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Appendix A
Conservation Planning Requirements

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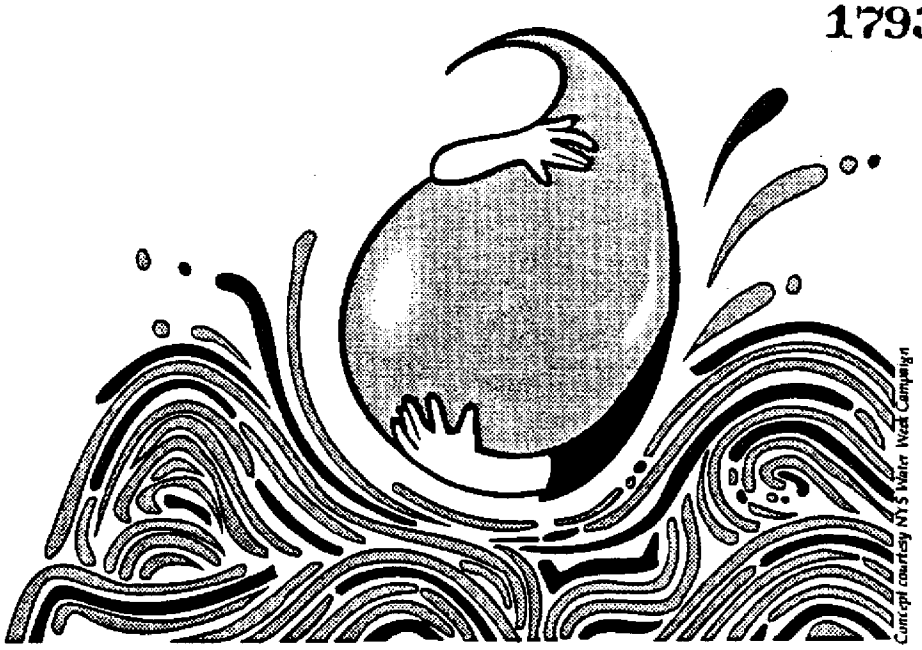

Conservation Planning Requirements

Guidelines and Requirements for Public Water Systems Regarding Water Use Reporting, Demand Forecasting Methodology, and Conservation Programs

WASHINGTON STATE DEPARTMENT OF ECOLOGY

Ecology Publication #94-24

Washington State Department of Health

Health PUB 331-008

BK0094PG4190

March 1994

printed on recycled paper

17938

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WASHINGTON STATE DEPARTMENT OF ECOLOGY

Washington State Department of Health

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Written Jointly by:

Washington Water Utilities Council

Washington State Department of Health

Washington State Department of Ecology

For more information please contact the regional office of the Department of Health or Department of Ecology for your location.

March 1994

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Introduction

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This document identifies water use reporting, forecasting, and conservation program requirements for public water systems. The intent is to help water system managers understand what will be required by State agencies for review and approval of water system plans, petitions for the reservation of future water supplies, and water right applications. The term "conservation plan" as used in this document refers to the requirements for water use data collection, demand forecasting, and the conservation program. The term "conservation program" as used in this document refers to the written evaluation of recommended conservation measures and a written description of the level and schedule for implementation of the required conservation measures and those recommended measures determined to be appropriate for the system.

This document was prepared by the Department of Ecology (Ecology), Department of Health (Health), and public water systems, as represented by the Washington Water Utilities Council (WWUC). In 1989 an earlier version of this document was submitted to a range of environmental, tribal, and public water system representatives for comment. Their comments have been considered in developing this document. The text was clarified in 1993 by Ecology, Health and the WWUC to better quantify the requirements in the text and to ensure consistent interpretation.

The Conservation Planning Requirements are based on existing State statutes directing Ecology and Health to encourage water use efficiency. General mandates for implementation of water use efficiency are found in RCW 43.27A.090 (6) [*Powers and duties of the department*]; RCW 90.03.005 [*Reduction of Wasteful Practices*]; RCW 90.03.400 [*Crimes Against Water Code*]; RCW 90.44.110 [*Waste of Water Prohibited*]; RCW 90.54.020 (2) and (6) [*General Declaration of Fundamentals for Utilization and Management of Waters of the State*]; and RCW 90.54.180 [*Water Use Efficiency and Conservation Programs and Practices*]. The last of these statutes states that "increased water use efficiency should receive consideration as a potential source of water in state and local water resource planning processes." Ecology interprets these statutes and the statute governing appropriations of water through issuance of permits (RCW 90.03.290--*Appropriation Procedure*) to direct the Department to incorporate consideration of water use efficiency in the appropriation processes. Ecology interpretation regarding its authority to establish conditions on water right permits and certificates has been supported by numerous Pollution Control Hearings Board decisions. Specific directives to Health for incorporation of procedures and guidelines relating to water use efficiency in development and approval of water system plans are provided in RCW 43.20.230 [*Water Resource Planning*] and WAC 246-290-100 [*Water System Plans*].

The guidelines for conservation emphasize flexibility. The selection of measures and the criteria for the level of implementation to be achieved recognize regional differences in water supply and demand conditions. Data developed pursuant to this document may be made available to other water resource planning efforts, such as the Water Resources Data Management Task Force, Ground Water Management Areas, watershed planning, Growth Management Act planning, and the regional water resource planning process.

Regulatory Agency Review and Implementation

The Conservation Planning Requirements may be implemented, in part, by adoption of a rule as part of the Washington Administrative Code, pending development of more definitive State policies. During the period required for the Legislature to develop and adopt formal policy regarding water use data collection, demand forecasts, and conservation, the Conservation Planning Requirements provide direction to both public water systems and to the Departments of Ecology and Health. Both agencies agree that more stringent conservation measures than those defined herein may be required: 1) where regional water resource plans, pursuant to RCW 90.54.045 [*Water Resource Planning--Pilot Process*], have been, or are being developed and include more rigorous conservation standards; 2) for areas designated as critical water resource situations, pursuant to WAC 173-500-080 [*Critical Water Resource Situation Response Process*], where the intergovernmental group has developed conservation requirements more rigorous than those in the current Conservation Planning Requirements; or 3) if legislation is passed mandating additional conservation efforts.

The Conservation Planning Requirements will be incorporated in Ecology and Health policy and program documents. They will be subject to routine review and modification jointly by Ecology, Health, and interested parties, including WWUC, as data collected and program results are assessed against the overall objectives. Approval of a water conservation plan is a necessary but not sufficient condition for issuance of a water right permit by Ecology. Ecology must also consider many other factors in addition to the conservation plan. **A water conservation plan in compliance with the Conservation Planning Requirements will be required for approval of water system plans and for issuance of water right permits for public water systems by Ecology.** Approval of a conservation plan will be based upon review of all three components of the conservation plan. These components include water use data collection, demand forecasting, and the conservation program development. Conditions may be attached by Health to a water conservation plan where such a plan is part of a water system plan, and by Ecology to a water right permit where such permit requires an approval of a water conservation plan. These conditions may specify requirements for data collection, demand forecasting, or analysis of measures in a conservation program.

Health is the lead state agency regarding conservation program development and planning for public water systems. Ecology has the overall state responsibility for development and implementation of a comprehensive water conservation program that includes all water uses. Conservation plans prepared in accordance with the Conservation Planning Requirements will be reviewed and approved by Health in the water system plan, with concurrence from Ecology. In the case where no water system plan is required by Health, Ecology shall be the lead agency in reviewing and approving the conservation plan when water rights are pursued. The detail regarding agency coordination in approving conservation plans is further defined in a memorandum of understanding between the two agencies on water system plan and water right application review procedures.

The specific criteria to be used in the evaluation of the water conservation program are identified under sections **Required Measures** and **Recommended Measures and Level of Implementation**. In general, the selection and implementation of conservation measures should be determined by the cost of a measure in relation to the value of the water conserved, i.e. by the relation of benefits and costs. Implementation of approved water conservation plans by public water systems will be a condition in all water right reports of exam and all subsequent water right permits and certificates issued by Ecology for public water systems. Preparation and implementation of a water conservation plan consistent with the Conservation Planning Requirements will be a consideration in the water system plan approval process by Health. Finally, conservation plans prepared as part of Coordinated Water System Plans, Water General Plans, and other appropriate regional water resource plans should be consistent with the Conservation Planning Requirements.

Effective resource management requires responsible action on the part of citizens, the public water systems, and the local and State regulatory agencies. The citizens will be asked and required to change their water use habits and possibly to retrofit their water use devices. The public water systems are being asked to establish new operation programs, collect and report more data, and modify system design strategies to conserve water. The regulatory agencies are being asked to provide technical assistance and a timely response to submitted water system plans, projects, and proposals.

Conservation plans submitted in compliance with these guidelines for data collection, demand projections, and conservation programs will meet all regulatory requirements of Health and Ecology for water conservation plans. Additional data requests by Ecology and Health related to such plans will be limited to clarification of background information and not expanded procedures.

Conservation Plan Outline

To assure consistency of review by the Department of Health and the Department of Ecology, conservation plans shall conform to the following format (additional detail is provided later in the text). The three elements of the conservation plan may be in different sections of a water system plan, but must include the items noted below and in the text.

Water Use Data Collection Requirements. Systems must report the best currently available data on water use for the categories of use which are identified in the text.

Water Demand Forecast. A complete forecast, including an estimate of reduction of water use from implementation of water conservation measures, must be developed.

Conservation Program. Implementation of approved water conservation plans by public water systems will be a condition on all water right reports of exam and all subsequent water right permits and certificates issued by Ecology for public water systems. If the public water system has not been collecting data as required, the data which has been collected must be submitted, and collection of data will be a condition of new water rights and certificates, and will be required for future water system plan approvals. Implementation of the required conservation measures, conservation measures chosen for implementation, and data collection identified in this document will be made a condition of all new water right permits, and will be reviewed in future water system plan approvals.

Program elements:

-**Conservation Objectives.** Goals and objectives of the conservation program shall be identified. These objectives should be designed to meet the needs of the specific water system (e.g., attain maximum utilization of current supplies, reduce peak daily consumption, reduce peak monthly consumption, reduce total annual consumption, promote long term efficiency with accelerated conservation on a short term basis, reduce usage from a specific customer class, and develop public education and awareness). *Each water system will need to develop conservation objectives which logically meet its needs.*

-**Evaluation of Conservation Measures.** Public water systems must evaluate all recommended conservation measures identified in the Conservation Planning Requirements and implement those that are required, and those that meet the public water systems needs. The specific measures to be evaluated depend upon the size of the system. However, systems are encouraged to evaluate measures above the minimum requirements. The system must explain decisions not to implement measures it is required to evaluate.

Identification of Selected Conservation Activities

-**Description.** Description of conservation measures being implemented, including required measures.

-**Schedule.** Schedule of when the conservation measures will be implemented, with emphasis on the six year implementation schedule.

-**Budget.** Projected budget for each selected conservation measure. Schedule and budget information should be shown together.

-**Monitoring Requirements.** Description of how the system will monitor the success of its conservation measures (e.g., documented reduction in water usage, distribution of conservation materials, implementation of specific measures).

-**Target Water Savings Projections.** Each system will identify a percentage savings goal, based on the measures chosen for implementation, which the entire water conservation program will attempt to save. Because different systems may have already implemented different levels of conservation, and the conservation needs of each system are different, no percentage savings goal has been established in this document. This percentage savings goal will be factored into the demand forecast as identified in the demand forecasting methodology later in the text.

Relationship between Data Collection and Demand Forecasting

Various State and local government planning activities require the forecasting of future demands for public water supplies. Such forecasts often result in either applications for additional water rights or requests for Ecology to reserve a quantity of water for future water supply needs. It is important that these forecasts accurately portray the future water supply needs of an area to ensure that Ecology and Health, in making their water resources management decisions, are able to do so with the best data available.

To implement an effective demand forecasting and conservation program and to achieve the identified objectives, water use data must be assembled and a conservation program implemented as an element of projecting long-term future water demand. Many public water systems are already collecting the data, others collect only a portion of the data. Therefore, a transition period has been established during which all public water systems can collect data that will provide the necessary database for meaningful demand forecasts. The transition period will be from 1991 to 1996. If unusual weather or demand patterns occur, five years of data may not be adequate.

This document outlines the data collection needs, provides the demand projection methodology for estimating water demands, and provides for incorporating an appropriate adjustment in demand based on a recommended conservation program.

Ecology, and Health, subject to adequate resources, should develop a data management system for the data collected as a result of the program outlined in this document. Individual agency responsibility for the development, application, and maintenance of the database will be identified in a memorandum of understanding between Ecology and Health. State and local governments will jointly expand their efforts to complete the assessment of available ground and surface water supplies. Ultimately, this data will be incorporated in a more comprehensive database that will include data relating to other water uses as well.

Water Use Data Collection Requirements for Public Water Systems

The following table identifies the minimum data required to project public water systems' water demand and to provide a basis for the evaluation of the effectiveness of conservation programs. To properly evaluate trends, at least five years of continuous data is required.

For the purpose of developing plans in compliance with this document, data collection is based on the number of existing direct service connections. A public water system is not required to report water use data for service connections it supplies indirectly through another public water system, i.e., for wholesale customers. However, a wholesale supplier shall identify all public water systems to which it supplies water, i.e. all wholesale customers, and must report data on annual totals of water provided to each. Finally, wholesale suppliers are required to include demands from wholesale customers in their demand forecast, and are strongly encouraged to require their wholesale customers to gather data at a commensurate level. This will help to ensure accurate demand forecasts can be developed, and that conservation programs can be developed which can target high water uses.

Conservation plans submitted through 1996 shall contain currently available data on water use for the categories identified in the following table, and a commitment to collect such data on an ongoing basis. Conservation plans submitted after 1996 should contain five years of data on water use for the categories identified in the following table, and a commitment to continue to collect such data on an ongoing basis.

These requirements are the minimum acceptable level of data collection for the identified size of public water systems. Systems must report the best currently available data on water use for the categories of use which are identified herein. Deficiencies in water use data will be considered on a case-by-case basis. Collection of data consistent with the Conservation Planning Requirements will be a condition on all new water right permits to public water systems issued by Ecology.

All data collected will be included in the water conservation plan submitted either as a part of the Water System Plan or Water System Plan Update submitted to the Department of Health or, where a water system plan is not required, as part of a water right application. As data management systems are developed, the data may be required to be reported annually as determined by Health and/or Ecology. Data should be collected for the time periods described below in the given units of measure. As noted above, water use data will be used for the following: demand forecasting for future water needs; identification of future initiatives in water conservation; to evaluate the success of conservation programs being implemented; to assist Ecology and Health in making water resource decisions; to develop regional water use patterns; to assist public water systems in making management decisions for their systems; and for other efforts where water use data is helpful.

In the water conservation plan, report data in the units of measure given for the time periods listed under the size of the utility. When available, daily, monthly or annual totals are to be included in the plan, not averages.

Type of Data	Units of Measure	Frequency of Collection Based on Number of Direct Service Connections(1)			
		>25,000	10,001-25,000	1,000-10,000	<1,000
Source of Supply Meter Readings (separate records for each point of diversion or withdrawal) (2)	Cubic feet	Collect: Read daily but report only monthly and annual totals	Collect: Read daily but report only monthly and annual totals	Collect: Read daily but report only monthly and annual totals (3)	Collect: Monthly and annual totals
Emergency Interties-amount imported (4)	Cubic feet	Collect: Monthly total	Collect: Monthly total	Collect: Monthly total	Collect: Monthly total
Wholesale-amount purchased (4)	Cubic feet	Collect: Monthly total	Collect: Monthly total	Collect: Monthly total	Collect: Monthly total
Peak Day/ Peak Month	Cubic feet pumped from the supply sources	Collect: Each year's peak day and month totals	Collect: Each year's peak day and month totals	Collect: Each year's peak day and month totals (3)	Collect: Each year's peak month totals
Non-Revenue Water					
Unaccounted for water (6)	Cubic feet	Collect: Annual total	Collect: Annual total	Collect: Annual total	Collect: Annual total(5)
Accounted for water	Cubic feet	Collect: Annual total	Collect: Annual total	Collect: Annual total	Collect: Annual total(5)
Service Meter readings (7)					
Single-Family (8)	Total cubic feet used by this customer class	Collect: Monthly totals	Collect: Monthly totals	Collect: Monthly totals	Collect: Monthly totals(5)

Multi-Family (8)	Total cubic feet used by this customer class	Collect: Monthly totals	Collect: Monthly totals	Collect: Monthly totals	Collect: Monthly totals(5)
Commercial/ Government/ Industrial (8) keep separate records for each of the categories	Total cubic feet used by each customer class	Collect: Monthly totals	Collect: Monthly totals	Collect: Monthly totals	Collect: Monthly totals(5)
Agriculture (8)	Total cubic feet used by this customer class	Collect: Monthly totals	Collect: Monthly totals	Collect: Monthly totals	Collect: Monthly totals(5)
Emergency Interties-amount exported (4)	Cubic feet	Collect: Monthly total	Collect: Monthly total	Collect: Monthly total	Collect: Monthly total
Wholesale-amount sold (4)	Cubic feet	Collect: Monthly total	Collect: Monthly total	Collect: Monthly total	Collect: Monthly total
Population Served (9)	Estimate the number of customers and connections served in the residential classes and the number of connections served in the Commercial, Government, Industrial and Agriculture classes.	Collect: Annual totals	Collect: Annual Totals	Collect: Annual totals	Collect: Annual totals
Economic Data	Exiting water rates for each customer class.	Existing water rates	Existing water rates	Existing water rates	Existing water rates
Conservation Data (10)	Report the type of measure, the level of implementation the duration of the measure, and the date at which they were begun.	Collect:once per year	Collect: once per year	Collect: once per year	Collect: once per year

Footnotes:

(1) The number of system services is based on the number of direct retail services supplied by the water system reporting the data.

(2) Those systems which do not have source meters will be required to estimate source production. Ecology will require source meters for all new or expanding public water systems needing additional water rights.

(3) Public water systems with 1,000 to 10,000 connections located in Critical Water Supply Service Areas (CWSSA - Chapter 70.116 RCW) that have source meters are required to collect source of supply meter readings daily. If not in a CWSSA, such systems must collect or estimate source of supply water use data monthly.

(4) If the public water system purchases water or sells water to another system or systems, collect and report separate data for each seller or buyer. Also separate data should be collected and reported for each intertie.

(5) Calculation of non-revenue water and service meter usage is dependant upon staff resources and the availability of service meters in areas not in CWSSAs. If a water system is located in a CWSSA, the information will be required.

(6) Unaccounted-for water is that water which is lost through leaks, evaporation, or use that is not recorded and/or accounted for. Non-revenue water that is accounted for, such as fire protection, system flushing, and other designated uses can be estimated and should not be included in the unaccounted-for estimate. If service meters are not available, unaccounted for water will have to be estimated from records of leak detection and repair.

(7) All water systems with more than 1,000 services should have a program to meter all individual services by 1996, unless an effective demand management program that identifies water uses of all major user groups is implemented. Those public water systems which do not have service meters will be required to identify major user groups and estimate usage.

(8) If the public water system has used different classes and/or definitions for single-family; multi-family; commercial, governmental or industrial; or agricultural, it may include those definitions and/or classes in its data reporting along with the corresponding data (instead of using the definitions and classes defined herein). If different classes of users are included, the public water system must include in the water system plan or water right application, a timetable for when data will be collected for customer classes consistent with those in this table.

Data shall be collected through normal billing procedures. Monthly data may be estimated if the water system bills less frequently. For systems that bill once a year or less frequently, data must be collected at least semi-annually, once during April to September and once during October to March.

Single-Family is defined as a unit designed to house one family that has one service meter. *Multi-Family* is defined as a group of separate dwelling units served by one meter (e.g., an apartment building). A duplex that has separate meters could be considered two single family units. A single-family home that is converted to house more than one set of residents could be considered a multi-family unit if only one service meter is connected to the house and the public water system is aware that the residence is subdivided into apartments.

Boarding houses and bed and breakfast establishments should be considered commercial users.

A golf course would be considered a commercial account unless it is owned by the same public entity that operates the water system in which case it might be considered part of the government category.

An industrial account is any manufacturer of products. Water is used in the creation of something else. A commercial account is a provider of services that uses water in the provision of service or for domestic use. An example would be a retail complex or a theme park with water rides.

Agriculture is defined as water sold to a user for the irrigation of crops. The water may be of a different quality and may be delivered through a separate meter than other water supplied to the user. Most agricultural uses should be considered commercial use, such as water sold to a nursery. The agriculture category is primarily provided for water systems that also serve irrigation water through an adjunct system.

(9) Population projections for counties are available from the Office of Financial Management (OFM) every five years. OFM also has information on the average number of persons per household in multi-family and single-family housing.

(10) Conservation data is not required to be reported annually but will be used by the water system in calculating a demand forecast. It will be required in water system plans or as a part of an application for a water right.

Demand Forecasting

Public water systems are divided into four categories for the purpose of data requirements (see page 7) and three categories for identification of demand forecasting methods (see page 13). A separate category of recommended demand forecasting methods is defined for regional water system plans. The demand forecast prepared as a component of the conservation plan will contain two separate demand projections (6 year and 20 year) for both average daily demand and peak daily demand. These shall depict future usage with and without conservation savings (target water savings projections) obtained from the system's conservation program.

The following factors will be used in developing the demand forecasts consistent with the guidance on page 12:

Population

Population forecasts must include forecasts approved by the appropriate county/regional planning agency, or Washington State Office of Financial Management (OFM). Alternative forecasts may be provided to establish a potential population range of high, medium, and low and a corresponding water demand forecast range.

Water Use

Water use trends and forecasts will be based on actual water use data contained in the standardized water use data collection requirements to be followed by public water systems beginning in 1991, as referenced on page 7.

Land Use/Zoning/Capacity

Adopted local government land use and zoning plans, including plans developed under the Growth Management Act, shall be used as the basis for the trend analysis of development and water use.

Water Rates

All public water systems shall identify existing rate schedules as part of the water use data collection requirements. Those public water systems with more than 25,000 connections will also be required to incorporate this information into demand projections. Rate design and rate revenue requirement approvals are the responsibility of the public water system board, local legislative body, or the Washington State Utilities and Transportation Commission. Public water systems may be required to outline a financial viability plan to demonstrate its ability to meet system operating and regulatory requirements.

Conservation Savings

Demand forecasts shall depict both projected demand which incorporates water saved through the conservation program and demand without the conservation program. If a public water system is beginning a conservation program, but has not yet collected adequate actual water use data that would reflect reductions in per capita use, an estimated reduction in per capita water use and a period over which it occurs, based on conservation measures selected for implementation in the conservation plan shall be utilized in the demand forecasts. The forecasted reduction in demand due to conservation should be monitored against actual water use data to assess its validity, with appropriate adjustments made to future projections as actual water use data becomes available. Water rights issued by Ecology will be based on demand projections which incorporate conservation savings. Where a water system plan is required, the conservation savings and demand projections identified in the water system plan will be used to determine the system's demand projections and water savings for the purpose of issuing water rights.

Demand Forecasting Methods for Public Water Systems

Public water systems shall use one of the following methods to forecast future public water supply demands, depending on the size of the system. For the purpose of this section, the system size is determined by the total number of services served by a water system, including direct service connections and service connections served by wholesale customers. Demand forecasts shall include demands of wholesale customers.

Systems with > 25,000 Services

The systems in this category will prepare, at a minimum, demand forecast for at least four customer classes (Single-Family, Multi-Family, Commercial/Governmental/ Industrial, and Agricultural). Each class shall factor in use, rates, land use zoning, population, conservation and other factors determined to be appropriate by the public water system. The water use projections should be based on actual data that reflects both existing trends and trends adjusted for changes in land use and implementation of conservation programs. Background on assumptions and methods used shall be provided.

Systems with 10,001 to 25,000 Services

The systems in this category will prepare, at a minimum, demand forecast for at least four customer classes (Single-Family, Multi-Family, Commercial/Governmental/ Industrial, and Agricultural). Each class shall factor in use, land use zoning, population, conservation and other factors determined to be appropriate by the public water system. The water use projections should be based on actual data that reflects both existing trends and trends adjusted for changes in land use and implementation of conservation programs. Background on assumptions and methods used shall be provided.

Systems with 10,000 or Fewer Services

The forecast for this category will be based, at a minimum, on projected population, land use zoning, conservation, documented per capita water use and other documented non residential water use, and other factors determined to be appropriate by the public water system using a trend analysis. The water use projections should be based on actual data that reflects both existing trends and trends adjusted for changes in land use and implementation of conservation programs.

Regional Water System Plan

The demand forecasts in coordinated water system plans, water general plans and other regional water plans should be based on the same methods required of systems of 10,000 or fewer services. If the regional plan is intended to meet the requirements for individual systems within the region, it should be done to a level commensurate to the size of all systems relying upon the regional forecast to meet requirements.

Conservation Program

Water conservation programs are composed of demand side strategies and supply side strategies. Demand side strategies are those which lessen demand (e.g., a shower head and toilet retrofit program). Supply side strategies are those which supply demand from an alternative source or improve system efficiency, but in which demand is not actually reduced (e.g., water reuse and use of non-potable water sources - including exempt wells - satisfies existing demand with an alternative source). Both strategies allow water systems the ability to supply more users with a fixed amount of supply.

Water demand management includes the implementation of comprehensive long-term conservation programs, short-term emergency response plans, and peak use management. In considering measures in a demand side strategy for water conservation, it is necessary to distinguish a permanent reduction in average per capita demand from a temporary reduction in demand resulting from short-term or mandatory measures. Short-term regulatory or mandatory measures more associated with drought or other emergency conditions of water shortage are not considered elements of conservation. Instead they are elements of an emergency response plan, which result in reduced use and a corresponding reduction in service by the public water system.

Peak flow management, such as use of impoundments to capture excess flows for use as a supply, or operational programs such as every other day lawn watering, can be an integral measure of an emergency response plan, a conservation plan, or a supply strategy.

Since water conservation is to be considered in future demand forecasts, conservation measures must be defined, described and projected reductions in water use (target water savings) resulting from such measures must be estimated. The program projections should be monitored against actual water use to assess their validity, with appropriate adjustments made to future projections.

All water systems with more than 1,000 service connections should have a program to meter all individual services by 1996, unless an effective demand management program that identifies water uses of all major user groups is implemented.

Required Measures

As a minimum, the Conservation Planning Requirements require implementation of two measures. Source meter installation will be required for all new or expanding public water systems needing additional water rights. Additional metering may be required, consistent with provisions for data collection identified on page 7. Program promotion, as described on page 24, will be required in all water conservation programs. Additionally, all water conservation programs shall consider the benefits and costs of installing individual service meters and implementing conservation rate structures, as defined on page 25. If a public water system's water use data indicates that unaccounted-for water is greater than 20 percent,

the water conservation program for the system will be required to include implementation of a program to detect and repair leaks, evaluate and repair meters if the meters are not properly functioning, or correct other system operation problems which may be causing the problem.

Recommended Measures and Level of Implementation

The policy of the State of Washington is for all water users to use water efficiently. The goal of the conservation program described in this document is to ensure that all public water systems are implementing conservation programs to a level where they are achieving benefits by 1996.

The conservation measures are grouped into four categories:

1) public education
2) technical assistance
3) system measures
4) incentives/other measures.

For each size category of public water system a set of recommended measures is identified: a set for small systems (systems with fewer than 1,000 services); a set for medium systems (systems with 1,000 to 25,000 services); and, a set for large systems (systems of 25,001 or more services).

Regional planning organizations are encouraged to consider conservation measures as shown in the chart on page 23. However, no requirement exists in the Conservation Planning Requirements for development of a conservation plan in regional water plans. The regional planning organization can fulfill some of the conservation requirements for individual systems in their planning area. Individual water systems can either use existing regional water resource planning organizations (e.g., regional water associations), or can pool resources to develop and implement region wide conservation efforts for some or all of the measures in their individual program. If a system can demonstrate that a regional planning organization is performing conservation measures in the conservation program for the individual system, that system will not be required to duplicate those measures; provided, the benefits to the individual system from the regional effort equal or exceed the benefits which could reasonably be expected from implementation of the measures by the individual system (also see Requirements For Wholesalers and Purveyors, page 19).

As indicated above, program promotion will be required for all public water systems. Source meters will be required for all systems requesting new water rights. In addition, all public water systems, regardless of size, will be required to consider the benefits and costs of installation of service meters and implementation of conservation rate structures (as required in RCW 43.20.235). Public water systems will be required to evaluate all of the recommended conservation measures identified for their specific size category to determine whether to implement the recommended measures. They must also determine the appropriate

level of implementation for selected measures. This evaluation of recommended conservation measures should reflect considerations specific to the public water system, including the cost of service, cost of new supply sources, competing demands for water, and unique conservation opportunities. Systems are encouraged to evaluate, and implement where appropriate, conservation measures above the minimum required in the Conservation Planning Requirements. The selection and level of implementation of conservation measures should be determined by the cost of a measure in relation to the value of the water conserved, i.e. by the relation of benefits and costs.

The Departments of Health and Ecology recognize that public water systems must focus their conservation programs, and that under some circumstances not all measures which meet the benefit-cost criterion can be pursued concurrently. However, new water right permits will not be granted until the public water system can document through the water conservation plan that all measures identified in these Conservation Planning Requirements for that size system have been evaluated and those which are cost effective have been scheduled for implementation. Any water right application being sought shall incorporate the implementation of these measures. Implementation of conservation measures identified in the conservation plan will be a condition of all new water right permits, and prior to certification the measures must be implemented.

In the evaluation of conservation measures public water systems will be required to explain and justify both the selection of measures and the level of implementation provided for in their water conservation programs. This explanation should be narrative and non-quantitative, but may be supplemented by technical quantitative analysis. It should reflect considerations specific to the public water system, as identified above. In the absence of clear evidence to the contrary, estimates of the value of conserved water and of costs and benefits will not be challenged.

Implementation of the approved conservation program will require new program development, regional coordination, and incorporation of the program within the water system plan. The transition period of 1991 to 1996 will provide time for identification and implementation of the program. The projected reduction in demand from conservation should begin to be recognized prior to 1996. This transition period is necessary to allow both public education and a high percentage of the users to modify existing facilities to incorporate water saving devices. Beginning in 1996, evaluation of conservation plans by Ecology and Health will include evaluation of implementation of conservation plans developed under the Conservation Planning Requirements.

Program Evaluation

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Three factors will be considered in determining acceptable implementation of conservation programs.

1. Reduction in per capita average day residential demand and documented non-residential water savings. The initial year shall be 1991, with adjustments to reflect previously implemented conservation programs.

2. Evidence of cost-effective approach by the water system to conservation (i.e., implementation of all measures which provide water from conservation at or below the cost of new supply).

3. Distribution of materials or achievement of other objectives identified in the conservation program. This factor is to be used where documentation of savings is not feasible (e.g., education efforts). The program objectives will be defined by the public water systems in their water system and conservation plan.

Conservation Program Requirements for Wholesale Suppliers and Wholesale Customers

A coordinated conservation program will be required for all public water systems in a wholesale supplier / wholesale customer relationship. Both the wholesale supplier and wholesale customer should state clearly in their water system plans who is responsible for each element of the conservation program. This conservation program constitutes a regional conservation program for all systems in this wholesale supplier/customer relationship.

All wholesale customers must be included in the regional conservation program. A wholesale customer may choose to have its conservation program developed and implemented by the wholesale supplier. Alternatively, a wholesale customer may develop and implement its own conservation program. The third option is for the wholesale customer to prepare and implement some elements in its conservation program and to have the wholesale supplier prepare and implement the remaining elements in the program.

The regional conservation program may be prepared and implemented by the wholesale supplier for its direct customers and for all wholesale customers. Alternatively, it may be composed of the separate conservation programs prepared and implemented by the wholesale supplier and by each separate wholesale customer. The third alternative is for the regional conservation program to be composed of the separate conservation programs prepared and implemented by the wholesale supplier and by the wholesale supplier and the wholesale customer jointly. The regional conservation program may be a combination of these alternatives.

The conservation program for the wholesale supplier and the conservation programs of all wholesale customers shall be based on the total number of direct and indirect customers dependent on the wholesale supplier for water.

Wholesale suppliers will encourage the cooperation of their wholesale customers in the development and implementation of the regional program.

The wholesale supplier, working with the wholesale customers it serves, shall calculate the value of potential conservation based upon the value of such conservation to the wholesale supplier's regional service area.

All wholesale customers which choose to prepare and implement some or all elements of a conservation program independently of the wholesale supplier shall use the value of potential conservation established for the regional service area by the wholesale supplier. They shall also assume the economies of scale of the supplier's program in the evaluation of potential conservation measures.

Wholesale suppliers are not responsible for the preparation and implementation of those elements in a conservation program which a wholesale customer chooses to prepare and implement on its own.

Future water rights will be conditioned on preparation and implementation of a conservation program consistent with the Conservation Planning Requirements for the direct customers of the wholesale supplier and for those elements of a conservation program which the wholesale customers choose to have prepared and implemented by the wholesale supplier.

Preparation and implementation of the regional conservation program shall be enforced through the water system plan approval process of Health. Preparation and implementation of the conservation program of the wholesale supplier and of those elements of the conservation program of the wholesale customer that are prepared and implemented by the wholesale supplier will also be enforced through conditions on future water rights.

Satellite Management - Requirements for Systems Under Satellite Management

Many public water systems are owned, operated or managed by a satellite management agency. As noted above, the conservation plan consists of three primary components: the conservation program; data collection; and demand forecasting. The requirements for each of these components are listed below.

Conservation Programs Systems under satellite management must complete conservation programs according to the number of connections for each individual system. The total number owned, operated or managed by the satellite management agency is not relevant. However, satellite management agencies are strongly encouraged to develop conservation plans commensurate to the total number of services managed. A single conservation program may be prepared for all systems under the satellite management agency.

Data Collection Systems under satellite management must collect data according to the number of connections for each individual system. The total number managed is not relevant. Systems have the option of gathering data commensurate to the number of total services under satellite management.

Demand Forecasts Systems under satellite management must develop demand forecasts according to the number of connections for each individual system. The total number managed is not relevant. Again, systems have the option of developing demand forecasts for each system owned, operated or managed based upon the total number of services under the control of the satellite agency.

Water Reuse

In addition to the specific measure requiring evaluation of water reuse, all public water systems will incorporate within their water system plans an inventory of major potential sources and uses for reclaimed water. This inventory is not part of the conservation program regarding water reuse which is required for large systems. The inventory shall include the following potential sources at a minimum:

- Fish hatcheries
- Storm water impoundments
- Sewage treatment plant effluent
- Industrial/commercial process or cooling water

And the following potential uses or users:

- Industries
- Nurseries
- Golf courses and other landscape irrigators
- Artificial recharge of aquifers
- Parks and parkways
- Agricultural irrigation
- Flushing of sanitary sewers
- Street cleaning, dust control, and other washing applications
- Fire protection
- Other appropriate uses

RECOMMENDED WATER CONSERVATION PROGRAM FOR PUBLIC WATER SYSTEMS

MEASURES	PUBLIC WATER SYSTEMS			
	LARGE	MEDIUM	SMALL	REGION
A. Public Education				
1. School Outreach	X			X
2. Speakers Bureau	X			X
3. Program Promotion (implementation required)	X	X	X	X
4. Theme Shows and Fairs	X			X
B. Technical Assistance				
1. Purveyor Assistance	X	X		X
2. Customer Assistance	X	X		X
3. Technical Studies	X			X
4. Bill Showing Consumption History	X	X		
C. System Measures				
1. Source Meters (required if requesting water rights)	X	X	X	X
2. Service Meters	X	X	X	X
3. Unaccounted Water/Leak Detection	X	X		X
D. Incentives/Other Measures				
1. Single-Family/Multi-Family Kits	X	X		X
2. Nurseries/Agriculture	X	X		X
3. Landscape Management/Playfields - Xeriscaping	X	X		X
4. Conservation Pricing	X	X	X	X
5. Utility Financed Retrofit	X			X
6. Seasonal Demand Management	X			X
7. Recycling/Reuse	X			X

Definitions:

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Large System Measures — Would apply to utilities having 25,001 or more services. This program requires a considerable staff effort and possible changes in land use or building code controls for implementation of some of the program measures.

Medium System Measures — Would be implemented by a majority of the municipal public water systems and water districts. This program applies to utilities with 1,000 to 25,000 services.

Small System Measures — Is a minimum program. This small system program will be required of all public water systems with fewer than 1,000 services, which must prepare a water system plan or obtain water rights.

Regional System Measures — Regional conservation plans may be developed in conjunction with these guidelines. However, no requirement exists in these guidelines for the development of a conservation plan in regional water plans. Regional planning organizations can develop conservation plans which meet the needs of individual water systems as noted in these guidelines.

DEFINITION OF CONSERVATION MEASURES FOR PUBLIC WATER SYSTEMS

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The following conservation measures must be evaluated and/or implemented as required in the text. For purposes of the conservation program, measures are defined as follows:

A. PUBLIC EDUCATION

1. School Outreach - Education programs targeted to increase awareness of local water resources and encourage water conservation practices. Activities can include school presentations, preparation of curriculum material, and tours of water system facilities.

2. Speakers Bureau - Seeking speaking opportunities and making speakers available to a wide cross-section of services, community, and other groups. Provide speakers with audio and visual aids for presentations. Focus on increasing public awareness of water resource and conservation issues.

3. Program Promotion - Publicize the need for water conservation through television and radio public service announcements, news articles, public water systems bill inserts, or other means. This includes promoting efficient indoor and outdoor water usage, distribution of Ecology/Health conservation brochures or other printed material, informing customers, builders and contractors of new plumbing code regulations requiring efficient plumbing fixtures, and other efforts.

4. Theme Shows and Fairs - Prepare a portable display on water conservation and selected written material. Staff this display at local area theme shows and fairs.

B. TECHNICAL ASSISTANCE

1. Purveyor Assistance - Assistance from wholesale suppliers to aide wholesale customers in developing and implementing conservation programs tailored to their needs, and in carrying out the wholesale suppliers conservation program.

2. Customer Assistance - Provide assistance and information to customers which facilitates water conservation.

3. Technical Studies - Studies would be designed and conducted by the public water system and/or regional organization. Study objective would be to collect data and research new technology to develop programs which would produce measurable water savings. Study areas might include residential flow metering, lawn watering practices, and commercial/industrial water use patterns.

4. Bill Showing Consumption History - Billings would show percentage increase/decrease in water use over the same period from the previous year.

C. SYSTEM MEASURES

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1. Source Meters - Install master source meters for all sources. Maintain periodic meter testing and repair program.

2. Service Meters - Install individual service meters for all water users. Maintain periodic meter testing and repair program.

3. Unaccounted Water/Leak Detection - Conduct a regular and systematic program of finding and repairing leaks in system mains and laterals. This includes on-site testing using computer-assisted leak detection equipment on water distribution mains, valves, services, and meters.

D. INCENTIVES/OTHER MEASURES

1. Single-Family/Multi-Family Kits - Distribute kits containing easily installed water saving devices to single-family residential homes and the owners and managers of apartment buildings and condominiums. Devices in kits could include shower flow restrictors, toilet tank water displacement devices, leak detection dye tablets, informational brochures, and other materials.

2. Nurseries/Agriculture - Encourage and/or require the application of current technology to water use practices of large agriculture/irrigation operations. Examples include nurseries and commercial agriculture. Moisture sensors, flow timers, low volume sprinklers, drip irrigation, weather monitoring, and other practices to increase irrigation efficiency could be installed.

3. Landscape Management/Playfields - Xeriscaping - Promote low water demand landscaping in all retail customer classes (private, public, commercial, industrial, etc.). Work with local nurseries to ensure the availability of plants that achieve this objective.

4. Conservation Pricing - Implement rate design techniques to provide economic incentives to conserve water. Rate setting is the responsibility of the public water system.

5. Utility Financed Retrofit - Install water efficient fixtures in existing residences and commercial/industrial facilities by: (a) providing fixtures at no cost, (b) giving a rebate for consumer purchased fixtures, or (c) arranging for suppliers to provide fixtures at a reduced price.

6. Seasonal Demand Management - Implement measures aimed at controlling peak seasonal demand. This may include use of seasonal rate structures, distributing lawn watering calendars, promoting public awareness on ways to curb peak day water demand, etc. This measure may be combined with the program promotion if materials are distributed.

7. Recycling/Reuse - Examine opportunities for water reuse and recycling as an approach to providing additional water. This includes identification of potential sources of reclaimed water, identification of potential users (i.e., landscape uses, major industrial users, etc.), and contracting for delivery of reclaimed water. Potential program areas include:

- Use of public water systems reclaimed wastewater for the irrigation of public green spaces, industrial cooling, and power plant cooling.
- On-site wastewater treatment and recycling of effluent for non-potable uses in commercial buildings.
- Utilization of gray water for non-potable uses.

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