RECOMMENDED PLANNING OUTLINE FOR WATER RECYCLING PROJECTS

This facilities planning report outline emphasizes the information relevant to water recycling and its application for water supply purposes. The outline is inclusive and not all items may be applicable to every project.

Facilities Plan/Project Report

A. Maps and Diagrams

1. Vicinity Map.
2. Detailed map of study area boundaries.
3. Topographic map.
4. City boundaries.
5. Wholesale and retail water supply entity boundaries within study area and adjacent to study area.
6. Wastewater agency boundaries within and adjacent to study area.
7. Existing recycled water distribution pipelines, storage, and customers.
8. Ground water basin boundaries, major streams, streams receiving waste discharges.
9. Present and projected land use.
10. Each recycled water facilities alternative (including recommended project), showing locations of potential customers and approximate pipeline routes.
11. Wastewater treatment schematic--existing and proposed.

B. Study Area Characteristics

1. Hydrologic features.
2. Ground water basins, including quantities extracted by all users, natural and artificial recharge, losses by evapotranspiration, inflow and outflow of basins, and safe yield or overdraft.
3. Water quality - ground water and surface water.
4. Land use and land use trends.
5. Population projections of study area.
6. Beneficial uses of receiving waters and degree of use, portion of flow that is effluent.

C. Water Supply Characteristics and Facilities

1. Description of all wholesale and retail entities.
2. All sources of water for study area and major facilities, their costs, (costs should be broken down into fixed and variable), subsidies, and customer prices.
3. Capacities of present facilities, existing flows, estimated years when capacities to be reached for major components (water treatment plants, major transmission and storage facilities).
4. Ground water management and recharge, overdraft problems.
5. Water use trends and future demands, prices and costs.
6. Quality of water supplies.

7. Sources for additional water and plans for new facilities (for both the local entity and the wholesalers).

D. Wastewater Characteristics and Facilities

1. Description of entities.
2. Description of major facilities, including capacities, present flows, plans for new facilities, description of treatment processes, design criteria.
3. Water quality of effluent and any seasonal variation.
4. Additional facilities needed to comply with waste discharge requirements.
5. Sources of industrial or other problem constituents and control measures.
6. Existing recycling, including users, quantities, contractual and pricing arrangements.
7. Existing rights to use of treated effluent after discharge.
8. Wastewater flow variations - hourly and seasonal.

E. Treatment Requirements for Discharge and Reuse

1. Required water qualities for potential uses.
2. Required health-related water qualities or treatment requirements for potential uses, operational and on-site requirements (such as backflow prevention, buffer zones).
3. Wastewater discharge requirements, anticipated changes in requirements.
4. Water quality-related requirements of the RWQCB to protect surface or ground water from problems resulting from recycled water use.

F. Recycled Water Market

1. Description of market assessment procedures.
2. Descriptions of all users or categories of potential users, including type of use, expected annual recycled water use, peak use, estimated internal capital investment required (on-site conversion costs), needed water cost savings, desire to use recycled water, date of possible initial use of recycled water, present and future source of water and quantity of use, quality and reliability needs, and wastewater disposal methods.
3. Summary tables of potential users and related data.
4. Definition of logical service area based on results of market assessment.

G. Project Alternative Analysis

1. Planning and design assumptions:
   a. Delivery and system pressure criteria.
   b. Peak delivery criteria.
   c. Storage criteria.
   d. Cost basis: cost index, discount rate, useful lives, etc.
   e. Planning period.
2. Water Recycling Alternatives to be Evaluated
   a. Treatment alternatives:

i. Alternative levels of treatment.
ii. Alternative unit processes to achieve a given level of treatment.

b. Pipeline route alternatives.
c. Alternative markets:
i. Based on different levels of treatment.
ii. Geographical areas.
d. Alternative storage locations.
e. Sub alternatives of selected alternative:
i. Marginal analysis for selected alternative for certain categories of users or certain geographic areas.
ii. Varying storage, pump rates, and pipeline diameters.
iii. Use of water blending during peak irrigation months.

2. Non-recycled water alternatives.
a. Discussion of other potentially viable new sources of water.
b. Provide economic costs.
3. Water conservation/reduction analysis.
a. Analysis.
b. Impact on recycling, if any.
c. Recommendation.
d. Implementation.
4. Pollution control alternatives (if applicable) needed to comply with waste discharge requirements, and possible allocation of costs between recycling and pollution control.
5. No project alternative.
6. Information supplied for each alternative to include, but not be limited to:
a. Cost tables for each alternative with breakdown of costs by total capital (without grants), O&M, unit processes, and with equivalent annual cost and per acre-foot cost.
b. Lists of potential users assumed for each alternative.
c. Economic analysis.
d. Energy analysis for each alternative, including direct and construction energy.
e. Water quality impacts:
i. Effect on receiving water by removing or reducing discharge of effluent, including effect on beneficial uses resulting from reduced flow.
ii. Ground water impacts.
7. Comparison of above alternatives and recommendation of specific alternative.

H. Recommended Facilities Project Plan

1. Description of all proposed facilities and basis for selection.
2. Preliminary design criteria and refined pipeline routes.
3. Cost estimate based on time of construction.
4. List of all potential users, quantity of recycled water use, peak demand, and commitments obtained.
5. Reliability of facilities as compared to user requirements.
6. Implementation plan:
a. Coordination with water suppliers, determination of recycled water supplier and needed agreements or ordinances.

b. Ability and timing of users to join system and make on-site investments.
c. Tentative water recycling requirements of RWQCB.
d. Commitments from potential users.
e. Water rights impact.
f. Permits, right-of-way, design, construction.
g. Detailed schedule.

7. Operational plan - responsible people, equipment, monitoring, irrigation scheduling, etc.

I. Construction Financing Plan and Revenue Program

1. Sources and timing of funds for design and construction.
2. Pricing policy for recycled water.
3. Costs that can be allocated to water pollution control.
4. Annual projection of:
   a. Water prices for each user or category of users.
   b. Recycled water used by each user.
   c. Annual costs (required revenue) of recycling project.
   d. Allocation of costs to users.
   e. Unit costs to serve each user or category of users.
   f. Unit price of recycled water for each user or category of users.
   g. Sensitivity analysis assuming portion of potential users fail to use recycled water.
5. Sunk costs and indebtedness.

J. Appendices

1. Tables of all abbreviations.
2. Copies of letters of interest or intent from recycled water users, or other documentation of support from potential users.
3. Draft of recycled water mandatory use ordinance or model user contract.
4. Drafts of necessary agreements, such as wholesale-retail agreement, joint powers agreement.