Chapter 7
MONITORING AND ASSESSMENT

An ongoing water quality surveillance and monitoring program is essential for implementation of a Basin Plan. It allows characterization of ambient water quality and the degree of support for beneficial uses on both a short-term and a long-term basis. “Baseline” data can be used to set standards for water bodies which currently do not have site-specific standards. “Trend” information defines the need for and allows prioritization of regulatory actions. Monitoring can document compliance with permit conditions, and the success of remedial activities.

The U.S. Environmental Protection Agency (USEPA) requires states to submit biennial reports on the quality of their water bodies under Section 305(b) of the federal Clean Water Act. It also requires identification of water bodies with any of several specific problem types (§ 131.11, 304(*l*), 314, and 319 “lists”). Beginning in 1989, the State Water Resources Control Board (State Board) and the Regional Boards have supplemented the “305(b) Report” with a detailed computer database. The assessment, which will be updated on an ongoing basis, will be used as part of the Watershed Management Initiative to provide the background for funding decisions.

The Porter-Cologne Act (Section 13267) authorizes Regional Boards to investigate water quality and to require dischargers to submit monitoring reports. It also (Section 13383) authorizes the State and Regional Boards to establish discharger monitoring requirements.

Because of the large size of the Lahontan Region, the large number of water bodies in it, the difficulties of sampling in remote terrain and severe weather, and ongoing funding constraints, detailed monitoring data are available for only a few of the Region's waters. The following is a summary of the kinds of monitoring information which are used by Regional Board staff in their ongoing planning, assessment, regulatory, and enforcement activities. Additional information on the assessment process is also provided. Because of expected year-to-year changes, no attempt has been made to provide a detailed list of monitoring stations, or to include monitoring results in this Chapter. Readers who wish to obtain information on monitoring or assessment data for a particular water body should contact Regional Board staff.

Water Quality Monitoring

Baseline and Trend Monitoring

The State Board has several ongoing monitoring programs which are statewide, or which involve sampling within the jurisdiction of more than one Regional Board. Programs such as the State Mussel Watch, and the Striped Bass Study (which affects the San Francisco Bay and Delta) are of little relevance to the Lahontan Region. However, the statewide Toxic Substances Monitoring Program (TSMP) samples several stations in the Lahontan Region every year.

Under the TSMP, the Department of Fish and Game collects fish or other organisms at each station, preserves and prepares specimens according to a rigorous protocol, and analyzes them for a spectrum of metals and/or toxic organic chemicals. Results are reported to the State Board, which prepares an annual report interpreting the data on a geographic and historical basis. Because of the small sample numbers and (in some cases) the lack of water quality criteria, results do not necessarily indicate impairment of beneficial uses. However, elevated toxic levels do indicate a need for more specific study of possible problems and their causes. In the Lahontan Region, elevated metals levels have been detected in fish from streams affected by past mining activity.

Another statewide program which has involved monitoring is the Well Investigation Program (WIP), which was initiated in 1986 to document sources of organic chemical degradation in public drinking water supply wells. This program is implemented at both the State and Regional Board levels. As of 1989, only 12 degraded wells (less than 1% of the total) had been identified in the Lahontan Region. Funding is no longer available for Regional Board monitoring under this program. Monitoring may be resumed in the future. Additional discussion on the enforcement-related aspects of the WIP is provided in Chapter 4.

The State Board has conducted shorter special studies in response to legislative mandates, on topics such as selenium in agricultural drainage waters and nitrate in ground water. The State Board has also contributed funding to cooperative studies by other state and federal agencies, such as the Lake Tahoe Interagency Monitoring Program (see Chapter 5).

The Regional Board also periodically conducts or manages special studies which provide baseline or trend monitoring data. Funds for these studies have come from the federal Section 205(j) grant program and the State Board special studies budget. Other potential funding sources are the Section 314 Clean Lakes Grant program and the Section 319 Nonpoint Source program.

The Regional Board makes use of monitoring data collected by other agencies such as the U.S. Geological Survey, the U.S. Forest Service, the California Department of Fish and Game, the California Department of Water Resources, and the Nevada Division of Environmental Protection. “Basic research” projects are also useful in assessing baseline/trend conditions. Ongoing research by California universities takes place at Lake Tahoe, Mono Lake, and Eagle Lake. The University of Nevada also conducts research in Lahontan Region waters.

Volunteer monitoring programs may involve data collection by school classes or citizens' groups who have been provided with training and equipment by Regional Board staff or other agencies such as the Department of Fish and Game. Quality assurance/quality control (QA/QC) programs must be implemented to ensure that data will be useful for Regional Board programs. An interagency program to encourage citizen monitoring is active in the Lake Tahoe Basin, and volunteer monitoring by stakeholders is expected to be an important part of the Watershed Management Initiative.

Compliance Monitoring

Waste discharge requirements and NPDES permits adopted by the Regional Board include discharger self-monitoring programs. Monitoring reports and technical reports may also be required of dischargers independently of waste discharge requirements (CA Water Code § 13267[d]). Dischargers may be required to monitor surface waters upstream and downstream of the discharge, as well as at the discharge point. Ground water monitoring, including installation of monitoring wells, may be required where appropriate. Monitoring programs range from the simple (periodic visual inspections of erosion and drainage control facilities at shopping centers) to the complex (physical, chemical, and biological analyses by municipal wastewater treatment plants and industrial dischargers). Parameters to be analyzed may be as varied as turbidity associated with dredging, toxic metals in geothermal discharges, and nutrients and pesticides in ground water underlying golf courses. Self-monitoring report submittal is tracked and report results are evaluated by Regional Board staff on an ongoing basis. The Board also receives monitoring data as a result of other regulatory programs (e.g., various toxics control programs).

Because many of the self-monitoring programs in the Lahontan Region do not require the collection of quantitative information, or require monitoring of only a few parameters, discharger monitoring data cannot be relied upon to provide quantitative background information on most of the receiving waters of the Region. This is particularly true of nonpoint source discharges.

Regional Board staff conduct periodic inspections of dischargers, and may collect samples for separate analysis of compliance with permit conditions. Occasionally, split samples may be taken to test the accuracy of the discharger's laboratory. Sampling of certain types of dischargers is required under state administrative procedures.

The California Environmental Quality Act (Public Resources Code § 21081.6) requires that monitoring and reporting programs be set up for any mitigation measures adopted as conditions of project approval. In general, the Regional Board's discharger monitoring programs fulfill the CEQA requirements. However, when the Regional Board acts as lead agency for the adoption of Basin Plan amendments or policies, additional monitoring may be necessary to document the accomplishment of mitigation conditions.

Remedial Project Monitoring

Regional Board staff are also involved in monitoring to measure the impacts of state-funded remedial projects. The Regional Board is responsible for oversight of the Leviathan Mine Pollution Abatement Project in the Bryant Creek drainage in Alpine County (See Section 4.7 of this Basin Plan). This includes periodic sampling of an established surface and ground water station network for selected toxic metals and related parameters, monitoring of the success of specific remedial measures such as revegetation, and bioassessment of streams affected by the discharge.

Monitoring for TMDLs

Monitoring data are essential for the development of Total Maximum Daily Loads (TMDLs) for impaired water bodies, and for evaluation of the accuracy of TMDL models and the success of remedial measures which are implemented as a result of the adoption of TMDLs. The development and implementation of TMDLs may involve the use of historical monitoring data, and monitoring by

Regional Board staff, Regional Board contractors, other agencies, and/or dischargers.

Complaint and Enforcement Monitoring

When investigating a reported water quality problem, Regional Board staff may collect samples and take photographs to document the extent of the problem and provide a basis for enforcement or remedial action. Monitoring is also performed by staff and/or the discharger as a follow-up to an enforcement action (e.g., underground tank cleanup). The existence of previous “baseline/trend” data is an important factor in documenting and correcting pollution.

Aerial Surveillance

The Regional Board's annual budget includes funds for aerial surveillance. Flights are made in chartered aircraft at least once a year over portions of the Region to take photographs for documentation of current conditions and detection of problems. Because of the large size and remote nature of much of the Lahontan Region, aerial surveillance allows the detection of problems which might not be apparent to inspectors on the ground.

The Regional Board also uses aerial photographic mapping by contractors and other agencies as the basis for special studies and remedial programs. For instance, aerial photographs of the Leviathan Mine were used in design of the Pollution Abatement Project. Historical and current aerial photographs also are being used to document shoreline erosion problems at Lake Tahoe.

Quality Control and Data Management

Federal regulations and state policy require the preparation and implementation of Quality Assurance/Quality Control (QA/QC) Plans for almost all monitoring carried out by the Regional Board's staff or its contractors. Dischargers must use laboratories approved by the Regional Board's Executive Officer and/or certified by the State Department of Health Services. The Regional Board's laboratory has an approved QA/QC program, and staff follow a standard “chain of custody” process in collection, transport, and shipment of samples.

Discharger monitoring reports are kept in the Regional Board's files; older files are microfiched. The Board has increasingly sophisticated computer facilities for analysis of data collected in special studies. “Raw” data are periodically made available to the State Board for entry into the STORET and/or SWQIS databases for use by other agencies.

The results of special studies are generally summarized in Regional Board staff reports and are discussed at public meetings of the Regional Board. The results of complaint monitoring are provided to the person or agency submitting the complaint. Copies of Regional Board planning documents and special studies reports are provided to public and university libraries.

Water Quality Assessment

The State Board has been preparing “Section 305(b) Reports” since the mid-1970s. Most of these reports have been fairly general in nature, highlighting a few significant problem areas and estimating total area or stream mileage of waters statewide which were classified as “good,” “medium,” or “poor” quality. In 1989, the State Board began a more detailed Water Quality Assessment (WQA) process to fulfill USEPA reporting requirements and to provide the basis for prioritizing funding under the State's Clean Water Strategy. The concepts of the Clean Water Strategy have since been incorporated into the Watershed Management Initiative Process.

The WQA process involves ongoing update of information in a computer database, which is now linked to Geographic Information System (GIS) data from a number of other agencies. The database provides qualitative information on water quality problems and threats, including causes, sources, and severity, and degree of beneficial use support. The database also allows inclusion of other information, such as remedial projects in progress, and attached files of monitoring data. The information used in update of the database includes the types of monitoring data discussed earlier in this Chapter, records of past Regional Board enforcement actions, professional judgement of Regional Board staff and other State and federal agency scientists and engineers, and public comments. In addition to its use in Section 305(b) reporting, the WQA database is used in update of the Clean Water Act Section 303(d) list of impaired water bodies. (See Section 4.13 of this Basin Plan.)

Future Monitoring and Assessment Needs

The completeness and accuracy of the WQA, and the validity of decisions based upon it, depend to a great extent on the availability of good monitoring data. As noted above, monitoring data are not available for most water bodies in the Lahontan Region. Regional Board staff will continue to submit funding proposals for special studies to increase knowledge of background water quality, and understanding of water quality problems. Staff will

also encourage monitoring and research by other agencies and universities to fill the many significant data gaps in the Lahontan Region.