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## **Bacteria Monitoring Inventory of California's Freshwater Beaches**

**March 2008**



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# Bacteria Monitoring Inventory of California's Freshwater Beaches

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Prepared for the State Water Resources Control Board's  
Surface Water Ambient Monitoring Program (SWAMP)

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## INTRODUCTION

Concentrations of bacteria along the state's coastal beaches are effectively monitored by the beach counties and the information is integrated into the State Water Resources Control Board's (State Water Board) BEACH Watch database. However, there is currently no statewide program for the monitoring of bacteria in fresh water recreational areas in California. The nine Regional Water Quality Control Boards (Regional Water Boards) throughout the state indicate that they do limited bacterial monitoring in fresh water recreational areas. Any routine monitoring of bacteria in fresh water recreational areas is done primarily by county health agencies, but there are no formal mechanisms for the counties or other entities collecting bacterial data to share this information with the Regional Water Boards.

To better understand the level of bacterial monitoring being conducted in fresh water recreational areas, the Aquatic Ecosystems Analysis Laboratory (AEAL) of UC Davis conducted a survey of the fifty-eight California counties and as many other state and federal agencies as possible to compile a database of the known fresh water recreational areas used for contact recreation as well as any bacterial monitoring currently being conducted.

## STATE REQUIREMENTS

The California Department of Public Health offers a [Draft Guidance for Fresh Water Beaches](http://ww2.cdph.ca.gov/HealthInfo/vironhealth/water/Pages/Beaches.aspx) (Draft Guidance) (see their website for all relevant documents: <http://ww2.cdph.ca.gov/HealthInfo/vironhealth/water/Pages/Beaches.aspx>). This document suggests in the 'sampling and analysis plan' section that sampling should be done no less frequently than weekly and that indicator organisms should include total and fecal coliform and either *E. coli* or *Enterococcus* bacteria. However, this document was developed for guidance and there is no state-mandated monitoring.

Appendix A of the Draft Guidance is the State Regulation of Beaches and Recreational Waters and Beaches (last updated April 2006). Under Article 4 Healthfulness, Section 7958 lists the bacteriological standards:

1000 MPN total coliform per 100 ml sample, if the ratio of fecal/total coliform bacteria exceeds 0.1
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Total coliform: 10,000 MPN per 100 ml sample
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Fecal coliform: 400 MPN per 100 ml sample
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<i>Enterococcus</i> : 104 MPN per 100 ml sample
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In the subsequent Section 7959, Bacteriological Sampling, for water-contact sports areas designated by a Regional Water Board, waters affected by discharge are to be monitored at a frequency determined by the Board. If the Regional Water Board has not designated a location as a water-contact sports area, water samples are to be collected at a frequency to be determined by the applicable local health agency. In this latter case, monitoring is left as a responsibility of local health agency officers.

Appendix B of the Draft Guidance provides the US EPA Guidance for Recreational Waters and Beaches. Specifically for fresh water beaches, they established single samples limits (based upon a 100ml sample):

Designated bathing beach area	= 235 MPN <i>E. coli</i> per 100ml, or 61 MPN Enterococci per 100ml
Moderate full body contact recreation	= 298 MPN <i>E. coli</i> per 100ml, or 89 MPN Enterococci per 100ml
Lightly used full body contact recreation	= 406 MPN <i>E. coli</i> per 100ml, or 108 MPN Enterococci per 100ml
Infrequently used full body contact	= 576 MPN <i>E. coli</i> per 100ml, or 151 MPN Enterococci per 100ml

Again, these are bacteriological standards, but there are no specified regulations for fresh water monitoring.

Appendix C provides Local Guidance and Ordinances. This particular link is the result of the California Department of Public Health polling “local environmental health departments about the status of their recreational water programs.” It suggests that “those who are interested in the current status of local programs should contact the local environmental health programs directly.” As of May 1997, the following counties are listed as having monitoring programs for fresh water beaches: **Kern** (lakes and reservoirs twice per month), **Los Angeles** (uses Los Angeles County’s Code to determine closures), **Riverside** (weekly), **San Bernardino** (microbiological quality is regulated by the county Department of Environmental Health Services), **San Joaquin** (lakes, reservoirs, and rivers once per week), **Santa Cruz** (has a county ordinance that establishes bacteriological standards), **Solano** (as needed to address complaints), **Tuolumne** (lakes/reservoirs and rivers on a volunteer [unspecified] basis, approximately once monthly), **Yolo** (rivers and creeks to address complaints or spills). There have been no updates to this appendix since 1997.

Given the information above, the expectation was that these counties would have data available when contacted by AEAL staff. However, efforts indicate no county based monitoring in Kern, Riverside, Solano, and Tuolumne counties. The reason for the inconsistency is unknown.

In summary, while the State provides both suggested bacteriological standards and suggested monitoring sampling frequencies for fresh water recreational areas, the actual monitoring is ultimately left to local health officials. There is no subsequently regulation or oversight by any other agency.

## SOURCES OF DATA COLLECTION AND METHODOLOGY INFORMATION

AEAL staff began data collection by contacting all county Environmental Health Departments via telephone. Initial calls were made to a contact number obtained from the web sites of the Environmental Health Departments. The initial call was received by various employees within

the offices ranging from receptionists to the Director. The contact was informed that AEAL staff were conducting a study for the State Water Resources Control Board regarding bacteriological monitoring in fresh water. The employee generally then referred AEAL staff to an employee thought best able to provide the information being sought. In many instances, attempts to reach the appropriate employee resulted in AEAL staff being passed from individual to individual within the Department. Occasionally, the repeated referrals resulted in AEAL staff receiving the same name as originally contacted. In most instances, an employee of the Public Health Department (or whatever the appropriate department was named in that county) eventually accepted responsibility for fielding the call. When that individual was identified, an initial conversation was conducted after which emails requesting information (e.g. names and locations of public fresh water recreational areas, any information regarding bacterial monitoring, and contact information) were sent to the departmental contact. In some instances, AEAL staff was referred to other entities that may have been monitoring or had jurisdiction over specific fresh water recreational areas and thus would be able to provide more information. Those entities included the National Parks Service, the National Forest Service, local municipal water districts or agencies, PG&E, and US Bureau of Reclamation. Those agencies were then contacted with a request for information. AEAL staff also contacted all county Parks and Recreation (or equivalent) Departments. All entities were questioned to identify all known fresh water recreational areas even if it was clear that no monitoring was conducted. Finally, contacts provided by the State Water Board's Surface Water Ambient Monitoring Program (SWAMP) roundtable participants were reached for information when possible.

In many cases email surveys were either not returned or returned with a simple statement that no information could be provided. Other surveys were returned with some information provided. Few surveys were able to provide all of the requested information. In many counties, there was no inventory of the fresh water recreational areas. This is particularly true of Sierra counties who often responded that they had several thousand miles of fishable waters; essentially all freshwater in the county was designated contact recreation, and they could not possibly keep track or monitor those waters.

The State Water Board's 303d list of impaired waterways was examined to determine which fresh waters in the state are impaired by bacteria. The resulting list is included as a separate spreadsheet (Appendix 1) of this report. AEAL examined the adopted orders in each of the nine Regional Water Boards to identify any National Pollutant Discharge Elimination System (NPDES) permits that require bacterial monitoring for any receiving waters. All permits requiring such monitoring are included in a separate spreadsheet (Appendix 2) of this report and were not incorporated into the main database as it is unclear whether the monitored sites coincide with fresh water recreational sites that allow public swimming.

## **RESULTS**

Thirteen of the fifty-eight counties conduct some level of county-based bacterial monitoring (Table 1). The number of sites monitored in each of the counties range from one to fifteen. Monitoring includes some combination of total coliform, fecal coliform, and *E. coli*. Marin and Humboldt counties also monitor *Enterococcus*. East Bay Regional Parks District (EBRPD)

conducts the monitoring for both Alameda and Contra Costa counties. San Bernardino County monitors all of the fresh water lakes in the county (fifteen at a minimum).

Table 1. Counties in which county departments oversee or conduct bacterial monitoring (N=13), the number of sites being monitored, and the number of years monitoring has been conducted. A + sign indicates that the current employee was unsure of the exact number of years but believed the number was the minimum number of years.

COUNTY	SITES	YEARS
Alameda (monitors via EBRPD)	8	15-18
Contra Costa (monitors via EBRPD)	1	6
Humboldt	1	14
Lassen	2	16
Los Angeles	3	13-17
Madera	1	5
Marin	3	5
San Bernardino (monitor lakes)	15	20+
San Joaquin	2	9
Santa Cruz	9	38
Siskiyou	1	39
Sonoma	2	7+
Yolo	2	6*

\*Recent monitoring only when a known *E. coli* input has occurred

Four counties do very limited county-based bacterial monitoring; event based or otherwise unspecified (Table 2).

Table 2. Counties in which county agencies conduct limited bacterial monitoring (N=4).

COUNTY	NOTES
Alpine	Markeleeville Creek has limited and unspecified monitoring
El Dorado	The County indicated that Parks and Recreation monitors American River, but Parks and Recreation did not respond to requests for information
Placer	No regular monitoring, but some event-based monitoring
Plumas	July 4 <sup>th</sup> monitoring for four years

Thirty-eight counties do not conduct any type of county-based bacterial monitoring, either because there are no known fresh water recreational areas in the county, fresh water areas do not allow swimming, or because they have not implemented a monitoring program (Table 3).

Table 3. Counties in which county agencies do not conduct any bacterial monitoring of freshwater recreational areas (N=38)

COUNTY	
Amador	Orange
Butte	Sacramento
Calaveras	San Benito
Colusa	San Diego
Del Norte	San Francisco
Fresno	San Luis Obispo
Glenn	San Mateo
Inyo	Santa Barbara
Kern	Santa Clara
Kings	Shasta*
Lake*	Sierra*
Mariposa*	Solano
Mendocino	Stanislaus
Merced	Sutter
Modoc	Tehama
Mono	Trinity
Monterey	Tuolumne
Napa	Ventura
Nevada	Yuba

\*County is listed as not having any county department monitoring because AEAL did not get a reply from county departments contacted, but was referred to other entities by departmental personnel

Tuolumne County is placed in the category of no bacterial monitoring although it is unclear if this is correct. During the initial telephone contact, AEAL staff was told by a county employee that there was extensive monitoring in the county and information would be provided. The email survey was not returned and during a follow-up telephone contact AEAL staff was told the employee was on vacation for several weeks. The next contact was made after the employee should have returned to work, and AEAL staff was informed that the employee no longer worked with the county and was referred to the replacement. The replacement indicated that no monitoring was conducted.

AEAL staff did not receive any response from three counties: Imperial, Riverside, and Tulare.

There are 22 counties in which non-county-based bacterial monitoring is conducted (Table 4). Monitoring includes sporadic volunteer monitoring by watershed councils and regular monitoring by various entities such as municipalities, National Parks Service, Forest Service, and US Bureau of Reclamation. The USBR monitors Napa County (at Lake Berryessa and Putah Creek) and also monitors sites in Santa Barbara (Santa Ynez River), Fresno (San Justo River), Placer (Folsom Lake), Calaveras/Tuolumne (Stanislaus River), Nevada (Little Truckee River), Sacramento (American River), Trinity (Trinity River), and Shasta (Clear Creek, Sacramento

River) counties. USBR monitoring data for Lake Berryessa and the Central Valley are included in separate spreadsheets (Appendix 3) in this report.

Table 4. Counties in which non-county entities conduct some level of bacterial monitoring, although not necessarily for contact recreation (as in the case of drinking water supplies). (N=22)

COUNTY	NOTES
Alpine	Alpine Watershed Group conducts volunteer monitoring
Amador	Upper Mokelumne River Watershed Council conducts volunteer monitoring
Butte	City of Chico monitors Chico Creek and State Water Resources Control Board monitors Lake Oroville, the Forebay, and the Afterbay
Calaveras	US Bureau of Reclamation monitors Stanislaus River below New Melones Dam (directly below the dam, but not a swimming area)
Del Norte	Yurok Tribal Environmental Program monitors Klamath River for blue-green algae
Fresno	US Bureau of Reclamation monitors San Justo River below Friant Dam at Lost Lake Park
Lassen	Lassen High School ROP Natural Resources Management Course conducts volunteer monitoring
Mariposa	National Park Service conducts mandated wastewater monitoring on Merced River; Upper Merced River Watershed Council conducts volunteer monitoring
Napa	US Bureau of Reclamation monitors Lake Berryessa, Putah Creek below Monticello Dam
Nevada	US Bureau of Reclamation monitors Little Truckee River below Boca Reservoir. Volunteer monitoring by Truckee River Watershed Council, Nevada County Resource Conservation District, Wolf Creek Community Alliance
Orange	Lake Mission Viejo Association monitors Oso Creek
Placer	US Bureau of Reclamation monitors Folsom Lake on Dam Face (Lake Sample) and Lake Clementine (boating lake)
Sacramento	US Bureau of Reclamation monitors American River at Negro Bar (upper Lake Natomas), American River at Head Water of Folsom South Canal (Lake Natomas), and American River at Rainbow Bridge
San Bernardino	Individual beaches, parks, and associations monitor swim areas
San Diego	City of San Diego monitors nine reservoirs that supply drinking water and swimming is not allowed in these reservoirs
Santa Barbara	County monitors Lower Santa Inez Recreational Area because it



COUNTY	NOTES
	feeds into Lake Cachuma Reservoir for drinking water. USBR monitors Santa Ynez River below Lake Cachuma.
Santa Clara	City of San Jose, Almaden Lake Park; Children's Discovery Museum conducts volunteer monitoring
Shasta	National Parks Service monitors Whiskeytown National Recreational Area. US Bureau of Reclamation monitors Clear Creek below Whiskeytown, Sacramento River below Shasta Dam, and Sacramento River below Keswick Dam (not a swimming area)
Sierra	Forest Services monitors Sand Pond
Sonoma	Community Clean Water Institute conducts volunteer monitoring
Trinity	US Forest Service does some testing at Trinity Lake, but it is not done at the shoreline and it is not for public health purposes. US Bureau of Reclamation monitors Trinity River at Lewiston
Ventura	Public Works Department monitors Malibu Creek, but no swimming is allowed; most of the freshwater in the county is for drinking water

The 303d list of impaired waterways for the state show several sites in the Central Coast (Region 3) and Los Angeles (Region 4) areas are impacted by bacterial pollution and may require TMDL programs (Table 5). A more detailed list identifying specific waterways is included as a separate spreadsheet (Appendix 1) in this report.

Table 5. 303d List of impacted waterways requiring TMDL programs; waterways impaired with bacteria

REGION	NUMBER SITES	STRESSOR
1 – North Coast	0	N/A
2 – San Francisco Bay	4	Coliform Bacteria
3 – Central Coast	26	Fecal Coliform
4 – Los Angeles	36	Total, Fecal, Coliform Bacteria
5 – Central Valley	6	Fecal, Coliform Bacteria
6 – Lahontan	0	N/A
7 – Colorado River Basin	0	N/A
8 – Santa Ana	3	Total, Fecal Coliform
9 – San Diego	8	Fecal Coliform, Indicator Bacteria, Enterococcus

AEAL staff examined the adopted NPDES orders of the nine Regional Water Boards (Tables 6, 7). NPDES permits that require bacterial monitoring for influent waters, receiving waters, surface water, or storm water are noted in a separate spreadsheet (Appendix 2) in this report.

The spreadsheet includes the Regional Water Board order number, the entity the permit was awarded to, the parameters that require monitoring (total coliform, fecal coliform, *E. coli*) and the frequency of sampling and reporting required. For Regions 2, 3, 4, and 9 only orders corresponding to Publicly-Owned Treatment Works (POTW) NPDES permits were examined (a list of POTWs was provided to AEAL by the State Water Resources Control Board staff). The entities required to monitor are provided as a separate spreadsheet, rather than incorporated into the main database since it is not clear whether the site being monitored coincides with fresh water recreational areas.

Table 6. Regional Water Board Orders and the number of permits requiring bacterial monitoring in influent or receiving waters for each region

<b>Region</b>	<b>Number of Permits</b>
1 North Coast	5
2 San Francisco Bay	2
5 Central Valley	61
6 Lahontan	0
7 Colorado River Basin	5
8 Santa Ana	2
9 San Diego	14

Table 7. Counties that have NPDES permits requiring bacterial monitoring in receiving or surface waters, but are not necessarily monitoring fresh water swimming areas.

<b>REGION</b>	<b>COUNTY</b>	<b>REGION</b>	<b>COUNTY</b>
1	Del-Norte	5	Merced
1	Mendocino	5	Nevada
1	Sonoma	5	Placer
2	Alameda	5	Plumas
2	San Mateo	5	Sacramento
3	Santa Cruz	5	San Joaquin
3	Santa Barbara	5	Shasta
3	Monterey	5	Siskiyou
4	Los Angeles	5	Solano
4	Ventura	5	Sutter
5	Alpine	5	Tehama
5	Amador	5	Tulare
5	Butte	5	Yolo
5	Calaveras	5	Yuba
5	Contra Costa	7	Riverside
5	El Dorado	7	Imperial
5	Fresno	8	Unspecified County
5	Glenn	9	Orange
5	Kern	9	San Diego

## CONCLUSIONS

The efforts to date by AEAL staff indicate it is possible to obtain a comprehensive list of all freshwater recreation areas in the state and determine whether there bacterial monitoring is being conducted, however completing this task will demand more time and effort. For example, the contact at Glenn County indicated that the USBR has “jurisdiction” over Stony Gorge Reservoir in Glenn County and suggested contacting USBR for information on bacterial monitoring. USBR indicated that it does not monitor, but suggested that the County or Orland Unit Water’s Association may conduct monitoring. By the time the USBR was able to respond to the inquiry, the project was scheduled for completion. Because the original referral was from the county to USBR, and USBR eventually referred AEAL back to the county, it is unlikely that USBR has any knowledge of monitoring. AEAL staff can contact the Orland Unit Water Association to determine if they monitor, but experience gained during this project suggests that it is unlikely that local entities monitor for bacterial indicators or maintain a database of results.

Another source that could be searched is the Federal Energy Regulatory Commission (FERC) relicensing data. A contact working with FERC re-licensing indicated that there are two-year studies of recreational area water quality (as they relate to the relicensing), but no “central repository” for these studies, nor do these recreational areas necessarily allow public swimming. While these studies would be available either on line or from consulting companies conducting the monitoring, searching thousands of documents or requesting information from consulting companies could take a large amount of time and effort.

The Department of Fish and Game’s fresh water fishing website is not a good resource for tracking recreational areas that allow swimming. While the website is very thorough in allowing the user to search by county or by specific waterway, the associated information does not indicate whether swimming is allowed as this is not the purpose of the website. Nor does the website indicate the regulatory authority for each waterway, who would presumably have knowledge of whether bacterial monitoring has been conducted.

Inconsistent information from the same organization also makes it difficult to effectively track monitoring efforts. For example, one contact at the USBR sent electronic copies of bacterial monitoring data for both Lake Berryessa and the Central Valley. Within the Central Valley dataset, there are bacterial data for Stanislaus River below New Melones Dam. Another contact at USBR specifically for New Melones said that while USBR does monitor water quality at this site, they do not conduct any bacterial monitoring anywhere nearby since no swimming is allowed. Consequently, it appears there is an element of chance as to the individual originally contacted and whether they happen to have the necessary information. These examples also illustrate a general unwillingness of personnel in many agencies to spend time even asking questions within their agency or searching through records.

Drinking water supplies specifically were not investigated as a source for monitoring data. However, drinking water sources were used if the water body was also used for contact

recreation. No grant programs or agricultural coalitions in the Central Valley were contacted as a source of bacterial monitoring for fresh water recreational areas. The UCD Data Center housed at AEAL maintains a database for the State Water Resources Control Board and data from the Central Valley Regional Water Board including the Irrigated Lands Regulatory Program (ILRP) Coalition data are included. All bacteriological data are available through the UCD Data Center but are not included in the database for several reasons including appropriateness and format. Coalitions are required to monitor for *E. coli* at all sites, but almost without exception, the sites are not designated for contact recreation. Downstream water bodies are given a contact-recreation (REC 1) beneficial use, but there is some debate as to whether the tributary rule should be applied to agricultural drains. Currently the AEAL believes that the ILRP data should not be included as part of this report. However, it is one of the few data sets with appropriate quality control data and can be provided if requested.

At this point, it seems unlikely that any large data sets are undiscovered. The only exception to this could be large municipalities like Sacramento, which obtains 85% of its drinking water from the Sacramento River and the American River. The City of Sacramento does perform testing on their water supply for total coliform bacteria. At this point, we do not have a location for the intake to determine its proximity to recreational areas and parks used for swimming. But, the rivers are used for contact recreation throughout the reaches near Sacramento and it is likely that bacteriological data would reflect water quality conditions at downstream recreational areas. To extend this analysis across the state, for each municipality, a determination of their drinking water source would be made. If surface water is used, the type and location of the surface water would be identified, and its proximity to recreational areas determined.

The remaining data that may be located at entities such as local watershed groups, citizen monitoring groups, or local water agencies has been collected with little regard to quality control or methodology. It is unlikely that the information content of these data will be worth the cost and time to obtain them. While not all contacts have responded to inquiries by AEAL staff, sufficient information has been collected to allow the State Water Resources Control Board to make policy decisions about future monitoring. If desired, all the major agencies/entities that might monitor (FS, NPS, USBR, all municipalities) can be contacted on a region by region, forest by forest, city by city, or recreational area basis for information. AEAL staff have contacted many of these entities while chasing down other leads and found them not particularly helpful, but a systematic search of these entities could be made and any results cross-referenced with the recreational areas data to determine if water is sampled from target water bodies.

There were two aspects to this analysis that were surprising. 1) The majority of agencies tasked with bacterial monitoring did no monitoring and had little or no information on monitoring conducted by others. AEAL staff was met with indifference in many cases, and in a few cases with hostility. Clearly, bacteriological monitoring has not been a priority of any entity and has been ignored by a majority of the counties and other agencies with jurisdiction over fresh water recreational areas. 2) Those programs with some data have almost no metadata and essentially no quality control information, making the interpretation of past monitoring data difficult and its use in any formal decision process questionable.

It is difficult to determine if state public health requirements are being ignored or violated. Tremendous data gaps exist with respect to understanding the timing and extent of fecal contamination of fresh waters in the state. At this point, it would be difficult to provide an assessment of the condition of waters of the State with respect to bacteria. Counties indicated that because they were not mandated to sample, none took place. If any regulations are applicable, counties in many cases appear to be simply unaware that they exist.

## **RECOMMENDATIONS**

The following recommendations are based on the assumption that the overall goal is to develop an understanding of the extent of bacterial contamination of surface waters in the state. Such an understanding would inform the 303d listing review process and provide necessary information to prioritize water bodies for source identification and implementation of management practices. To develop this understanding will require a centralized, mandated program in which counties are required to perform testing and report results to the state as is done for coastal beaches. If left to organize their own efforts, our opinion is that the counties will be unable to provide any reliable information within a reasonable time frame. With the exception of counties that already perform coastal beach monitoring, there appears to be little understanding within the counties of the issues, techniques, and difficulties associated with bacteriological monitoring. It should also be noted that many counties will experience considerable financial demands if they are required to monitor using an in-house laboratory or a contract laboratory.

- Do not expend additional resources on acquiring information about remaining data sets. Although the AEAL is capable and willing to contact any additional entities that may have data, it seems as if the added value of these data would be low relative to any decisions that need to be made. The only exception to this would be large municipalities that use surface water as a drinking water source.
- Request data sets from sources currently identified (if not already in the database) and incorporate into a database that will be used for reporting from a new monitoring program. The SWAMP bacteriological database would be a good candidate for the database structure and the current Access database (Appendix 4) developed for this project would be a good metadata file.
- Rather than rely on counties for any further information, the State Water Resources Control Board should identify candidate water bodies for bacterial monitoring or establish criteria for identifying monitoring locations that would then allow the counties to identify appropriate water bodies. The criteria should be broadly inclusive because it should be assumed that if water is present, it is going to be used for recreation unless physically fenced.
- The State Water Resources Control Board should develop minimum monitoring requirements for bacteria in fresh water including frequency of monitoring, constituents, methodology, quality control requirements and reporting. All counties should be required to comply as is done with the coastal counties and beaches. Because the information does not involve drinking water, the State Water Resources Control Board would be the most appropriate agency to provide oversight for the program.

## **DATABASE AND RELATED SPREADSHEETS**

In the Microsoft Access Database (Appendix 4) of this report, all of the contacts made in each of the counties as well as all of the survey results are provided. The USBR data for Lake Berryessa and Central Valley and 303d Impaired Waterway data are included in this database, but also attached as separate Excel files. The list of counties and contacts is also summarized in Table 8 below. An “NA” in the database indicates the information was not available, generally due to the county contact being unable to supply the requested information.

Table 8. Summary table of contacts made, the corresponding county and agency.

<b>COUNTY</b>	<b>CONTACT NAME</b>	<b>AGENCY</b>
Alameda	Cynthia Bartus Jepsen	Department of Environmental Health
Alameda	Hal MacLean	East Bay Regional Park District
Contra Costa	Jocelyn Habal	Department of Environmental Health
Contra Costa	Neal Fujita	East Bay Regional Park District
Alpine	Richard Blood	Department of Health and Human Services
Alpine	Chris Katopothis	Alpine Watershed Group
Amador	Tracey Towner Yep	Amador County Recreation Agency
Amador	Anthony Boitano	East Bay Municipal Utilities District
Amador	Robert Bean	Upper Mokelumne River Watershed Council
Butte	Doug Fogel	Department of Public Health
Butte	Dennis Beardsley	City of Chico
Calaveras	Tony Maris	Department of Environmental Health
Calaveras	Mike Miller	Department of Public Works
Colusa	Robert Kostlivy	Department of Environmental Health
Colusa	Jon Wrysinski	Department of Public Works
Del-Norte	Leon Perraul	Department of Environmental Health
Del-Norte	Online website	Yurok Tribal Environmental Program
El Dorado	Christine Mearse	Department of Environmental Health (Recreational Health Program, Placerville Division)
El Dorado	Noah Rucker-Triplett	El Dorado County Parks, Rivers, Trails
El Dorado	Virginia Huber	Department of Environmental Health (Recreational Health Program, South Lake Tahoe Division)
El Dorado	Sue Norman	USFS Lake Tahoe Basin Management Unit
Fresno	Kesha Criswell	County of Fresno Environmental Health System
Fresno	Pat Starky	Public Works Resources Department
Fresno / Kern / Tulare	Peter Landucci, Darryl Stephen	Sequoia National Forest
Glenn	Don Holm	Environmental Health
Glenn	Jackie Billings	Planning and Public Works Agency
Glenn	Richard Robertson	US Bureau of Reclamation
Humboldt	Harriet Hill	Division of Environmental Health
Humboldt	General Number	Public Works – County Parks

Imperial	Marcus Ramirez	Department of County Property Services
Inyo	Marvin Moskowitz	Environmental Health Services
Kern	Sally	Department of Environmental Health Services
Kings	Keith Winkler	Environmental Health Services
Lake	Robyn Browne	Department of Environmental Health
Lake	Caroline	Department of Parks and Recreation
Lassen	Alan Jones	Department of Environmental Health
Lassen	John Allison	Lassen National Forest
Lassen	Jim Reichle	Lassen High School ROP Natural Resource Management course
Los Angeles	Hugh Maldonado	Department of Parks and Recreation
Madera	Jill Yaeger	Department of Environmental Health
Marin	Robert Turner	Environmental Health Services
Mariposa	Dave Conway	Department of Health
Mariposa	Jim Roche	National Parks Services – Resources Management and Science Division
Mariposa	Jim Allen	National Parks Services
Mariposa	Holly Warner	Upper Merced River Watershed Council
Mendocino	John Morley	Department of Public Health – Environmental Health Branch
Mendocino	Melissa Brosnan-Torisse	PG&E
Mendocino	John Brown	Hendy Woods State Reserve
Mendocino	Brett Carre	US Army Corps of Engineers (Lake Mendocino)
Merced	General Number	Public Works
Merced	Steve Lowe	Division of Environmental Health
Modoc	Warren Farnam	Environmental Health Department
Modoc	Rick Hironymous	Public Works Department
Mono	Dennis Lampson	Environmental Health
Mono	Kelly Garcia	Public Works Department
Monterey	Roger Beretti	Health Department
Monterey	Thomas Shepherd	County of Monterey Lake San Antonio
Napa	Christine Secheli	Environmental Management Department
Napa	Karen J. Wagner	US Bureau of Reclamation, Lake Berryessa
Nevada	Pat Ditrovati	Department of Environmental Health – Consumer Protection Division



Nevada	Daniel Luban	South Yuba State Park
Nevada		US Army Corps of Engineering
Nevada		Yuba Watershed Council
Nevada	Beth Christman	Truckee River Watershed Council
Nevada	Lesa Osterholm	Nevada County Resource Conservation District
Nevada	Noel Kroeplin	Wolf Creek Community Alliance
Orange	Ted von Bitner	Watershed and Coastal Resources Division, County of Orange
Orange	Thomas G. Buckowski	Lake Mission Viejo Association
Placer	Richard Brown	Environmental Health
Placer	Bob Becker	USDA Forest Service – Lake Tahoe Basin
Placer	Don Schmidt	CA Department of Parks and Recreation – Donner Memorial State Park
Plumas	David Cline	Public Health Services – Environmental Health
Plumas	Jim Bowland	Public Works Department
Plumas		PG&E
Riverside	Mike Mendoza	Environmental Health Department
Sacramento	Mike Gross	Folsom Lake State Recreation Area / CA State Parks
San Benito	Robert Shingai	Environmental Health
San Bernardino	Jim Nichol	Environmental Health Services
San Bernardino	Sam Brock	Iron Wood
San Bernardino	Rene Longoria	Silver Lakes Association
San Bernardino	Osmar	Spring Valley Lake
San Bernardino	Sue Alcott	Wrightwood Country Club
San Bernardino	Ron Robillard	Cedar Lake Camp
San Bernardino	Jason Rice	Meadow Park Swim Beach
San Bernardino	Katy Lawrence	Presbyterian Conference Center
San Bernardino	Phil Krause	Lake Gregory Regional Park

San Bernardino	Paul Lacanford	Forest Home Christian
San Bernardino	Jeffrey Gill	Calvary Chapel Christian
San Bernardino	Rod	Green Valley Lake
San Bernardino	John Rutledge	Arrowhead Lakes Association
San Bernardino	General	Lake Arrowhead Resort
San Bernardino	Home Owners Association	Meadow Bay North
San Bernardino	Tony Lees	Pali Mountain
San Diego	Ron Coss	Environmental Health / Land and Water Quality Division
San Diego	Dana Chapin	City of San Diego
San Francisco	Lorraine Anderson	Public Health, Environmental Health Section
San Francisco	Elton Pon	Parks and Recreation
San Joaquin	Jeff Carruesco	Environmental Health Department
San Luis Obispo	Denis Philbin	Parks Department
San Mateo	General	Department of Parks
Santa Barbara	Willy Bromid	Environmental Health Services
Santa Barbara	Jim Lopez	Los Padres National Forest, Santa Barbara
Santa Clara	Alex Paerson	City of Jan Jose, Almaden Lake Park
Santa Clara	Sandy Derby	Children's Discovery Museum
Santa Cruz	Steve Peters	Environmental Health Services
Shasta	Cindy Luzietti	Shasta-Trinity National Forest
Shasta	Brian Rasmussen	National Park Service, Whiskeytown National Recreational Area
Sierra	Heather Newell	Yuba River Ranger Station
Sierra	Elizabeth Morgan	Environmental Health Department
Siskiyou	Dan Wessell	Environmental Health Department
Siskiyou	Randy Akana	Public Works Department
Solano	Patrick Rodriguez	Environmental Health Department
Solano	Dan Sykes	Parks and Recreation
Sonoma	David Robinson	Park Operations

Sonoma	Jim Tyler	Parks Department
Sonoma	General Number	US Army Corps of Engineers (Lake Sonoma)
Sonoma	Robert Pennington	Community Clean Water Institute
Stanislaus	Denise Wood	Environmental Health Department
Sutter	Sharon Schiffers	Environmental Health Services
Tehama	Tim Potanovic	Department of Environmental Health
Trinity	Peter Hedtke	Environmental Health Office
Tulare	Larry Dwoskin	County Public Works Department
Tuolumne	Christy McKinnon	Environmental Health Division
Ventura	Darrell Siegrist	Environmental Health Division
Ventura	Kevin Coyne	Public Works Agency
Yolo	Wayne Taniguchi	Health Department, Environmental Health Division
Yuba	Paul Donoho	Environmental Health Department