in California. The source of this point coverage is the U.S. Geological Survey's Geographic Names Information System (GNIS) datafile. These text files are compiled mainly from USGS map products such as the 7.5' 1:24,000 quads.*

- **Population Growth:** Recent population growth information was developed by comparing census data by census tract between 1990 and 2000. The Web site containing the year 2000 Census information is at [http://www.esri.com/data/download/census2000\\_tigerline/index.html](http://www.esri.com/data/download/census2000_tigerline/index.html). Census information for the year 1990 can be obtained at the California Spatial Information Library.

- **Growth Area Potential (GAP) Status:** A database identifying development potential was also obtained from the California Spatial Information Library website. The Web site address of ([http://www.gis.ca.gov/data\\_index.epl](http://www.gis.ca.gov/data_index.epl)) provides the following data description:

*Land ownership and management of California, distinguishing local, state, and federal jurisdictions from private lands and delineating areas managed for the long-term maintenance of natural ecological processes and biodiversity. This layer therefore contains attributes both for ownership and for the level of biodiversity protection.*

*The ownership data were derived from the 1:100,000 scale Bureau of Land Management Surface Management Status maps. The most recent national forest maps and other sources were used to update the BLM maps prior to digitizing. The managed area boundaries were compiled from many sources. Many larger areas could be found on the USGS 1:100,000 scale topographic maps revised in the 1980s. Fish and Game Ecological Reserves and Wildlife Areas and Nature Conservancy Preserves were provided as digital files from the California Department of Fish and Game's Heritage Program. ARC/INFO coverages of the Santa Monica Mountains National Recreation Area, BLM Areas of Critical Environmental Concern and some other managed areas were obtained from the responsible agency. USFS wilderness area boundaries were obtained from published and unpublished Forest Service maps. The wilderness areas and park designations in the California Desert Conservation Act of 1994 were obtained from the 1991 digital GIS coverage prepared by the BLM state office. Various paper maps were used to delineate state wildernesses and all other managed areas.*

#### Status Description

- 1 *An area having permanent protection from conversion of natural land cover and a mandated management plan in operation to maintain a natural state within which disturbance events (of natural type, frequency, and intensity) are allowed to proceed without interference or are mimicked through management. (Fire is usually suppressed in most managed areas in California, however).*

- 2 *An area having permanent protection from conversion of natural land cover and a mandated management plan in operation to maintain a primarily natural state, but which may receive use or management practices that degrade the quality of existing natural communities.*
  - 3 *An area having permanent protection from conversion of natural land cover for the majority of the area, but subject to extractive uses of either a broad, low-intensity type or localized intense type. It also confers protection to federally listed endangered and threatened species throughout the area.*
  - 4 *Lack of irrevocable easement or mandate to prevent conversion of natural habitat types to anthropogenic habitat types and allow for intensive use throughout the tract, or existence of such restrictions is unknown.*
- **FEMA-Mapped Floodplains:** Floodplain shapefiles were obtained, including coverages provided by FEMA (Q3 data through 1996) and coverage depicting awareness floodplain mapping accomplished to-date.

## **2.4 Stream Prioritization Assessment Procedure**

Proximity of streams to populated places is one of the prioritization factors. The following process was used to establish priorities for this factor. Distance coverages which consist of grids of values identifying the distance from any point within the coverage to the nearest populated place were created first. Next, the streams were overlain on these maps, and the endpoints of the stream reaches were queried to determine the value of the underlying distance grid. The average value of the two endpoint values are then associated with that given stream reach in the accompanying database table.

Similar procedures were used to establish priorities associated with population growth and development potential factors. Stream lines were overlain on polygon coverages of growth and GAP coverages, and each stream reach's database table was updated to reflect the value of the underlying coverage.

The fourth prioritization factor is proximity to roads. Developing priorities for this factor were accomplished in a similar way, except that major and minor roads were

differentiated. Major roads were defined as primary transportation corridors, ranging from federal to state and county roads; minor roads were defined as private and unnamed public roads. Again, a proximity grid was established for major and minor roads throughout the state, and streams were overlain against this grid to ascertain their proximity to the nearest road.

The end result of the querying procedures was an updated database table for the stream reaches that reflects values associated with proximity to populated places, proximity to major and minor roads, recent population growth in the local vicinity, and development potential. Each of these data were then normalized on a scale of 1 to 4 (2 to 5 for minor roads), according to the following formulas:

<b>Town Proximity</b>	<b>Priority</b>
0-1 mile	1
1-2 miles	2
2-3 miles	3
> 3 miles	4

<b>Road Proximity</b>	<b>Priority</b>	
	<i>Major Roads</i>	<i>Minor Roads</i>
0 – 0.5 mile	1	2
0.5 – 1.0 miles	2	3
1.0 – 1.5 miles	3	4
> 1.5 miles	4	5

<b>Change in Population Density</b> (People per square mile)	<b>Priority</b>
> 1000	1
500 – 1000	2
0 – 500	3
Negative	4

<b>GAP Status</b>	<b>Priority</b>
4	1
3	2
2	3
1	4

The sum of the values for each factor provides a summary prioritization factor that varies from a low of 4 to a high of 21, with the lower values reflecting higher priority.

Stream reach shapefiles were then color coded according to those priorities and overlain on maps depicting floodplains mapped by FEMA (Q3 data through 1996), previous awareness floodplain mapping, and the community areas of preference for future awareness floodplain mapping. Future mapping efforts may be directed following the priorities indicated for the remaining unmapped reaches.

## **2.5 Results**

The results of the stream prioritization process for the AFMP are included in Appendix A. The first figure depicts the results of the stream prioritization. The next figure shows the same first figure overlain by FEMA mapping data (Q3 data through 1996), AFMP mapping data, and polygons of areas of interest identified by the communities.

The stream analysis results show that prior to commencing the statewide AFMP there were approximately 153,000 unmapped stream miles in the state. At the time of performing this analysis, approximately 5,900 stream miles had been mapped through the Awareness Mapping Program. This number has increased to approximately 13,000 stream miles mapped at the time this final report was released.

Table 2-1 lists by county, the total number of unmapped stream miles and the number of stream miles mapped by the AFMP.

Figure 2-1 shows the stream miles the AFMP have mapped and where those stream miles fall within the four prioritization categories. A graph that compares prioritization distributions by category for total unmapped streams and awareness floodplain mapping is included.

Figure 2-2 shows the percentages of AFMP miles and remaining miles for each of the four ranking categories. The results indicate that approximately 7% of the Priority 1 unmapped stream miles have been mapped through the AFMP. This leaves

approximately 19,000 Priority 1 stream miles to be mapped before Priority 2 stream miles are mapped.

Figures 2-3 and 2-4 show remaining stream miles for Categories 1 and 2 by county. This is the future Awareness Floodplain Mapping Program.

It should be noted that the input received from the communities in the form of “selective” areas of interest for awareness mapping might cover stream miles of a lower priority than Priority 1 streams. This is because communities have a better understanding of the activities and prioritization elements pertaining to their own communities and citizens. Community input also could be viewed as a quality assurance factor that improves the applicability of the prioritization results.

**TABLE 2-1**

**Total Number of County Unmapped Stream Miles and Mapped by the  
Awareness Floodplain Mapping Program (as of May 2003)**

<b>County</b>	<b>Unmapped Stream Miles</b>	<b>Mapped by Awareness Program</b>
Alameda	897	0
Alpine	1,033	101
Amador	862	325
Butte	1,735	67
Calaveras	1,829	732
Colusa	757	0
Contra Costa	383	0
Del Norte	1,100	30
El Dorado	2,423	0
Fresno	5,026	0
Glenn	1,557	0
Humboldt	3,788	0
Imperial	2,617	0
Inyo	9,120	184
Kern	7,960	424
Kings	388	0
Lake	1,576	0
Lassen	3,015	0
Los Angeles	3,725	456
Madera	1,774	0
Marin	362	247
Mariposa	1,557	0
Mendocino	4,125	0
Merced	1,642	0
Modoc	3,108	306
Mono	2,976	195
Monterey	4,271	0
Napa	719	0
Nevada	1,197	0
Orange	649	0
Placer	1,520	0
Plumas	2,991	0
Riverside	8,463	0

<b>County</b>	<b>Unmapped Stream Miles</b>	<b>Mapped by Awareness Program</b>
Sacramento	566	364
San Benito	2,070	602
San Bernardino	19,530	0
San Diego	5,120	0
San Francisco * **	20	0
San Joaquin	672	0
San Luis Obispo	3,467	0
San Mateo **	556	0
Santa Barbara	3,857	559
Santa Clara	1,274	257
Santa Cruz	433	0
Shasta	3,327	0
Sierra	1,270	0
Siskiyou **	4,430	0
Solano	338	161
Sonoma	1,743	0
Stanislaus	1,539	711
Sutter	179	0
Tehama	3,287	30
Trinity	3,631	0
Tuolumne	2,981	0
Tulare	3,634	0
Ventura	2,643	136
Yolo	472	0
Yuba	618	0
<b>TOTAL</b>	<b>152,797</b>	<b>5,891***</b>

\* Not participating in the NFIP.

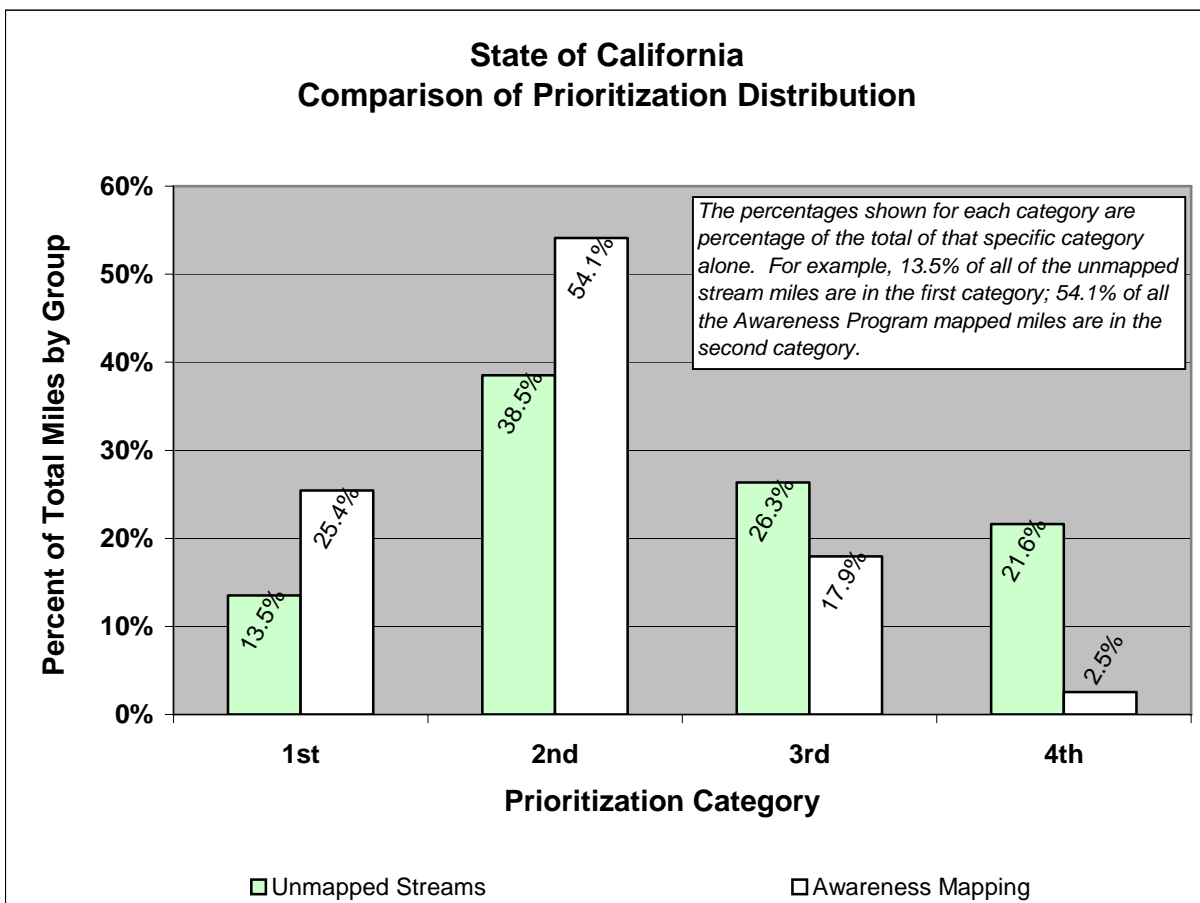
\*\* County does not wish to participate in the AFMP.

\*\*\* Total number of stream miles mapped under the AFMP at the time of completing the stream prioritization methodology analysis. This number has increased to reach approximately 13,000 stream miles at the time of releasing this report.

Figure 2-1

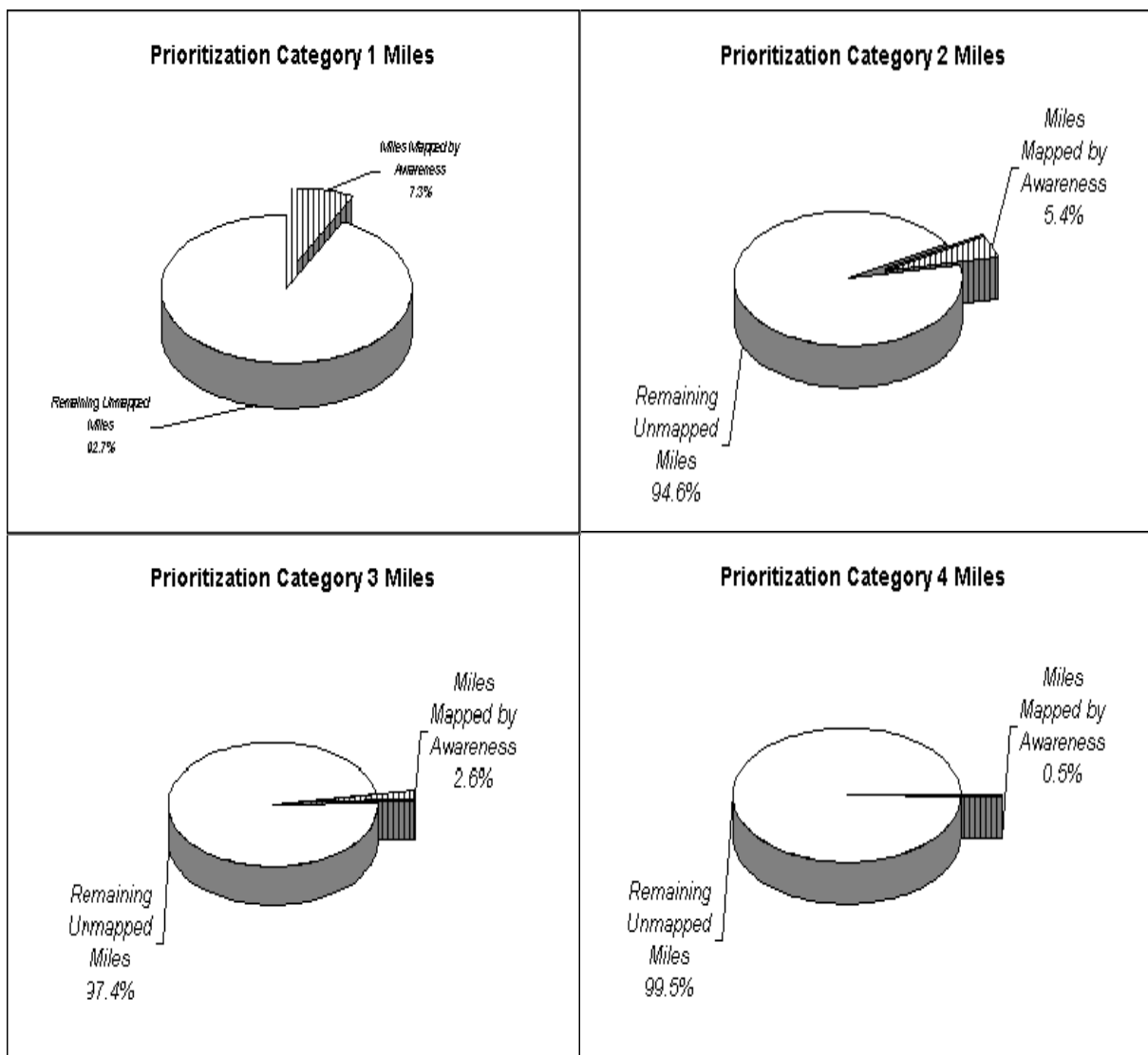
**Distribution of Stream Miles by Prioritization Category:  
All Unmapped Stream Miles vs. Stream Miles Mapped by Awareness Floodplain  
Mapping Program**

Group of Streams	Stream Miles by Prioritization Category				Total
	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	
All Unmapped Streams	20,629	58,885	40,258	33,025	152,797
Awareness Mapping	1,498	3,188	1,057	149	5,891

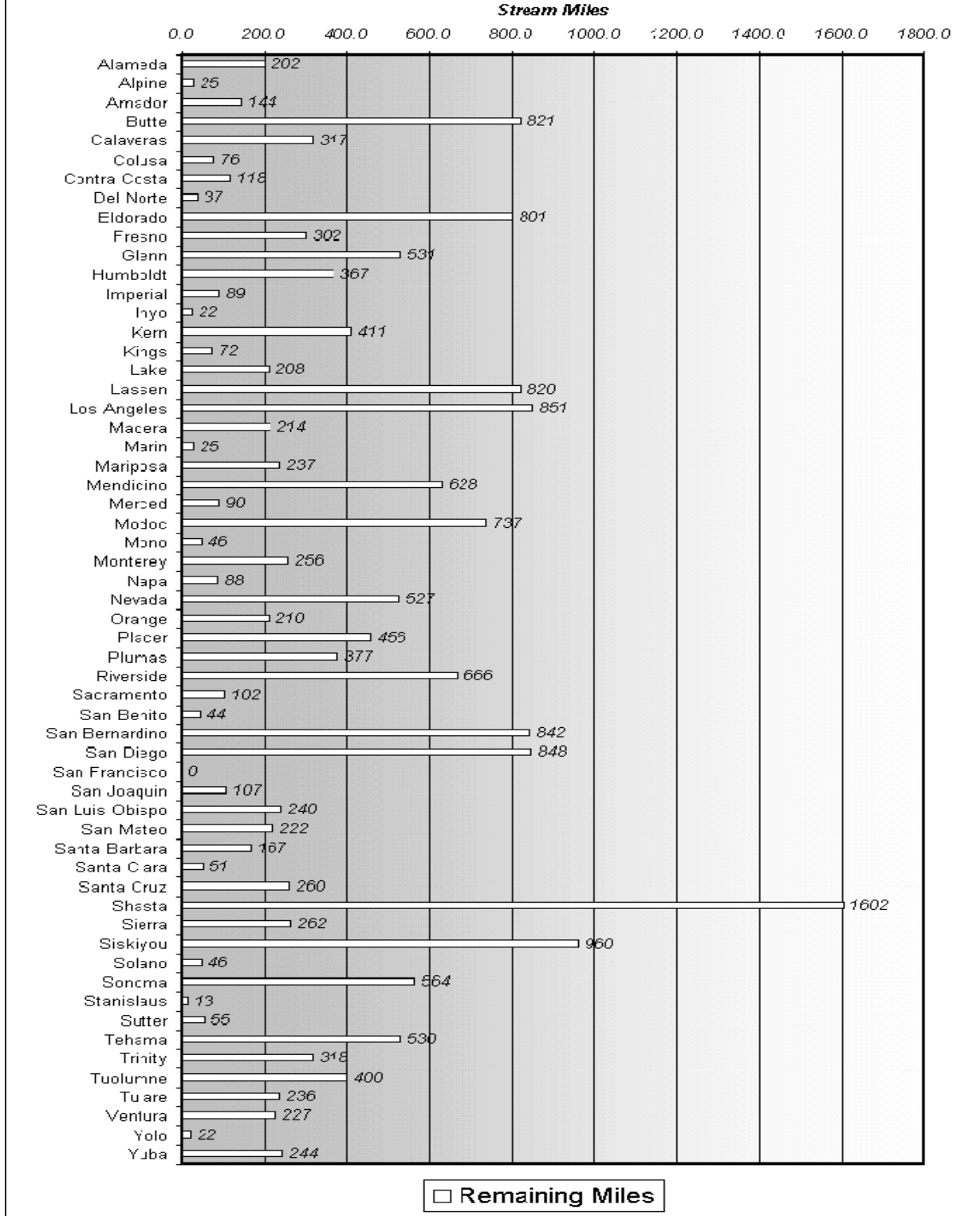


**Figure 2-2**  
**California Stream Prioritization Results**

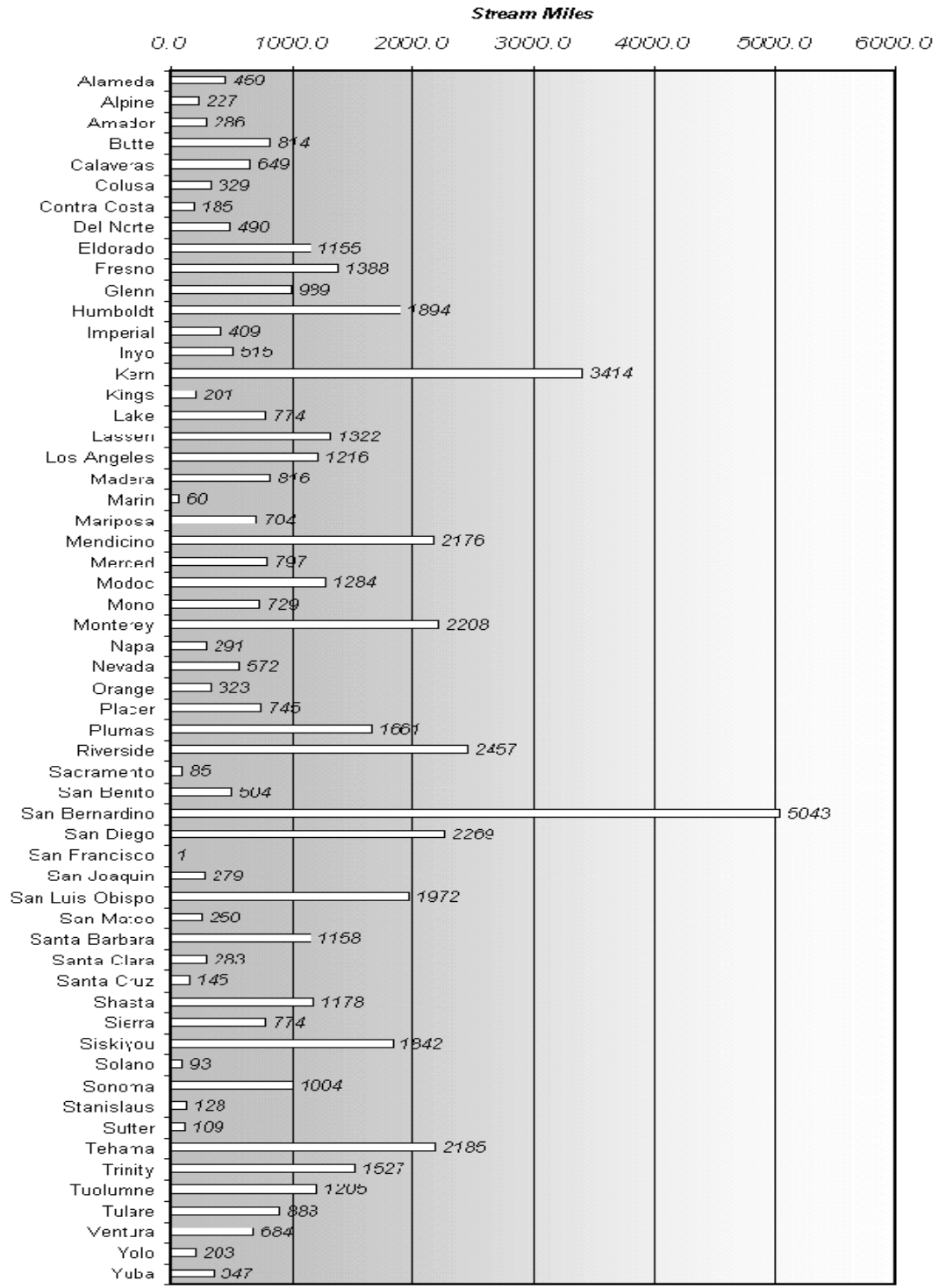
<b>Prioritization Category</b>	<b>Unmapped Stream Miles</b>	<b>Miles Mapped by Awareness Program</b>	<b>Remaining Unmapped Miles</b>
<b>1</b>	20,629	1,498	19,132
<b>2</b>	58,885	3,188	55,697
<b>3</b>	40,258	1,057	39,200
<b>4</b>	33,025	149	32,876



**Figure 2-3**  
**AWARENESS FLOODPLAIN MAPPING**  
**Remaining Category-1 Miles by County**



**Figure 2-4**  
**AWARENESS FLOODPLAIN MAPPING**  
**Remaining Category-2 Miles by County**



## 3.0 Support of FEMA Map Modernization Plan

### 3.1 Introduction

Since FEMA issued its July 30, 1997, *Modernizing FEMA's Flood Hazard Mapping Program* report, FEMA and its mapping partners have been laying the groundwork for implementing the Map Modernization Plan. In Fiscal Years 2003-2006, the initial upgrade of the inventory will be underway. In planning the flood map upgrades, FEMA will address the following Government Performance Results Act (GPRA) performance measures suggested by the Office of Management and Budget (OMB) for the proposed funding for flood map modernization:

- Reducing the average age of the maps to 6 years (current average age of maps is 13.6 years);
- Producing digital mapping products with up-to-date flood hazard data for the top 15% of highest priority areas;
- Developing flood maps for half of the unmapped, flood prone communities; and
- Encouraging state/local cost sharing on flood mapping projects.

To identify the streams with the highest priorities for studies, FEMA has developed a software application that stores all identified needs nationally, performs a benefit cost analysis, and ranks the identified map maintenance needs and flood data update needs for each community. This software application is known as the MNUSS program. FEMA uses this software to assist in its annual selection of new flood studies to be done under the map modernization initiative.

Communities can update their information in the MNUSS database at any time. This special effort is being made now to assure that FEMA has reasonably updated information to use in selecting new studies to be accomplished using the map modernization funds allocated for FY-2003.

### **3.2 DWR's Role**

This work assignment followed an earlier one, during which URS provided electronic files containing the MNUSS worksheets to about 150 communities. This effort was done in concert with on-going solicitations being performed by FEMA. The completed worksheets were then included in a report submitted to FEMA in 2002. The advantage of following this approach was that community officials had more time to review their needs for updated or new flood hazard mapping and to complete the MNUSS worksheets. In addition, during the two series of visits to the communities, officials had the opportunity to ask any remaining questions about the MNUSS program, the worksheets, and the differences between the DWR AFMP and FEMA Map Modernization Plan.

DWR tasked URS to continue soliciting MNUSS information from the communities. The completed worksheets, which are necessary for input in the FEMA MNUSS database for prioritizing potential future detailed floodplain mapping studies were collected. During the community visits conducted by URS, community officials were reminded of the need to submit their priority areas to FEMA for study and detailed mapping by completing the MNUSS worksheets.

Some communities had the impression that DWR's involvement in a FEMA initiative was an added level of unneeded administration. URS explained that DWR's involvement would result in a more effective communication of the communities' needs to FEMA, and that this is an opportunity for the community to resolve existing, as well as, new, mapping issues.

## **4.0 Community Outreach**

### **4.1 *The Process***

In an effort by DWR to improve communication with local communities throughout the state, URS was tasked to take the opportunity, during two series of community visits, to have an open discussion with the local officials about the current level of communication with DWR and means for improving coordination. The discussions revolved around three central issues related to general communication with DWR, communication related to all floodplain mapping efforts, and communication related to the AFMP:

- What does the community think of the current level of communication with DWR?
- What weaknesses can the community identify in DWR's communication programs?
- What measures would the community recommend DWR take to improve its communication with the local communities?

### **4.2 *The Findings***

In general, visits to the communities by URS staff were well received and communication of information was welcomed. Community representatives appreciated having this opportunity for a “dialogue” and felt comfortable to discuss their communities’ flood related issues. Appendix A at the end of this report includes all of the meeting minutes from the visits to the communities.

During these visits, input was received when questions related to communication with DWR were asked, and the range of responses received was as follows:

- Pleased with the level of communication as it stands now;

- Pleased with the level of communication as it stands now, but see room for improvement;
- Indifferent to any communication with DWR;
- Unhappy with the level of communication as it stands now, and would like to see significant steps taken to improve it; and
- Not interested in any communication with DWR.

A general conclusion drawn from meetings with the various communities was that there is a lack of knowledge of the role of DWR, its programs, and the services it provides. Community officials often asked about DWR's programs, DWR's organizational chart, DWR's funding and grant programs, and the identified and clear points of contact within DWR for the different programs. Communities also were interested in the role DWR can play in supporting them as they deal with federal agencies.

Community officials expressed their pressing need for additional and updated detailed mapping studies. They also shared the challenges they are facing in managing development within Special Flood Hazard Areas studied by approximate methods, which lack any information about water surface elevations.

### **4.3 Recommended Actions**

To address the suggestions and concerns provided by the communities visited, the following few methods can be adopted by DWR to improve communication.

- Establish a frequent communication process to serve as a venue for the dissemination of useful relevant information to the communities and to provide them with more opportunities to interact with DWR. This could be in the form of a regular monthly or quarterly electronic transmittal that includes information about DWR programs, contact information, funding mechanisms, existing and upcoming grant programs, and available technical support. This transmittal could include information about other agencies or programs with which DWR programs

are connected, such as the Reclamation Board, CALFED, California Department of Fish and Game, the USACE, and FEMA.

This scheduled transmittal should have an established and professional format that is easy to follow, appeals to the reader, and provides electronic links to the locations of beneficial information, other programs, and contact personnel. This transmittal should also provide the recipient with the opportunity to comment on the contents and submit questions and feedback.

- Periodic visits should be performed by DWR. For example, in conjunction with the Community Assistance Visits (CAV), a small-scale conference could be arranged that would combine attendees from neighboring communities. At this “mini conference”, staff could provide an overview of DWR’s programs, address communities issues or concerns, and provide an opportunity for open discussion and continuing communication.
- Training seminars could be presented to improve the technical and regulatory knowledge of local community officials. Examples include training seminars related to hydrology and hydraulics, AFMP process, FEMA’s role and its mapping process, USACE’s role, Reclamation Board’s role, and different permitting processes. Speakers and lecturers from outside of DWR with experience in the proposed training could be invited to help during these seminars and provide in-depth technical and regulatory information.

## **5.0 Conclusion and Future Steps**

### **5.1 Awareness Floodplain Mapping Program**

The AFMP stream prioritization results will lead to the more efficient use of available funds for mapping higher priority streams first. The results will help focus the effort and organize the work of the different entities responsible for the awareness mapping in the different counties in California. The combination of the GIS stream prioritization results with the communities' priority areas for flood hazard mapping will result in a more beneficial mapping effort and, ultimately, keep people out of harm's way and reduce property damage.

The utilization of the stream prioritization results could be useful in the following areas, in addition to the purposes of the AFMP:

- In support of FEMA's mapping efforts under the Map Modernization Plan. Since the Q3 data are already included as one of the layers (see Appendix A), the highest priority streams could be targeted first for updating existing FEMA maps in areas requested by communities through the MNUSS program.
- As an element of the communities' general plans. This information could help communities direct their future development away from high flood hazard areas.
- As boilerplate for other efforts that require a similar prioritization process. The database of roads, populated places, areas of growth potential, and waterways that has been developed could prove valuable to these efforts.

### **5.2 Support of FEMA Map Modernization Plan**

Discussions related to the MNUSS program helped emphasize to the communities the need to complete the MNUSS work sheets, which is the means of communicating the communities detailed mapping needs and revisions to existing FEMA mapping. These visits were also an opportunity to distinguish between FEMA mapping program and

process and the AFMP, clarify that the AFMP was not intended to re-map areas already studied by FEMA, and the difference between the AFMP and the MNUSS prioritization processes.

As communities complete the MNUSS work sheets they will be forwarded to FEMA to be used for updating the MNUSS program information. FEMA will then be responsible for follow up with the communities for more information related to their work sheet submittals and for initiating, performing, and funding for updating existing FIRMs or new detailed studies. DWR will continue in the role of a leading supporter for the FEMA Map Modernization Plan in the State of California.

### **5.3 *Improved Community Outreach***

Using the opportunity of two series of meetings with local community officials to discuss means of improving communication with DWR has proved highly beneficial. The input received from the communities can be used to close the communication gaps between DWR and the communities, not only during the AFMP work but also in the longer term, to establish a long-lasting and effective communication process.

Future steps related to improving communication between DWR and California communities will include the initiation of an electronic transmittal that will be forwarded to community officials via electronic mail. This letter will improve the knowledge of California local officials in the different DWR programs, the AFMP, FEMA and other agencies programs and initiatives, available funding sources, and training and seminar information. DWR could also provide liaison between California communities and federal agencies such as FEMA and the USACE on floodplain management issues including pre-disaster mitigation.