#### PREPARATION OF THE TECHNICAL REPORT

This is the heart of the application for a permit and contains all of the technical information necessary to allow the Department to evaluate the proposed water system. This report must accompany the permit application and must be prepared by a qualified engineer with drinking water system design experience. Although it is not necessary that the report follow the specific order in which the following items are presented, it must address all of the required information. If part of the information is contained in another document or report, it is not necessary to repeat that information in this report but appropriate references should be indicated and the additional reports attached.

The discussion of the various elements of the technical report as presented below are for a community water system since this is the most comprehensive type of water system. If your application is for a non-community water system, you may ignore those items (or simply indicate them as non-applicable) that do not pertain to a non-community system. Examples are the number of service connections or the map of the service area. Those elements that pertain only to a community water system or a non-community water system are designated as CWS or NCWS respectively.

# 1. General Water System Information

This section should present or describe basic information regarding the proposed water system. This section should include a written description of how water flows through the system, from the source through the distribution system and how the flow rates and water system pressures are maintained. These items are in addition to the managerial information that is included in the TMF Assessment. If the information is included elsewhere, it does not have to be repeated in this report. The report should describe or provide the following:

- Type of use or users (NCWS). Describe the nature of the facility and the water system. For example will the system serve a campground, restaurant, motel, school, place of employment, etc? Also provide information on the anticipated number of persons that are or will be using the facility. Include estimates of maximum as well as average number of persons that will have access to or may use water from the water system. Also describe the basis for your estimates.
- <u>Period of use</u>. If the water system will be used on a seasonal basis you should indicate the periods of time that the water system will be in use. Examples of where this may be applicable are second home subdivisions that are closed in the winter, ski resorts, campgrounds etc.
- <u>Consolidation evaluation</u>. As indicated earlier, the feasibility of consolidating with an existing water system rather than creating a new one must be evaluated. The report should describe the results of that evaluation. If consolidation was deemed not to be feasible, a justification for that determination must be provided. Adequate justification, for example, may be based on physical separation (no nearby water

- system), type of terrain, excessive costs, or lack of sufficient water in the existing system.
- <u>Map of facilities</u>. You must provide a map that clearly shows the locations of the proposed water source(s), the location of any treatment facilities, storage facilities, and primary transmission lines. If you desire, these locations can be included on the map delineating the bacteriological sample sites.

### 2. Source Water Information

- <u>Description of source(s)</u>. The report must describe the nature of the planned source of water for the system. For example, will the source be a surface stream, lake or reservoir; a well; or an interconnection with another water system? Also describe the location of any surface water intakes and any information on the groundwater for proposed wells (depth of water table, etc.). Yield must be determined using the methods described in the Waterworks Standards.
- Water rights. If the planned source is from a surface water or an adjudicated groundwater basin, you need to provide adequate information to demonstrate that you have legal rights to divert or extract water in the amount indicated in your application. Demonstration can be in the form of a copy of a water right permit application submitted to the State Water Resources Control Board or a permit approval from the Watermaster for extraction from an adjudicated basin. If you are claiming a riparian right, a statement to that effect will suffice. Water extracted from a non-adjudicated groundwater does not require any demonstration of rights.
- Water quantity. In order to receive a permit for a new water system, you must demonstrate that the proposed source is sufficient to reliably serve the anticipated water demands of the system (including expected growth) for at least 10 years. Information must be presented to establish what the anticipated water demand will be for a 10-year period for the service area of the system. Make sure all water demands including required fire flows are included. If your source is a well, you need to establish the anticipated safe yield for the well and the ability of the groundwater basin to sustain that yield for the foreseeable future. The District Office can provide you with information on calculating well yield. The safe well yield, or the allowable water right, must be sufficient to meet the water demands for a period of at least 10 years. The Maximum Day Demand (MDD) must be provided for the water system, in accordance with the WaterWorks Standards. Water system sources must provide MDD without storage.
- Assessment of vulnerability to contamination. The technical report must include a
  source water assessment to determine the vulnerability of the source water to
  contamination. Forms and guidance on conducting this assessment are available from
  the District Office.
- <u>Source water quality analysis</u>. In order to assess the suitability of the proposed source and the appropriateness of any planned treatment, it is essential that the quality of the

source water be determined. Samples of the raw source water must be taken and analyzed by a State certified laboratory. All sources, whether surface or groundwater, must be sampled and analyzed for all of the organic and inorganic chemicals as well as radioactivity compounds listed in the drinking water regulations. In addition, surface water sources must be analyzed for the presence of bacteriological organisms.

If the source will be a well that has not yet been constructed, the District Office or LPA may require a test well or may impose a permit condition that requires the constructed well to be sampled and analyzed before the well can be placed into service. If an existing well will be used, you will need to submit a copy of the well driller's report.

## 3. Treatment and Design Information

- Description and layout. Any type of treatment that is planned to be used should be described in detail and specification sheets for all units must be submitted. You should be aware that all surface sources and any wells subject to surface water influence must have complete filtration treatment. Most other sources require disinfection as a minimum. If the water quality analyses indicate that any drinking water standard may be exceeded, appropriate treatment must be provided. Treatment alternatives should be discussed with the District Office or the LPA during the initial meeting discussed in Section I. You also need to provide a flow diagram showing the locations and relationships of individual treatment process units. The District Office has various treatment data forms and checklists that may assist you in preparing and presenting this information.
- <u>Design capacities</u>. The report should set forth the design criteria or parameters used for the treatment units as well as the planned design capacities. For wells, the anticipated yield should be estimated.
- Spring construction. The report should describe the anticipated depth of the well as well as the size and type of casing to be used. Also show the planned depths of perforations and the type and depth of the sanitary seal. Please note that all wells must be constructed in accordance with the California Water Well Standards (DWR Bulletins 74-81 and 74-90) and any applicable local ordinances. Copies of these can be obtained from the District Office or the LPA. The Department also has available additional specific guidance material for the construction of drinking water wells. This can be made available upon request.
- <u>Treatment chemicals</u>. The type of chemicals planned to be used as well as the dosages and method of feeding those chemicals should be described. You need to be aware that all chemicals used in water treatment must be certified under the ANSI/NSF Standard 60.
- <u>Disinfection facilities</u>. Disinfection is one of the most important treatment processes and is required on many sources. The report should present detailed information on

any proposed disinfection facilities including equipment to be used, feed rates, residuals, contact times, CT values, reliability features, etc.

# 4. Distribution System Information.

- In designing and laying out the distribution system, the requirements of the Waterworks Standards should be carefully reviewed.
- <u>Location</u>. In addition to the overall map required under general information, you will need to prepare a scaled map showing the locations of all pumping stations, storage tanks, mains, hydrants, isolation valves, and flushing valves. If the system will have more than one pressure zone, the different zones should be delineated.
- Water mains. The report should provide the locations, sizes, lengths, depths, and type
  of materials to be used for all transmission and distribution mains. Special
  protections, such as where a water main crosses over a sewer line, should be shown
  and described.
- <u>Pumping stations and storage tanks</u>. Descriptions, specific designs, and the capacities of all pumping stations and storage tanks must be provided.
- <u>Distribution pressure</u>. The report should present sufficient design information to demonstrate that the system has been designed to sustain a minimum pressure of 40 psi throughout the distribution system at all times.

## 5. Operational Plans.

- Water Quality Monitoring Plan. As described in detail in the drinking water regulations, the water system must be monitored to assure that none of the drinking water standards are exceeded in the water delivered to consumers. The monitoring requirements are extensive and cover many different types of constituents including organic and inorganic chemicals, bacteria, radioactivity, and general minerals. It is required, therefore, that you develop and submit a water quality-monitoring plan that describes the proposed methods for compliance with these regulations. The plan, for example, must show the locations of sampling points, the frequency of sampling at each point, and the types of analyses to be run on the samples. If there will be rotational sampling for coliform bacteria, the method and locations of the rotational points should be described. The plan should also indicate who will be collecting the samples (e.g. water system personnel, certified laboratory) and the training those persons have or will receive. Once your monitoring plan has been approved, it will be incorporated into the permit and will be enforced.
- Water System Operations Plan. As described in the TMF guidance (also required by the Waterworks Standards), a comprehensive plan for operation of the water system must be prepared and submitted. The District Office or the LPA will inform you whether this plan needs to be submitted prior to or after issuance of the permit. The

District Office can provide you with a separate guidance document for preparation of an operations plan.

• <u>Disaster/Emergency Response Plan</u>. As described in the TMF guidance, you will need to prepare a plan for responding to emergencies. This includes notification to the appropriate regulatory agencies, notification to consumers, and actions to be taken by the water system in the event of an emergency (earthquake, water supply disruption, power outage, contamination incident, etc.). The District Office can provide you with sample plans and guidance material for preparation of the emergency plan.