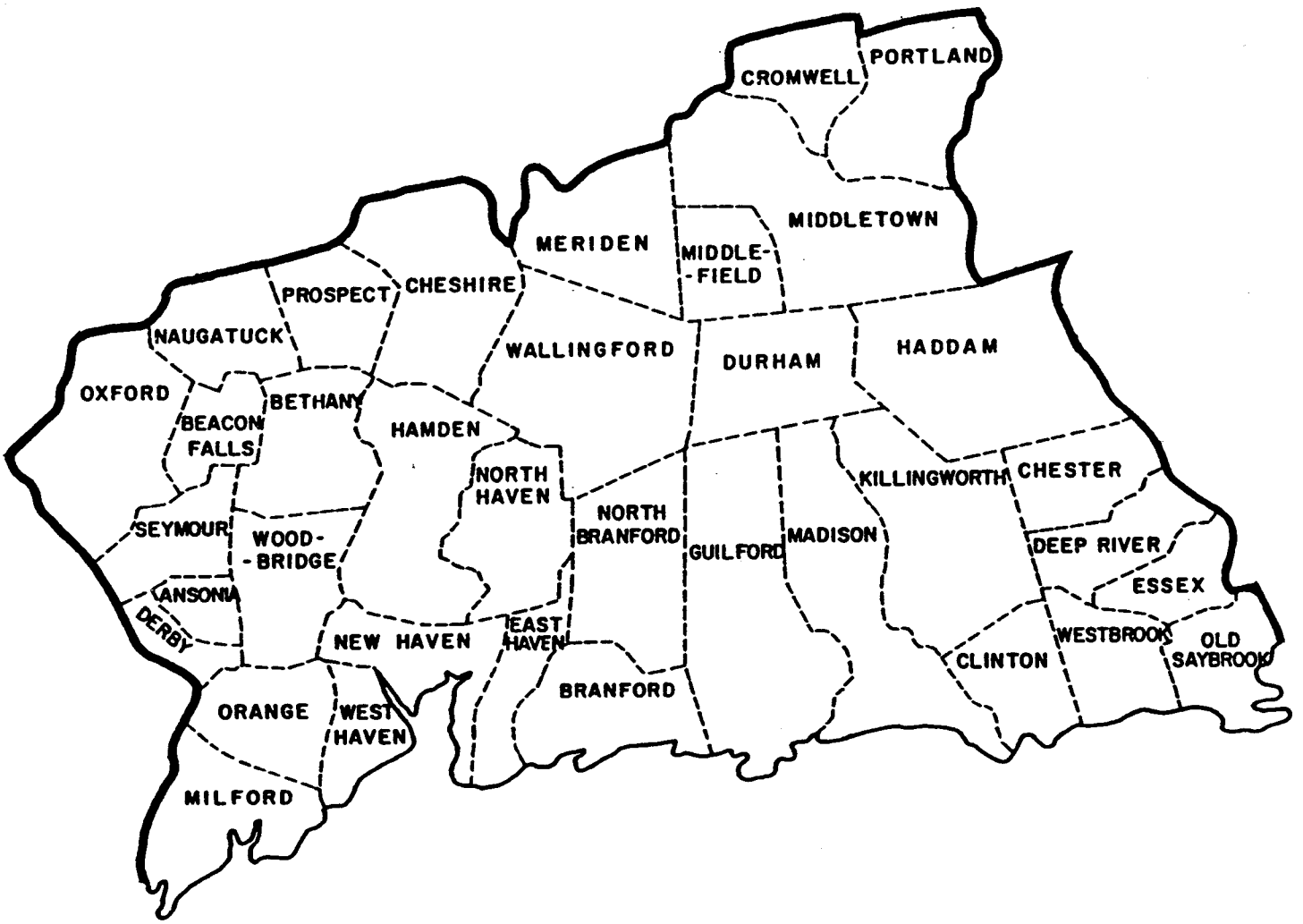
SOUTH CENTRAL CONNECTICUT
WATER SUPPLY MANAGEMENT AREA

FINAL
Executive Summary

PART 4



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EXECUTIVE SUMMARY SYNOPSIS

This Executive Summary is one of four documents that make up the Areawide Supplement for the South Central Connecticut Water Supply Management Area. The complete Areawide Assessment includes this Summary, a Water Supply Assessment, Exclusive Service Area Report, and an Integrated Report. Each of these documents satisfies the requirements of Public Act 85-535, which established the Connecticut Plan for Public Water Supply Coordination.

These reports provide extensive information on subjects such as water utility service area boundaries, service populations, water demand, supply needs, and source protection. The South Central Connecticut Water Utilities Coordinating Committee (WUCC) identified numerous issues of concern, with the following being of special importance:

- The WUCC believes that water supply is the highest use for a water resource, and that water supply and source protection be given the highest priority in water resource planning. Surface water resources should be protected in the same fashion as groundwater is through the initiatives of Aquifer Protection Task Force and subsequently passed Legislation. Successful water resource protection programs should involve all segments of the community: the consuming public, planning and zoning commissions, industry, and the utilities.

- Areawide supplies are inadequate to meet either the average or peak demand levels anticipated in the future. Most of the large utilities must pursue additional sources of supply to ensure an adequate margin of safety. In identifying alternatives for future water supply, utilities must determine the necessary steps for the development of the resources, and the potential constraints and conflicts in doing so. Issues include water quality and treatment concerns, potential impacts on other resources, multiple-use conflicts, and aquifer and watershed protection.

- It is becoming increasingly difficult to develop new sources of supply due to federal and state regulations, environmental impacts, spreading urbanization, cost, and competing demands for water resources.

- Several utilities currently depend on the South Central Connecticut Regional Water Authority (SCCRWA) for a significant fraction of the water supply. SCCRWA's ability to develop new sources of supply, therefore, will impact more than one service area. Expansion of the Lake Whitney filtration plant and/or a diversion from the Salmon River will be crucial if SCCRWA is to meet local and regional demands in the future.

- Utilities within the South Central Area must continue to cooperate with one another to ensure that they will have adequate future water supplies. Interconnections, and joint-use and satellite management will become increasingly important in the future, as water supplies are forced to cope with more water quality and quantity problems. The WUCC will continue to be an important mechanism for communication among area utilities.

I. INTRODUCTION

A. THE SOUTH CENTRAL CONNECTICUT WATER SUPPLY MANAGEMENT AREA

The South Central Connecticut Water Supply Management Area, shown on Figure 1-1, comprises 36 of the municipalities in New Haven and Middlesex counties. Long Island Sound is located to the south, Fairfield County to the west, and Hartford County to the north. The Connecticut River forms part of the area's eastern boundary. The estimated 1987 population for the area was 780,440, with over 127,000 people living in New Haven.

The 64 water utilities in the management area serve about 80 percent of the population, with the remaining inhabitants depending on individual groundwater wells. Forty-nine utilities serve fewer than 1,000 people; the other 15 utilities have 1,000 or more users. Of these 15 utilities, three provide water to about 79 percent of the population that is served by public water supply systems: the South Central Connecticut Regional Water Authority (SCCRWA), the Connecticut Water Company (CWC), and the Meriden Water Department.

The State Office of Policy and Management has projected an increase in population in the management area of about 8 percent between 1980 and 2,000, and 21 percent between 1980 and 2030. The communities that are predicted to have above-average growth rates are primarily in the eastern and northern halves of the management area away from metropolitan New Haven. The overall growth rate and pattern in the region indicates the need for comprehensive water resources planning to accommodate future water supply needs.

B. THE COORDINATED WATER SYSTEM PLANNING PROCESS

In 1985, the Connecticut General Assembly passed Public Act No. 85-535, "An Act Concerning a Connecticut Plan for Public Water Supply Coordination," codified in Connecticut General Statutes as 25-33c through 24-33, initiating a procedure to coordinate the planning of public water supply systems.

The Connecticut Plan for Public Water Supply Coordination addresses water quality and quantity issues from an areawide perspective. The Coordinated Water System Plan process is designed to bring together utility

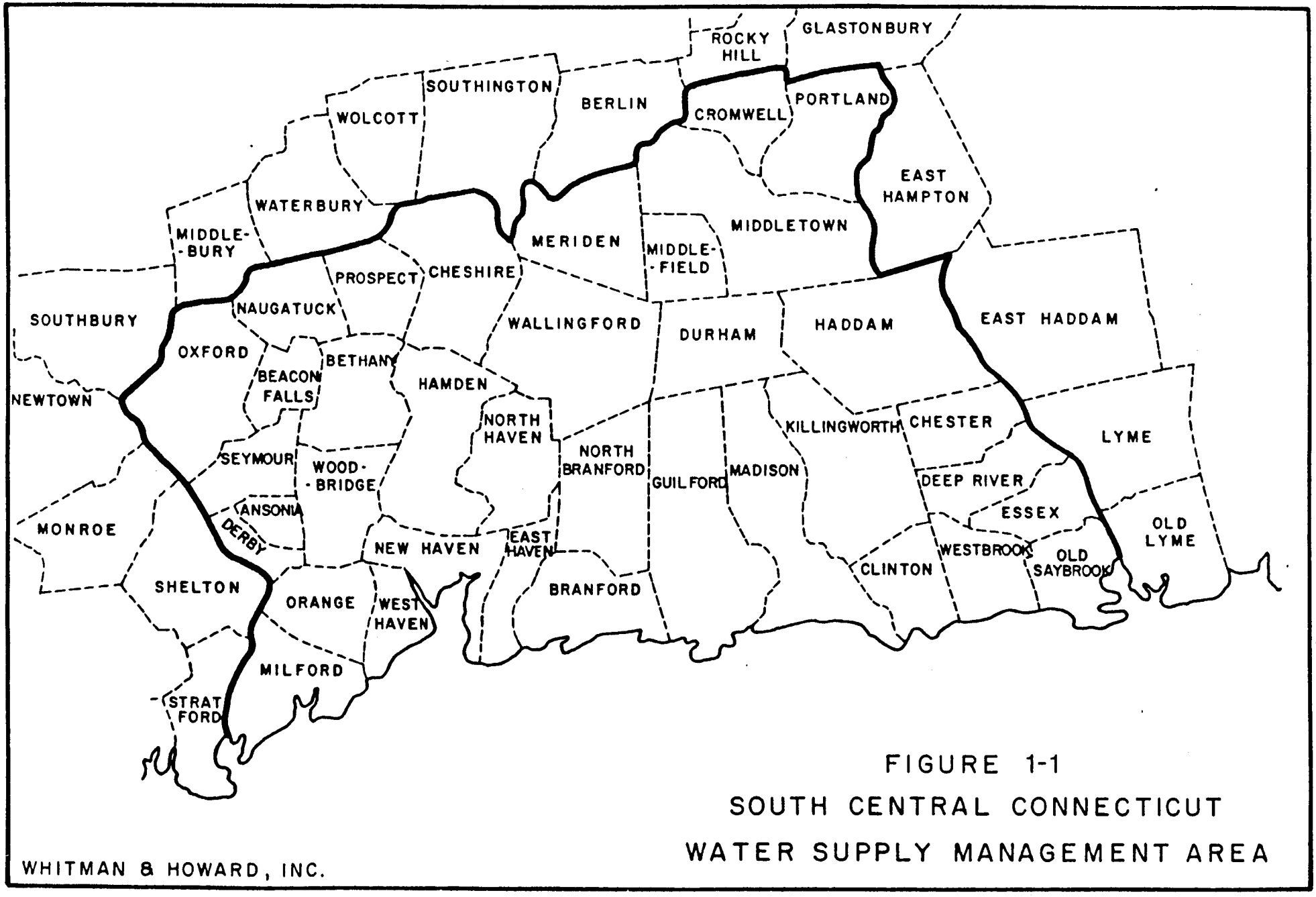

FIGURE 1-1

SOUTH CENTRAL CONNECTICUT

WATER SUPPLY MANAGEMENT AREA

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and regional planning organization representatives in a Water Utility Coordinating Committee (WUCC) to discuss long range water supply issues and to develop an areawide water plan. The South Central WUCC is made up of the members listed in Table 1-1.

Administration of the planning process is the responsibility of the Department of Health Services (DOHS) in consultation with the Department of Public Utility Control (DPUC), Department of Environmental Protection (DEP), and the Office of Policy and Management (OPM). In order to implement the coordinated planning process, a WUCC must be established in each of the seven water supply management areas, shown on Figure 1-3.

As shown on Figure 1-2, the Coordinated Water System Plan for the South Central WUCC area incorporates the individual water system plans from each utility in the area serving 1,000 or more people or those utilities required by DOHS to prepare plans as well as the Areawide Supplement prepared under the auspices of the WUCC.

The principal goals of the individual Water Supply Plans are to ensure water system planning to secure an adequate quantity of pure drinking water now and in the future, to ensure orderly growth of the system, and to make efficient use of available resources. The Water Supply Plans are intended to look ahead at least 5-, 20-, and 50-years into the future.

The Areawide Supplement includes four key components: The Water Supply Assessment (Chapter II), Exclusive Service Area Boundaries Report (Chapter III), Integrated Report (Chapter IV), and the Executive Summary. The Water Supply Assessment constitutes the area's problem statement and serves as the basis for the balance of the planning work. The Assessment has been designed to evaluate water supply conditions and to identify areawide system issues, concerns, and needs.

The second component of the Areawide Supplement consists of the Exclusive Service Area Boundaries Report. Each utility's exclusive future service area is delineated, and the rights and responsibilities for providing service are established. Exclusive Service Area Boundaries serve to promote orderly water system growth, and avoid duplication of service.

The third component is the Integrated Report, which is designed to provide an overview of the public water systems within the area and to address areawide water supply issues. The Integrated Report addresses

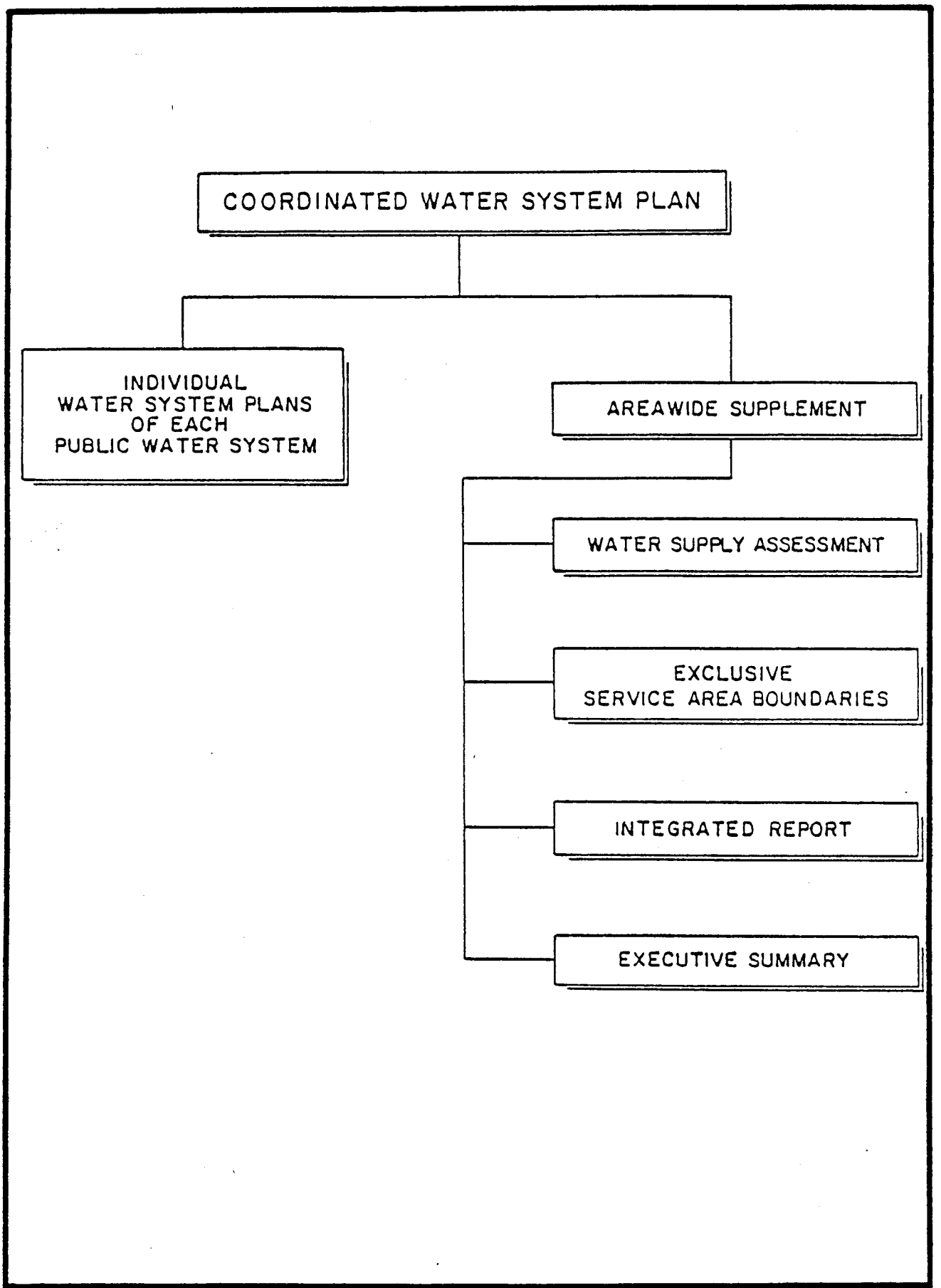

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Figure 1-2

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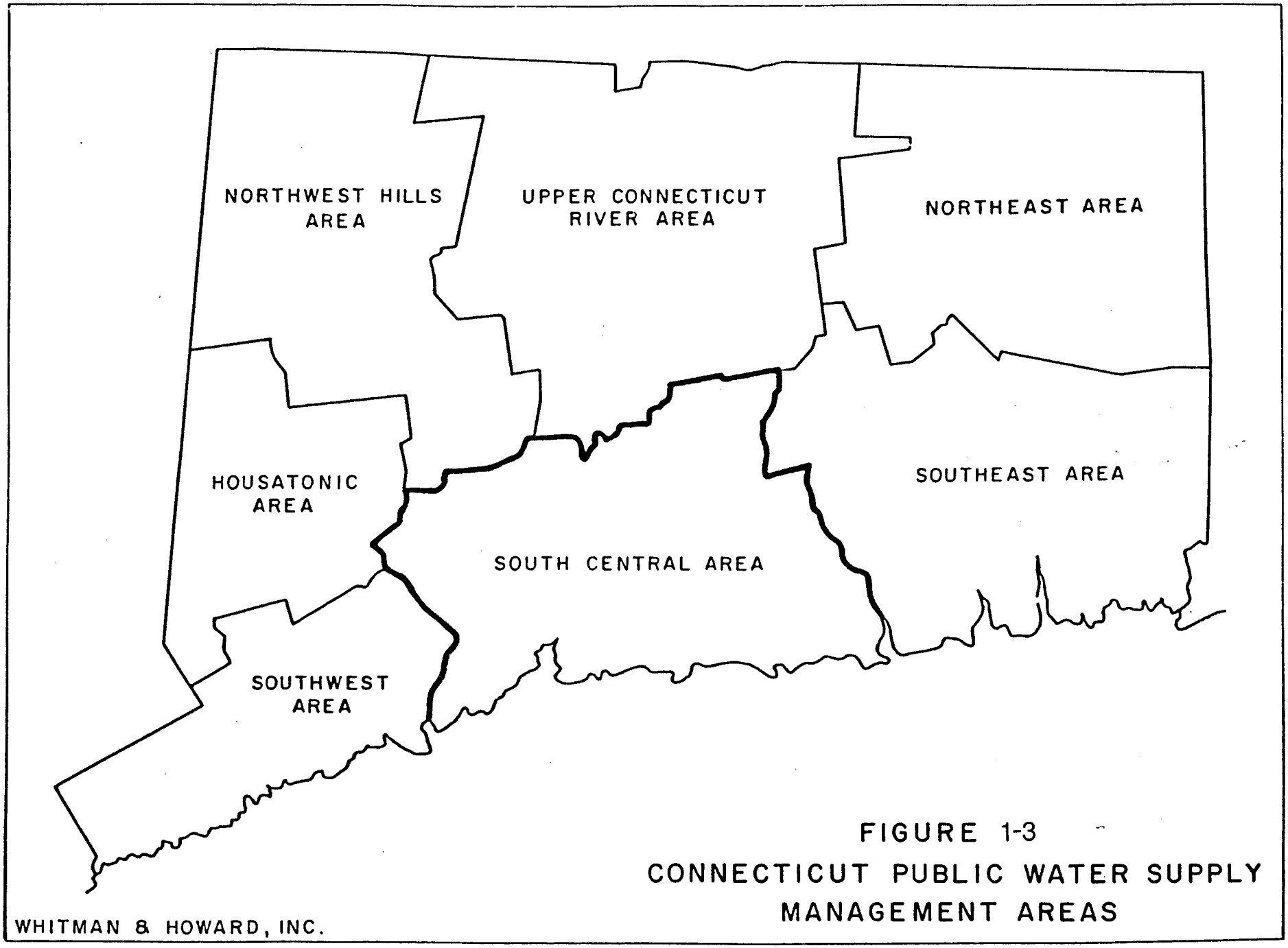

FIGURE 1-3
CONNECTICUT PUBLIC WATER SUPPLY MANAGEMENT AREAS

source protection, interconnections, satellite management, design standards, and alternative supply sources.

This report represents the fourth and final output of the WUCC. The Executive Summary serves as an abbreviated version of the Areawide Supplement.

TABLE 1-1
SOUTH CENTRAL WATER SUPPLY MANAGEMENT AREA
WATER UTILITY COORDINATING COMMITTEE MEMBERS

Aaron Manor Convalescent Home, Chester
*Ansonia-Derby Water Company
Beechwood MHP, Killingworth
Bernice's Court, Guilford
Beseck Lane Water Company Middlefield
Bittersweet Ridge, Middlefield
Blue Train Acres, North Branford
Bradley Home, Meriden
*Bridgeport Hydraulic Company
Cedar Grove MHP, Clinton
oCentral Naugatuck Valley COG
oConnecticut River Estuary RPA
*Connecticut Valley Hospital, Middletown
*Connecticut Water Company
Country Manor Health Care Ctr., Prospect
Crestview Condo Assoc., Cheshire
*Cromwell Fire District Water Dept.
*Derby Water Department
Desrocher Apartments, Middlefield
Dogwood Acres, Durham
Durham Center Water Company
Ed's Trailer Park, Bethany
Evergreen Trailer Park, Clinton
Gendron's Valley MHP, Naugatuck
Green Springs Water Co., Madison
Grove School, Madison
Haddam Elderly Housing
Happy Acres, middlefield
Harmony Acres, Middlefield
Hawkstone Terrace Corp, Oxford
Hemlock Apartments, Essex
Henry's Trailer Park, Wallingford
Heritage Cove, Essex
*Heritage Village, Oxford
Highland Heights Water Co., Prospect
Hillview Water Supply, Cheshire
Idleview, MHP, Naugatuck
Krayeske Water Supply, Guilford
Lake Grove at Durham
Lakeside Water Company, Guilford
Leetes Island, Guilford
Legend Hill Condos, Madison
Lorraine Terrace, Middletown
Meadowbrook Rest Home, Essex
*Meriden Water Department
*Metropolitan District Commission
*Middletown Water Department
oMidstate RPA
Mill Pond Elderly Housing, Durham
Mount St. John School, Deep River
New Lakeview Convalescent Home, Cheshire
Nod Hill Apartments, Clinton
Northford Glen Condo, North Branford
Our Lady of Grace Monastery, Guilford
*Portland Water Department
Quonnipaug Hills Water Supply, Guilford
Ridgewood Hill Condos, Deep River
Rivercrest Water Company, Portland
*South Central CT Regional Water Authority
oSouth Central Regional Council of Governments
*Southington Water Department
Sugarloaf Elderly Housing, Middlefield
Sylvan Ridge Condos, Middlefield
Twin Maples Nursing Home, Guilford
oValley RPA
Walden III Condos, Guilford
*Wallingford Water Division
*Waterbury Water Bureau
West Lake Lodge Nursing Home, Guilford

Public Water Suppliers

*No. serving more than 1000 people	15
No. serving less than 1000 people	49
oRegional Planning Organizations	5
TOTAL MEMBERS	69

II. WATER SUPPLY ASSESSMENT

A. INTRODUCTION

The Water Supply Assessment, published in October 1988, was the first element of the Areawide Supplement to be produced. The overall purpose of the Assessment was to evaluate water supply conditions and problems in the South Central Management Area. It provided information on the five subjects mandated by the coordinated planning regulations, and an additional one requested by the WUCC:

- Description of existing water systems
- Availability and adequacy of future water sources
- Description of existing utility service area boundaries
- List of present and projected population growth rates
- Status of water system planning and coordination with local land-use planning
- Identification of key water supply problems (requested by the WUCC)

The findings of the Assessment in each of these areas are summarized in this section.

B. EXISTING WATER SUPPLY SYSTEMS

The existing service area boundaries for the 64 utilities in the South Central Connecticut Water Supply Management Area are shown on Maps 1-1 and 1-2 (in rear pocket). These systems may serve as few as 25 people or as many as 387,000. Forty-nine utilities serve fewer than 1,000 users, while 15 serve 1,000 or more. Over 60 percent of public water supply customers in the area are served by the largest system, the South Central Connecticut Regional Water Authority (SCCRWA).

The three largest utilities (SCCRWA, Connecticut Water Company, and Meriden Water Department) use a combination of wells and surface water supplies, as is generally true of the large companies in the area. Approximately 85 percent of SCCRWA's total capacity comes from surface supplies. Sixty-five to 70 percent of the total population in the area that is served by public water supplies receive water from surface water sources. The

major sources of surface water are reservoir systems in Woodbridge, Bethany, North Branford, Branford, Hamden, Meriden, Cheshire, Wallingford, Middletown, Portland, Naugatuck, and Killingworth.

The remaining 30 to 35 percent of the serviced population, i.e., 200,000 people, are dependent upon groundwater supplies. Most of this group is serviced by stratified drift groundwater supplies yielding an average 0.5 to 2.0 million gallons per day (mgd) and located in the vicinity of the Housatonic, Connecticut, and Quinnipiac Rivers. Other scattered wells are located throughout the area, especially in Guilford, Madison, Middlefield, and Durham. Of the 49 small utilities, i.e., those servicing 1,000 people or less, 39 are served exclusively by drilled wells, indicative of a bedrock aquifer. Most of the small utilities are dependent upon groundwater supplies in bedrock aquifers that have limited yields averaging 5,000 to 200,000 gallons per day (gpd).

Water quality problems that vary in severity have been experienced by some of the South Central Area (SCA) utilities. Water quality problems identified by area utilities include aesthetic and contamination problems such as elevated levels of sodium, iron and manganese, coliform bacteria, low pH, high levels of volatile organic compounds, and elevated nitrate levels.

Approximately 15 utilities have supplies that exceed the recommended state standard of 20 mg/L of sodium. A number of utilities have had to abandon sources of supply due to water quality problems and/or have had to utilize various types of treatment or develop new supplies to meet water quality requirements. Fifteen utilities have identified septic systems in the near vicinity of the supply sources, resulting in potential water quality problems. Approximately 10 wells in the SCA have been abandoned due to aesthetic problems or contamination. Incidents of high manganese were identified by eight different utilities.

Many of the reported problems are associated with high levels of land development in the vicinity of the public water supplies. For example, elevated levels of sodium, the presence of VOCs and coliform bacterial contamination are associated with nearby roadways, fuel storage, and septic systems.

Many utilities do not have alternate supply sources available in the event their primary groundwater supply is lost. Some small utilities rely

on either a single rock well or a combination of sources having individual marginal yields. If a loss of capacity occurs, users may be without potable water until a new or alternate supply is obtained, or until treatment methods are identified and installed. Nineteen utilities in the area are presently dependent on a single source; all of these are small companies, with the majority having fewer than 100 customers.

The adequacy of sources of supply is dependent upon the vulnerability of the existing supply to contamination or to a capacity loss, and to the estimated yield of the supply. Thirteen utilities have experienced problems meeting peak demand, reflecting a need for increased supplies, storage, or pumping capacity. Both large and small companies have this difficulty.

System reliability is primarily a problem of the smaller utilities. Lack of backup power, insufficient storage capacity, inadequate supply, and inadequate distribution systems are typical factors leading to reliability problems in the management area.

Insufficient capacity for firefighting also is a common problem for smaller utilities. Many of these systems were not designed to provide firefighting capability, and must rely on alternate means, such as on-site ponds or tanker trucks.

Most large utilities maintain some form of regular planning to identify facility needs and associated costs. In addition, long range water supply plans must be prepared by large utilities, which serve more than 1,000 people, and other utilities that are required to do so by DOHS. These plans include five, twenty, and fifty year planning horizons, and must be updated every three to five years. The individual water company plans prepared by area WUCC utilities include plans for developing additional sources of supply, ongoing maintenance to assure proper system operation, or constructing system improvements to meet future demand requirements.

C. AVAILABILITY AND ADEQUACY OF FUTURE SOURCES

The need for future sources of supply varies depending on the particular utility. Additional supplies are needed by a number of utilities experiencing high growth rates, existing and potential well contamination

problems, and decreasing yield rates of existing supplies. Small utilities, which now depend on one groundwater supply, need to evaluate and obtain additional sources. System improvements, source protection measures, water conservation measures, and treatment of existing supplies could moderate the need for additional sources.

Potential future supply sources were identified in the Water Supply Assessment (WSA), and examined in detail in the Integrated Report. Individual utility supply plans and information available from the Connecticut DEP were used to compile a preliminary list of future groundwater and surface water sources. Generally, these sources include all significant stratified drift aquifers, surface water bodies, and rivers. These have been delineated by the Department of Environmental Protection (DEP) and are included in Maps 3-1 and 3-2 (in rear pocket).

The major surface and groundwater sources identified, have varying water quality classifications. Under state law, those surface water sources which are designated as Class B are prohibited for use as a water supply, although under this planning process their consideration as potential sources is permitted.

In addition to the state's water quality classification issue, many other factors are considered when evaluating a surface water body for water supply purposes. These include recreational uses, fisheries, hydroelectric generation, and political or regulatory restraints on the transport of water from one political or natural entity to another. Also, the watershed area for a surface supply can be very large, making protection strategies for the watershed difficult to implement. Development pressures can lead to land uses that have a negative impact on watershed areas. The proper control of the disposal of potential contaminants throughout such a wide area is difficult, if not impossible.

Groundwater sources are covered by a water quality classification system similar to that for surface supplies, although the delineation of the non-use of a Class GB groundwater is not as restrictive as that for a Class B surface water. In the case of groundwaters, Class GB aquifers are degraded or potentially degraded groundwater sources that may serve as public or private supplies with proper treatment, as needed.

D. LAND USE AND POPULATION TRENDS

The population in the South Central Connecticut Water Supply Management Area is projected by the Office of Policy and Management to increase about 8 percent between 1980 and 2000, and 21 percent between 1980 and 2030. The highest growth rates will be in communities outside the metropolitan New Haven area. Prospect is the only town in the area which is predicted to decline in population.

The WUCC expressed concern regarding areawide land-use practices and insufficient water supply protection measures. Incompatible land uses in the vicinity of water supplies have led to increased potential for source contamination. Due to the rapid pace of economic growth, this situation is viewed as a key issue in the SCA.

E. WATER SYSTEM PLANNING

The extent of water system planning by the utilities in the SCA varies considerably. In general, larger utilities have an ongoing planning process in place for system needs and capital improvements. The smaller utilities on the other hand, are often not in a position to expand, so future planning is less critical.

Utility planning efforts include the evaluation of subjects such as system needs and improvements, land use, future service areas, and customer rates. Systems that serve a larger and more diverse customer base normally conduct planning by using either internal engineering staff or outside consulting firms. These utilities typically assess their system needs and develop capital improvement programs for upgrading or expanding their facilities.

The coordinated planning process includes the preparation of individual supply plans by utilities as requested by the DOHS. The preparation of these plans has provided incentive to the large utilities to address more than their short-term capital improvement programs. Their individual plans must include a review of utility planning efforts for a 5-, 20-, and 50-year period.

A number of the larger utilities have projects underway, and have taken steps to implement their capital improvement programs. Twenty-one of the utilities in the area provided information regarding their planning

programs to the WUCC. Most area utilities are small, and typically do not conduct planning programs.

F. LAND-USE PLANNING

Land-use planning as it relates to water resources management is a major focus of the coordinated planning process. This process involves coordination of local, utility, state, and regional water supply planning efforts.

The primary local planning activity relating to water supplies appears to be the enactment of zoning bylaws protecting surface and/or groundwater supplies. In addition, recent plans of development generally provided language relative to water supply management, as required by Public Act 85-279. This act requires, rather than allows, municipal planning and zoning commissions to consider protection of existing and potential public surface and groundwater supplies in their plans and zoning.

Fourteen of the 36 communities in the SCA have enacted source protection measures in the form of protective zoning, with another six indicating a need to implement such measures. The remainder have either no plan of development, or plans that have not been updated within the last 10 years.

Municipal planning and zoning should be viewed and evaluated for the negative impacts, as well as positive impacts, that it may have on sources of water supply.

Five separate regional planning organizations serve the 36 towns in the South Central Water Supply Management Area. Regional planning organizations participate in the coordinated planning process as members of the Water Utility Coordinating Committee. Regional concerns are thereby represented throughout the planning process.

In addition, various water supply related studies or programs have been implemented by regional planning organizations. For example, an analysis of the Quinnipiac River watershed in Wallingford and Meriden is currently being prepared by the South Central Regional Council of Governments. Also, the Gateway Zone Area, bordering the Connecticut River estuary, is an example of a regional land-use planning program currently being implemented.

At the state level, there are a number of significant planning activities that affect land use and water supply protection. In addition

to the Coordinated Water System Planning Process, there are the state's Clean Water Program, assistance to local officials, identification of aquifers and groundwater protection strategies, and adoption of policies and goals relating to water resources and land use. The State Policies Plan for the Conservation and Development of Connecticut 1987-1992 (C&D Plan) recommends review of State plans and projects to ensure that they do not irreversibly commit to other uses any significant potential water supply sources.

G. COORDINATION BETWEEN WATER UTILITIES AND MUNICIPALITIES

Although utilities and municipalities do coordinate their efforts in the SCA, improvement is needed to ensure appropriate water supply management on an areawide basis.

Large, investor-owned utilities in the area tend to maintain a high degree of cooperation between themselves and local municipal officials. Small, privately-owned utilities on the other hand, do not always communicate regularly with the local officials. Coordination in both situations is critical to maintaining adequate water supplies since the individual systems must interact with local officials to ensure adequate source protection, compatible development in water supply areas, and satisfactory land-use policies.

Although coordination between most of the communities and area water utilities is good, an effort should be made to improve coordination between some of the adjacent communities and area utilities, between the smaller utilities with each other, and with and between municipalities.

H. IDENTIFICATION OF KEY WATER SUPPLY ISSUES

The WUCC identified a number of key water supply issues. Many of these problems are not unique to the SCA; some have been experienced by other WUCC's. However, other issues such as the Quinnipiac River Basin allocation problem are unique to this area.

1. Data Availability and Consistency

One of the issues that came to light during the development of the Water Supply Assessment was the availability and consistency of data. Although individual water supply plans were provided by most of the 15 large utilities, and questionnaires were returned by 29 of the small

utilities, obtaining data from the remaining utilities did pose some problems. Also, data from some small utilities did not necessarily correspond to state agency data on these utilities. Differences in how data should be derived by large utilities and periodic gaps in available data were both identified as issues during the development of the Assessment, especially with regard to source yield data and consumption estimates. Source yield data for the small utilities was primarily based on DOHS records, which are themselves constrained by limited available data at the water supply source.

2. Data Base Methodologies

Several utilities identified problems with some of the methodologies required by Department of Health Services (DOHS) for the preparation of their individual supply plans. The use of the DOHS methodology for service ratios was considered problematic by three utilities since their number of service connections does not reflect the number of people served. The accuracy of the DOHS methodology is dependent upon the service connection values - if one service connection serves a number of units, the service ratio value should be adjusted. These utilities modified their individual supply plans accordingly.

The calculation of the safe yield of supplies in unconfined aquifers has been a subject of much debate since many utilities have not fully explored the hydrogeologic status of their aquifers. In addition, the absence of a clearly defined state guideline for the calculation of safe yield for groundwater supply in unconfined aquifers has lead to variations in individual methodologies.

Problems with methodologies for calculating service ratios and safe yields of unconfined aquifers have been recognized by state agencies, who are working to resolve them.

3. Population Projections

The WUCC expressed concern about using population projections from the Office of Policy and Management (OPM) to project long-term water supply needs. Use of the OPM figures was mandated by the state legislature for the development of individual supply plans and for areawide water supply assessments. This is due to the fact that they are the only statewide projections available though the year 2030.

There is concern that the OPM figures do not reflect recent changes and may be low in some cases.

4. Water Quality Issues

Several utilities in the SCA are experiencing or have experienced water quality problems of both an "aesthetic type" and a "contamination type." Aesthetic water quality problems are generally associated with elevated levels of iron and manganese or other substances that create an aesthetic or annoyance problem but do not necessitate source abandonment. Approximately 21 utilities in the SCA have experienced aesthetic problems; 14 utilities have experienced contamination problems requiring source abandonment or treatment.

Surface and groundwater supplies are subject to a variety of contaminants that cause water quality degradation. Common water quality problems in the SCA include elevated sodium levels, bacterial contamination, volatile organic compound contamination, and elevated levels of manganese and iron. Public health issues and aesthetic problems associated with water quality degradation are significant concerns of the WUCC.

5. Land-Use and Water Supply Protection

The WUCC expressed concern regarding areawide land-use practices and insufficient water supply protection measures. Inappropriate land uses in the vicinity of water supplies have led to increased potential for source contamination. Due to the rapid pace of economic growth, this situation is viewed as a key issue in the SCA. For example, municipal zoning in many of the communities allows industrial development in productive aquifer areas and/or surface water supply watershed. Although many of the communities have enacted source protection measures in the form of restrictive zoning, land acquisition and wetland protection, the remaining towns must address land-use requirements in the vicinity of existing and potential water supplies if the potential for contamination is to be minimized.

The Connecticut DEP currently is preparing "The Watershed Protection Handbook", a guide for local officials on regulated and non-regulated activities on public water supply watersheds. This guide will be a useful tool for South Central communities in the future. In addition, Level A and B mapping of aquifers will be done in the next 2

years, which will aid communities in identifying recharge areas that should be targeted for protection.

6. Utility-Owned Lands

The WUCC considers water utility land ownership a key issue for several reasons. Utility-owned lands protect the water quality of the source, which is beneficial to both the Town and water company. However, utility-owned watershed areas are sometimes considered a disadvantage in communities where the owner does not provide water service or pay significant property taxes to that community. Conversely, some communities view the disposition of water utility-owned land in their Town negatively because of the aesthetic and recreational advantages of open space.

7. Coordination Between Utilities/Municipalities

Although considerable coordination already exists between some utilities and municipalities in the SCA, it must be improved to ensure appropriate water supply management on an areawide basis. Many municipalities must respond to and act on utility recommendations regarding water supply protection and management. Neighboring communities must coordinate to a greater degree to ensure comprehensive water resource management. Municipal and utility coordination must be improved with respect to water supply management.

8. Regulatory Issues

The utilities identified a number of issues related to the state and federal regulatory process. Several WUCC member utilities expressed discontent with what they perceive to be over-regulation by federal and state agencies. For example, additional requirements created by the 1986 Amendments to the Safe Drinking Water Act were highlighted concerns.

The WUCC identified several problems related to state regulatory policies. Regulatory priorities, the lengthiness of the regulatory process, and overlapping agency jurisdictions were identified as key issues. Agency directives sometimes "overlap" and result in an increased level of effort on the part of the utilities. Regarding agency directives that affect utilities, there are conflicting priorities between agencies regarding water supply and wasteload allocation.

Utilities expressed concern with the lengthiness of the permit process by some state agencies. Dissatisfaction with the diversion permit process especially with regard to water supply allocation priorities and review requirements, was a highlighted concern.

Utilities also were concerned about inconsistent public utility regulatory requirements. Operational standards that apply to private, investor-owned utilities are not always applied to the municipally-owned utilities. The WUCC observes this inconsistency.

9. Supply Management and Allocation Issues

The availability of water resources is a key issue in the SCA. Increased economic development in the area has caused steady increases in water demand. The physical limitations of water supplies in some areas is evidenced by existing and potential withdrawal limits in the Quinnipiac River Basin. The Department of Environmental Protection Water Compliance Unit indicates a stressed condition in the basin, and has proposed limiting future withdrawals and diversions. Potential demand management measures such as conservation and growth restriction in the stressed basins of the area are being considered as alternatives to interbasin transfers or new source development. Conservation programs, which reduce demand, may play an important role in the further analysis of the area's allocation issues.

In addition to area resource capacity limitations, competition between utilities for the same supply is becoming more evident. Increased levels of demand, combined with limited available sources of supply, has heightened competition between utilities. Competition between types of water resource uses is also a concern. An example of a competitive water use issue is the allocation level verses water supply needs in the Quinnipiac River Basin. Surface water recreational use that is compatible with water supply requirements has been identified as a concern in some parts of the SCA.

Finally, upstream and downstream water use needs have been identified as concerns in the SCA. At present, few incentives exist to consider downstream water use requirements when establishing an upstream demand. Other than the diversion permit process and unenforceable "good neighbor" policy, upstream uses of a resource are not always precluded by downstream needs.

10. Small Utilities

Comments were received with regarding the long-term viability of some of the area's small utilities and the responsibilities faced by large utilities located adjacent to failing small utilities. Conversely, some small utilities expressed concern that state policy encourages their eventual takeover by large utilities. As was described earlier, the primary concerns of the small utilities include regulatory requirements and assistance in meeting these requirements. The concern of the large utilities in these instances is their having to accept the liability associated with failing or inadequately maintained small systems. The current trend of smaller utilities being bought, interconnected, or satellite-managed by larger purveyors was identified as an issue in the SCA. The actual number of purveyors has decreased as larger utilities assume responsibility for the smaller ones. Due to the large number of small utilities and recent experiences related to water supply management, some consolidation could be anticipated in Naugatuck, Guilford and Durham.

11. Role of Regional Planning

During the preparation of the Assessment, it was observed that many water supply management problems were intermunicipal or regional in scope. For example, water quality, protection, and allocation issues often involve more than one town or utility. Although the coordinated water supply planning process assesses and makes recommendations with regard to areawide concerns, the need for additional long-term regional participation was identified. The increased involvement of regional planning organizations and regional Councils of Government was suggested. The current, limited action of regional planning involvement in the field of water resource management is primarily due to inadequate funding and staffing limitations.

12. Adequacy of Supplies

Most of the SCA's population served by public water supply is served by the 15 large utilities in the area. In addressing the adequacy of existing supplies in meeting average and peak demand requirements, these large utilities were reviewed to determine the existence of possible surplus or deficit situations. The review revealed that all of the large systems in the area can currently meet the average daily demand.

An assessment of the adequacy of existing supplies on an areawide basis indicates that available supplies are adequate throughout most of the area; however, several utilities in the area have difficulty meeting the estimated peak demand with their available supplies.

The long-term adequacy of areawide supplies is insufficient to meet either average or peak demand levels. With the exception of two systems, most of the large utilities must pursue additional sources of supply to ensure an adequate margin of safety. The sources of supply used by the area's small utilities are generally adequate to meet the short-term average daily demand, but expansion of these systems would frequently require the development of additional sources.

III. EXCLUSIVE SERVICE AREA DECLARATION PROCESS

The legislation establishing the coordinated water system planning process specifies that exclusive service area boundaries be delineated by WUCC utilities. Three general considerations guide this process:

- Utilities will be allowed to maintain existing service areas
- Areas will not be left as unserviced islands, unless it can be demonstrated that there is, and will be, no future need for public water service
- New service areas or main extensions that create duplication or overlap of services will not be allowed.

In addition, the regulations specify that the following factors be used to determine exclusive service area boundaries:

- Existing water service area
- Land-use plans, zoning regulations, and growth trends
- Physical limitations to water service
- Political boundaries
- Water company rights as established by statute
- System hydraulics
- Ability of a water system to provide a pure and adequate supply of water now and in the future

A utility can serve customers in its exclusive service area by supply source development, main extensions, or satellite management. In the SCA, the utilities will use a combination of these options.

The South Central Management Area's exclusive area declaration process was conducted in accordance with the requirements of Section 25-33h-1(c)(6) of the Connecticut General Statutes. As part of this process, the WUCC, municipalities, and interested individuals or groups in the management area were notified as to the need for utilities to delineate their exclusive service areas, or possibly waive their right for future expansion beyond

their existing service area boundaries. The WUCC sent notices to all area utilities on March 3, 1988 requesting a written description of their proposed exclusive service areas by April 15, and a reminder notice was sent on May 27 to utilities who had not responded. A legal notice to the public informing them of the pending request for delineations was published March 14-16, 1988.

When the exclusive service area declarations were compiled, no areas were left unclaimed; however, not all towns or subareas can be built to densities which would require public water service. In these areas, the utility which declared the exclusive service area is given the responsibility to provide service, should the need develop. In most cases, this will be to serve spot needs, such as elderly housing or condominiums, or to address local contamination problems. Many of the more rural, peripheral towns were primarily residential and have sufficiently large lots to permit on-site septic and water service.

Bethany and Prospect were declared by more than one utility as part of its exclusive service area. This conflict was negotiated by the WUCC and the Department of Public Utility Control (DPUC), but when they were unable to resolve it, it was referred to the Department of Health Services (DOHS) as provided for by Public Act 85-535. On March 15, 1990, DOHS issued a final decision designating the Town of Prospect as the exclusive service area of the Connecticut Water Company (CWC), and the Town of Bethany as the exclusive service area of the South Central Connecticut Regional Water Authority (SCCRWA).

If a utility did not declare an exclusive service area, the existing service area was delineated as such. It should be noted that expansion for those utilities is limited to the area currently served. In accordance with Section 16-262m of the General Statutes regarding Certificates of Public Convenience and Necessity for all water companies serving less than 1,000 persons, any expansion will require a certificate, which is issued jointly by the DOHS and DPUC. Expansion is defined in Section 16-262m-1(d) as: 1) a five percent increase in the number of service connections to be served by a water system above the number allowed under an existing certificate or permit issued by the DPUC and DOHS, or 2) a five percent increase in the number of service connections above the number served as of the effective date of the regulations.

Following preliminary resolution of the boundary locations by the WUCC members, the Department of Environmental Protection compiled the preliminary exclusive service area delineations and plotted their location on maps at 1:50,000 scale. These maps, labeled Maps 2-1 and 2-2, can be found at the rear of this summary. The service areas shown on these plates indicate the delineations of each nonconflicting utility's exclusive service area.

A. INTRODUCTION

The Integrated Report was the third major product of the South Central Management Area WUCC. It provides an overview of individual public water systems within the management area and addresses areawide supply issues.

Components within the Integrated Report include:

- Population and consumption projections
- Sources of supply, safe yield, and amount of purchased water available
- Discussion of compatibility of coordinated plan with land-use planning and growth policies
- Evaluation and prioritization of alternative water sources
- Plan for interconnections
- Plan for joint use, management or ownership of systems and facilities
- Plan for satellite management
- Minimum design standards
- Presentation of financial data pertinent to areawide projects
- Review of potential impacts on other water resource uses
- Summary

The following sections summarize the findings of the Integrated report. Table numbers have been maintained as they appear in the Integrated Report to enable easier cross-reference.

B. POPULATION AND CONSUMPTION PROJECTIONS

Table 2-1 provides a summary of the historical and projected total population trends in the SCA. These population projections were derived from the Connecticut Office of Policy and Management (OPM) statistics for the area. Table 2-2 provides a summary of the current and projected population serviced by public water utilities.

TABLE 2-1
SOUTH CENTRAL MANAGEMENT AREA
POPULATION PROJECTIONS

Community	U.S. Bureau of Census Population Counts 1970	1980	DOHS Est. 1987[1]	OPM Population Projections[2] 1992	2000	2030
Ansonia	21,160	19,039	18,930	19,265	19,220	19,600
Beacon Falls	3,546	3,995	4,480	4,300	4,400	5,000
Bethany	3,857	4,330	4,620	4,705	4,900	5,800
Branford	20,444	23,363	26,690	24,455	24,940	27,400
Cheshire	19,051	21,788	25,280	25,290	26,790	34,500
Chester	2,982	3,068	3,260	3,600	3,800	5,000
Clinton	10,267	11,195	12,370	12,250	12,740	15,200
Cromwell	7,400	10,265	11,810	11,870	12,770	16,600
Deep River	3,690	3,994	4,260	4,210	4,300	4,800
Derby	12,599	12,346	12,460	12,910	13,110	14,400
Durham	4,489	5,143	5,640	5,960	6,290	8,100
East Haven	25,120	25,028	25,950	25,505	25,730	26,900
Essex	4,911	5,078	5,500	5,340	5,430	6,000
Guilford	12,033	17,375	19,590	19,155	20,730	25,300
Haddam	4,934	6,383	6,820	7,830	8,580	11,900
Hamden	49,357	51,071	51,840	51,745	51,970	53,300
Killingworth	2,435	3,976	4,470	4,730	5,180	7,000
Madison	9,768	14,031	15,360	15,830	17,030	21,400
Meriden	55,959	57,118	59,700	58,070	58,870	61,100
Middlefield	4,132	3,796	3,940	4,270	4,320	5,200
Middletown	36,924	39,040	42,910	42,440	44,540	52,700
Milford	50,858	50,898	52,100	51,900	52,650	55,100
Naugatuck	23,034	26,456	29,410	28,470	29,640	34,500
New Haven	137,707	126,109	127,080	127,110	131,110	138,300
North Branford	10,778	11,554	13,030	12,050	12,700	14,200
North Haven	22,194	22,080	22,530	22,760	23,270	25,000
Old Saybrook	8,468	9,287	10,060	9,665	9,760	10,500

[1,2]See footnotes at the end of this table.

TABLE 2-1 (Cont)
SOUTH CENTRAL MANAGEMENT AREA
POPULATION PROJECTIONS

Community	U.S. Bureau of Census Population Counts 1970	1980	DOHS Est. 1987[1]	OPM Population Projections[2] 1992	2000	2030
Orange	13,524	13,237	13,500	13,740	14,040	15,200
Oxford	4,480	6,634	7,760	7,910	8,540	11,400
Portland	8,812	8,383	8,670	9,260	9,540	11,400
Prospect	6,543	6,807	7,590	6,785	6,630	6,500
Seymour	12,776	13,434	14,120	15,940	17,640	24,000
Wallingford	35,714	37,274	40,580	40,395	41,770	48,700
West Haven	52,851	53,184	54,340	54,480	55,330	58,500
Westbrook	3,820	5,216	5,550	5,700	6,000	7,200
Woodbridge	7,673	7,761	8,240	8,085	8,110	8,700
S. Central Area	714,290	739,736	780,440	777,980	802,370	896,400

[1]Department of Health Services, Division of Health Surveillance and Planning
Population Estimated for Counties and Towns as of July 1, 1987.

[2]Office of Policy and Management, Projected Populations, prepared 1986.

TABLE 2-2
SUMMARY OF UTILITY SERVICE PROJECTIONS

Utility Name	Service Area	Population Served				Percent of Total Population Served			
		1987	1992	2000	2030	1987	1992	2000	2030
Ansonia Derby Water Company	Ansonia	18,037	18,482	18,836	19,600	95	96	98	100
	Derby	11,907	12,484	12,848	14,400	96	97	98	100
	Seymour	803	1,045	1,315	1,805	6	7	7	8
	TOTAL	30,747	32,011	32,998	35,805				
Bridgeport Hydraulic Company	Beacon Falls	2,206	2,398	2,640	3,500	49	56	60	70
	Oxford	356	427	598	1,710	5	5	7	15
	Seymour	11,276	12,237	13,936	20,400	80	77	79	85
	TOTAL	13,838	15,062	17,174	25,610				
Connecticut Valley Hospital	Middletown	2,200	2,200	2,200	2,200	-	-	-	-
Connecticut Water Company Chester System	Chester	845	1,073	1,634	3,500	26	31	43	70
	Deep River	1,529	1,758	2,099	3,141	37	42	49	65
	Essex	2,336	2,785	3,475	5,100	44	52	64	85
	TOTAL	4,710	5,615	7,208	11,741				
Connecticut Water Company Guilford System	Clinton	6,058	7,524	8,959	12,643	50	61	70	83
	Guilford	4,708	6,418	9,616	19,024	25	32	46	75
	Madison	7,046	8,688	10,644	15,747	47	55	62	74
	Old Saybrook	8,212	9,462	10,648	12,843	61	73	83	95
	Westbrook	3,837	4,584	5,351	6,667	70	81	89	93
	Durham								
	Haddam				595				5
	Killingworth			518	1,750			10	25
	TOTAL	29,861	36,675	45,735	69,269				

TABLE 2-2 (Cont)
SUMMARY OF UTILITY SERVICE PROJECTIONS

Utility Name	Service Area	Population Served 1987	1992	2000	2030	Percent of Total Population Served 1987	1992	2000	2030
Connecticut Water Company Naugatuck Division	Naugatuck	16,513	18,675	23,712	27,600	58	65	80	80
	Beacon Falls	171	173	308	350	4	4	7	7
	Bethany	90	93	294	1,160	2	2	6	20
	Prospect	210	617	1,326	3,770	3	9	20	58
	Waterbury	1,052	1,053	1,054	1,088	1	1	1	1
	Middlebury	0	0	255	280	0	0	4	4
	TOTAL	18,036	20,610	26,949	34,248				
Cromwell Fire District	Cromwell	9,500	10,865	12,000	16,600	80	92	94	100
Heritage Village Water Company	Oxford	25	123	405	1,749	0.3	1.6	4.7	15.3
Meriden Water Department	Meriden	59,100	58,002	58,811	61,039	98	99	99	100
Middletown Water Department	Middletown	34,300	35,300	37,900	44,800	87	83	85	85
Portland Water Department	Portland	5,860	6,180	6,400	8,100	67	67	68	72

TABLE 2-2 (Cont)
SUMMARY OF UTILITY SERVICE PROJECTIONS

Utility Name	Service Area	Population Served 1987	1992	2000	2030	Percent of Total Population Served 1987	1992	2000	2030
South Central Connecticut Regional Water Authority	New Haven	127,080	131,220	134,800	142,200	100	100	100	100
	West Haven	53,000	54,880	54,200	57,700	97	98	98	99
	Milford	52,000	53,300	54,700	57,200	100	100	100	100
	Hamden	49,962	52,460	54,700	57,500	96	97	97	99
	East Haven	25,643	27,400	29,600	31,300	98	99	99	100
	Branford	24,793	25,020	26,300	29,700	93	95	97	100
	Cheshire	19,593	22,320	24,900	35,400	77	80	85	94
	North Haven	20,867	21,720	22,100	24,400	93	93	93	95
	Orange	8,839	9,640	10,700	12,900	65	67	69	78
	North Branford	3,730	4,600	5,400	8,900	28	32	39	57
	Woodbridge	997	1,280	1,800	3,600	12	15	20	38
Bethany		16	16	20	60	3	3	3	9
	TOTAL	386,520	403,856	419,400	461,400				
Wallingford Water Division	Wallingford	27,272	37,415	43,376	54,233	67	74	72	90
	TOTALS	621,969	663,914	710,556	826,794				

The small utilities that are not listed in Table 2-2 serve approximately 6,400 people in the SCA. These utilities are primarily small systems using bedrock well supplies. This figure is not expected to change substantially over the 50-year planning period.

Table 2-3 provides a reorganization of the available population served data to illustrate the serviced population on a per municipality basis. As shown on these tables, total projected population for the area ranges from 777,980 in 1992 to 896,400 in 2030. Projections of the population served by public water systems are 663,914 in 1992 to 826,794 in 2030.

Average daily demand and available supply projections for large utilities are shown in Table 2-3, and for small utilities in Table 2-4. The projected demand figures generally were based on Office of Policy and Management population projections. Some of these OPM projections have already been exceeded by the current estimated populations. Projections are estimates of future possibilities based on current trends. These trends can be influenced by actions that are often unpredictable. Similarly, demand figures can also be influenced by unpredictable factors such as the installation of metering programs, the implementation of voluntary or mandatory conservation programs, or rapidly escalating water rates or sewer discharge fees.

C. SOURCES OF SUPPLY, SAFE YIELD, AND PURCHASED WATER

Sources of supply in the SCA include both groundwater supply wells and surface water reservoirs. Groundwater sources supply nearly all of the utilities serving less than 1,000 people, whereas about 65 to 70 percent of the population served by public water supplies are using surface water sources. The SCCRWA is the largest utility in the area and about 85 percent of its total capacity comes from surface supplies.

As described in the Interconnection Section of the Integrated Report, there are four major interconnections used for continuous supply purposes within the SCA.

- SCCRWA - Interconnection to supply Ansonia Derby Water Company Woodbridge - minimum guaranteed available average flow of 3 mgd and available peak flow of 6 mgd

TABLE 2-3
SOUTH CENTRAL WATER SUPPLY
MANAGEMENT AREA
MUNICIPALITY SUMMARY

Community	1987 Total Population[1]	Average Size of Household[2]	Public Utilities	1987 Population Served[3]	1987 Percent Population Served
Ansonia	18,930	2.64	Ansonia Derby Water Co.	18,037	95.0
Beacon Falls	4,480	2.91	BHC Valley Division[4]	2,206	49.2
			CWC[5]	171	4.0
				2,377	53.2
Bethany	4,620	3.04	Ed's Trailer Park	138	3.0
			SCCRWA[6]	16	.3
			CWC[7]	90	1.9
				244	5.2
Branford	26,690	2.50	SCCRWA	24,793	92.9
Cheshire	25,280	2.99	Crestview Condo Association	84	0.3
			Hillview Water Supply	36	0.14
			New Lakeview Conv. Home	270	1.04
			SCCRWA	19,593	77.5
			Southington Water Dept.	200	0.8
				20,183	79.7
Chester	3,260	2.62	Aaron Manor Conv. Home	78	2.3
			CWC-G-C Division, Chester System	845	26.0
				923	28.3

[1-7]See footnotes at the end of this table.

TABLE 2-3 (Cont)
SOUTH CENTRAL WATER SUPPLY
MANAGEMENT AREA
MUNICIPALITY SUMMARY

Community	1987 Total Population[1]	Average Size of Household[2]	Public Utilities	1987 Population Served[3]	1987 Percent Population Served
Clinton	12,370	2.77	Cedar Grove Mobile Home Park	25	0.2
			CWC Guilford System	6,058	48.9
			Evergreen Trailer Park	103	0.8
			Nod Hill Apartments	30	0.2
				6,216	50.1
Cromwell	11,810	2.52	Cromwell Fire District	9,500	80.4
			Metropolitan District Commission	20	0.1
				9,520	80.5
Deep River	4,260	2.54	CWC Chester System	1,529	35.8
			Mt. Saint John School	144	3.3
			Ridgewood Hill Condos	72	1.6
				1,745	40.7
Derby	12,460	2.58	Ansonia Derby Water Co.	11,081	88.9
			Derby Water Dept.	826	6.6
				11,907	95.5
Durham	5,640	3.16	Dogwood Acres	35	0.6
			Durham Center Water Co.	154	2.7
			Lake Grove at Durham	150	2.6
			Mill Pond Elderly Housing	49	0.8
			Twin Maples Nursing Home	50	0.8
				438	7.8
East Haven	25,950	2.81	SCCRWA	25,643	98.8

[1-7]See footnotes at the end of this table.

TABLE 2-3 (Cont)
SOUTH CENTRAL WATER SUPPLY
MANAGEMENT AREA
MUNICIPALITY SUMMARY

Community	1987 Total Population[1]	Average Size of Household[2]	Public Utilities	1987 Population Served[3]	1987 Percent Population Served
Essex	5,500	2.36	CWC Chester System	2,336	42.5
			Hemlock Apartments	96	1.7
			Heritage Cove Condos	300	5.4
			Meadowbrook Rest Home	30	0.5
				2,762	50.2
Guilford	19,590	2.93	Bernice's Court	29	0.1
			CWC Guilford System	4,708	24.0
			Krayeske Water Supply	50	0.2
			Lakeside Condos	27	0.1
			Leetes Island	40	2.0
			Our Lady of Grace Monastery	45	0.2
			Quonnipaug Hills Water Supply	456	2.3
			Walden III Condos	143	0.7
			West Lake Lodge Nursing Home	75	0.3
				5,573	28.5
Haddam	6,820	2.92	Haddam Elderly Housing	38	0.5
Hamden	51,840	2.55	SCCRWA	49,962	96.4
Killingworth	4,470	2.77	Beechwood MHP	750	16.77
Madison	15,360	2.95	CWC Guilford System	7,046	45.8
			Green Springs Subdivision	105	0.6
			Grove School	94	0.6
			Legend Hill Condos	270	1.7
				7,515	48.9

[1-7]See footnotes at the end of this table.

TABLE 2-3 (Cont)
SOUTH CENTRAL WATER SUPPLY
MANAGEMENT AREA
MUNICIPALITY SUMMARY

Community	1987 Total Population[1]	Average Size of Household[2]	Public Utilities	1987 Population Served[3]	1987 Percent Population Served
Meriden	59,700	2.60	Bradley Home	151	0.2
			Meriden Water Dept.	59,000	98.8
				59,151	99.0
Middlefield	3,940	2.74	Beseck Lake Water Co.	276	7.0
			Bittersweet Ridge	40	1.0
			Descrocher Apts.	25	0.6
			Happy Acres	130	3.0
			Sugarloaf Elderly Housing	40	1.0
			Sylvan Ridge Condos	84	2.0
				595	15.0
Middletown	42,910	2.48	Conn. Valley Hospital	2,200	5.1
			Lorraine Terrace	20	0.0
			Middletown Water Dept.	34,300	79.9
				36,520	85.0
Milford	52,100	2.80	SCCRWA	52,000	99.8
Naugatuck	29,410	2.73	CWC Naugatuck Division	16,513	56.1
			Gendrons Valley Mobile Home Park	129	0.4
			Idleview Mobile Home Park	174	0.5
				16,816	57.0
New Haven	127,080	2.41	SCCRWA	127,080	100.0

[1-7]See footnotes at the end of this table.

TABLE 2-3 (Cont)
SOUTH CENTRAL WATER SUPPLY
MANAGEMENT AREA
MUNICIPALITY SUMMARY

Community	1987 Total Population[1]	Average Size of Household[2]	Public Utilities	1987 Population Served[3]	1987 Percent Population Served
North Branford	13,030	3.17	Blue Trail Acres	216	1.6
			Northford Glen Condos	84	0.6
			SCCRWA	3,730	28.6
				4,030	30.8
North Haven	22,530	2.95	SCCRWA	20,867	92.6
Old Saybrook	10,060	2.68	CWC Guilford System	8,212	81.6
Orange	13,500	3.07	SCCRWA	8,839	65.5
Oxford	7,760	3.11	BHC Valley Division	356	4.6
			Hawkstone Terrace	56	0.7
			Heritage Village Water Co.	31	0.4
				443	5.7
Portland	8,670	2.79	Portland Water Dept.	5,860	67.6
			Rivercrest Water Co.	72	0.8
				5,932	68.4
Prospect	7,590	3.16	Country Manor Health Facility	150	1.9
			CWC Naugatuck Division	210	2.7
			Harmony Acres Mobile Home Park	350	4.6
			Highland Heights Water Co.	122	1.6
				832	10.8

[1-7]See footnotes at the end of this table.

TABLE 2-3 (Cont)
SOUTH CENTRAL WATER SUPPLY
MANAGEMENT AREA
MUNICIPALITY SUMMARY

Community	1987 Total Population[1]	Average Size of Household[2]	Public Utilities	1987 Population Served[3]	1987 Percent Population Served
Seymour	14,120	2.66	Ansonia Derby Water Co.	803	5.7
			BHC Valley Division	11,276	79.8
				12,079	85.5
Wallingford	40,580	2.77	Wallingford Water Division	27.107	66.8
			Henry's Trailer Park	65	0.1
			Meriden Water Dept.	100	0.2
				27,272	67.1
Westbrook	5,550	2.50	CWC Guilford System	3,837	69.1
West Haven	54,340	2.51	SCCRWA	53,000	97.5
Woodbridge	8,240	2.99	SCCRWA	997	12.1
TOTAL	780,440			627,128	80.35

Sources of Information:

[1]Department of Health Services, Division of Health Surveillance and Planning Population Estimates for Counties and Towns, 1987
[2]Department of Health Services, Division of Health Policy, Planning and Statistics 1986 Persons Per Household
[3]Individual Water Utility Supplied Information
[4]BHC - Bridgeport Hydraulic Company
[5]CWC - Connecticut Water Company
[6]SCCRWA - South Central Connecticut Regional Water Authority
[7]CWC - Supplies 90 people in Bethany with fire protection.

TABLE 2-4
AVERAGE DAILY DEMAND AND AVAILABLE SUPPLY FOR THE LARGE UTILITIES[1]

Utility Name	Community(s) Served	Average Daily Demand (mgd)[2] 1987	1992	2000	2030	Available Supply (mgd)[3] 1987	1992	2000	2030
Ansonia Derby Water Co.	Ansonia Derby Seymour	4.06	3.77	3.75	4.06	6.45	6.45	6.45	6.45
Bridgeport Hydraulic Company	Beacon Falls Oxford Seymour	1.65	1.69	1.76	2.86	4.9	4.9	4.9	4.9
Connecticut Valley Hospital	Middletown	.165	.165	.165	.165	.704	.704	.704	.704
Connecticut Water Company Chester System	Chester Deep River Essex	.589	.677	.812	1.18	1.6	1.6	1.7	1.7
Connecticut Water Company Guilford System	Clinton Guilford Madison Old Saybrook Westbrook Durham Haddam Killingworth	3.58	4.37	5.41	8.0	6.37	9.0	10.9	18.85
Connecticut Water Company Naugatuck System	Naugatuck Beacon Falls Bethany Prospect Waterbury Middlebury	3.19	3.73	4.75	5.7	4.06	5.57	6.93	8.68

[1,2,3]See footnotes at the end of this table.

TABLE 2-4 (Cont)
AVERAGE DAILY DEMAND AND AVAILABLE SUPPLY FOR THE LARGE UTILITIES[1]

Utility Name	Community(s) Served	Average Daily Demand (mgd)[2] 1987	1992	2000	2030	Available Supply (mgd)[3] 1987	1992	2000	2030
Cromwell Fire District	Cromwell	1.5	2.23	2.75	4.37	3.96	4.36	5.43	8.84
Heritage Village[4] Water Company	Oxford Southbury Middlebury	.82	.925	1.05	1.53	1.3	1.3	1.3	1.3
Meriden Water Department	Meriden	6.8	7.7	8.7	9.8	9.6	9.6	9.6	12.2
Middletown Water Department	Middletown	4.55	6.04	7.0	11.1	9.35	9.35	9.35	21.2
Portland Water Department	Portland	.708	.871	.902	1.142	1.5	2.5	2.5	3.4
South Central Connecticut Regional Water Authority	New Haven West Haven Milford Hamden East Haven Branford Cheshire North Haven Orange North Branford Woodbridge Bethany	56.77	62.4	66.3	73.7	74.3	76.1	82.6	82.6

1,2,3,4See footnotes at the end of this table.

TABLE 2-4 (Cont)
AVERAGE DAILY DEMAND AND AVAILABLE SUPPLY FOR THE LARGE UTILITIES[1]

Utility Name	Community(s) Served	Average Daily Demand (mgd)[2] 1987	1992	2000	2030	Available Supply (mgd)[3] 1987	1992	2000	2030
Wallingford Water Division	Wallingford	6.02	6.91	7.5	9.11	8.2	8.97	8.97	12.0
TOTAL		90.40	101.47	110.8	132.71	135.99	147.40	163.43	194.77
TOTAL LESS HERITAGE VILLAGE WATER CO.		89.58	100.55	109.80	131.18	134.69	146.10	162.13	193.47

[1]Available supply consists of only active supplies and not emergency or inactive sources.

[2]mgd - Million Gallons Per Day

[3]Available supply is comprised of sources of supply that are in continuous use, exclusive of supplies that require additional treatment or supplemental pumping capacity, etc.

[4]Heritage Village Water Company currently serves approximately 25 people in the SCA. System totals are provided in this table.

- SCCRWA - Interconnection to supply Ansonia Derby Water Company Grassy Hill - maximum guaranteed available flow of 2 mgd
- SCCRWA - Interconnection to supply Bridgeport Hydraulic Company Seymour - maximum guaranteed available flow of 4 mgd
- SCCRWA - Interconnection to supply Meriden Water Department - maximum guaranteed available flow of 0.5 mgd

The available sources of supply listed in Tables 2-4 and 2-5 represent available yield from groundwater and surface supplies, as well as water purchased or sold through interconnections.

Most of the systems in the SCA serve fewer than 1,000 people, and rely on bedrock wells. Although Tables 2-4 and 2-5 show that supply availability is in excess of projected demand, it should be noted that many of their systems are already experiencing difficulty in meeting peak demand levels due to system limitations, inadequate treatment capacity, or other constraints. It is the opinion of the WUCC that this apparent surplus of supply should not be considered as such. It is presumed, instead, that all the small utilities which are shown to have excess supply capabilities be considered only self-sufficient through the planning period. The excess capacity should not be viewed as "available" to ease any areawide or large system supply inadequacies.

Projections for future water supply needs for the large water systems were developed. The projected water supply surplus or deficit was calculated assuming that all existing supplies and all agreements to purchase or sell water will continue throughout the planning period. Because small systems in the area are held to be self-sufficient, and nonexpanding, it is assumed that no deficit or surplus condition exists from the perspective of the overall water supply management area. Individual small water utilities may experience problems in meeting future needs. The projected surplus or deficit of current available water to meet projected average daily demands for each large water system is listed in Table 2-6.

D. COMPATIBILITY OF COORDINATED PLAN WITH LAND-USE PLANNING AND GROWTH POLICIES

A variety of recent state initiatives demonstrate the increasing concern for protection of water resources. Public Act 85-279 was the first state mandate that communities consider protection of water resources

TABLE 2-5
AVERAGE DAILY DEMAND AND AVAILABLE SUPPLY FOR SMALL UTILITIES

Utility Name	Location	Average Daily Demand (gpd)[1] 1987	1992	2000	2030	Available Supply (gpd) 1987
Aaron Manor Home		5,850	5,850	5,850	5,850	36,774
Beechwood MHP		45,000	45,000	45,000	45,000	61,236
Bernice's Court		2,175	2,175	2,175	2,175	7,776
Beseck Lake Water Company		7,000	7,000	7,000	7,000	34,992
Bittersweet Ridge		3,000	3,000	3,000	3,000	3,000
Blue Trails Assoc.		16,200	16,200	16,200	16,200	92,000
Bradley Home		7,350	7,350	7,350	7,350	243,000
Cedar Grove MHP		1,875	1,875	1,875	1,875	29,160
Country Manor		15,750	15,750	15,750	15,750	21,384
Crestview Condos		6,300	6,300	6,300	6,300	11,664
Descrocher Apartments		1,875	1,875	1,875	1,875	Unknown
Dogwood Acres		2,265	2,265	2,265	2,265	Unknown
Durham Center Water Co.		16,000	16,000	16,000	16,000	Unknown

[1]Gallons per day

TABLE 2-5 (Cont)
AVERAGE DAILY DEMAND AND AVAILABLE SUPPLY FOR SMALL UTILITIES

Utility Name	Location	Average Daily Demand (gpd)[1] 1987	1992	2000	2030	Available Supply (gpd) 1987
Ed's Trailer Park		10,350	10,350	10,350	13,350	Unknown
Evergreen Trailer Park		19,125	19,125	19,125	19,125	50,000
Gendron's Valley MHP		14,625	14,625	14,625	6,579	52,488
Green Springs Subd.		6,000	6,270	6,270	6,270	18,468
Grove School		5,310	5,310	5,310	5,310	48,600
Haddam Elderly Housing		2,850	2,850	2,850	2,850	38,880
Happy Acres		9,570	9,750	9,750	9,750	Unknown
Harmony Acres MHP		29,475	29,475	29,475	29,475	108,810
Hawkstone Terrace Corp.		4,200	4,200	4,200	4,200	23,760
Hemlock Apartments		7,200	7,200	7,200	7,200	16,524
Henry's Trailer Park		4,875	4,875	4,875	4,875	17,496
Heritage Cove Condos		12,395	12,400	12,400	12,900	80,676
Highland Heights Water Company		7,500	7,500	7,500	7,500	37,584

[1]Gallons per day

TABLE 2-5 (Cont)
AVERAGE DAILY DEMAND AND AVAILABLE SUPPLY FOR SMALL UTILITIES

Utility Name	Location	Average Daily Demand (gpd)[1] 1987	1992	2000	2030	Available Supply (gpd) 1987
Hillview Water Supply		3,600	3,600	3,600	3,600	7,776
Idleview MHP		6,300	6,300	6,300	6,300	24,300
Krayeske Water Supply		3,750	3,750	3,750	3,750	Unknown
Lake Grove at Durham		27,397	27,397	27,397	27,397	223,356
Lakeside Water Company		2,025	2,025	2,025	2,025	4,860
Leetes Island		3,000	3,000	3,000	3,000	Unknown
Legend Hill Condos		16,200	16,200	16,200	16,200	70,000
Lorraine Terrace		1,500	1,500	1,500	1,500	34,020
Meadowbrook Rest Home		2,250	2,250	2,250	2,250	7,776
Mill Pond Elderly Housing		3,675	3,675	3,675	3,675	10,800
Mount St. John School		4,680	4,680	4,680	4,680	26,244
New Lakeview Conv. Home		20,250	20,250	20,250	20,250	Unknown
Nod Hill Apartments		2,030	2,030	2,030	2,030	19,440

[1]Gallons per day

TABLE 2-5 (Cont)
AVERAGE DAILY DEMAND AND AVAILABLE SUPPLY FOR SMALL UTILITIES

Utility Name	Location	Average Daily Demand (gpd)[1] 1987	1992	2000	2030	Available Supply (gpd) 1987
Northford Glen Condos		6,300	6,300	6,300	6,300	17,496
Our Lady of Grace Mon		3,375	3,375	3,375	3,375	13,608
Quonnipaug Park Water Supply		34,200	34,200	34,200	34,200	41,796
Ridgewood Hill Condos		5,400	5,400	5,400	5,400	17,496
Rivercrest Water Company		5,400	5,400	5,400	5,400	Unknown
Sugarloaf Elderly Housing		3,000	3,000	3,000	3,000	12,960
Sylvan Ridge Condos		6,300	6,300	6,300	6,300	24,300
Twin Maples Nursing Home		4,050	4,050	4,050	4,050	108,000
Walden III Condos		10,725	10,725	10,725	10,725	32,400
West Lake Lodge Nurs.		4,800	4,800	4,800	4,800	432,000

[1]Gallons per day

TABLE 2-6
PROJECTED WATER SUPPLY SURPLUS OR DEFICIT
FOR EACH LARGE UTILITY BASED ON EXISTING AVAILABLE SUPPLIES

Utility Name	Community(s) Served	Projected Surplus or Deficit (mgd) 1987	1992	2000	2030
Ansonia Derby Water Company	Ansonia Derby Seymour	2.39	2.68	2.7	2.39
Bridgeport Hydraulic Company	Beacon Falls Oxford Seymour	3.25	3.21	3.14	2.04
Connecticut Valley Hospital	Middletown	.54	.54	.54	.54
Connecticut Water Company Chester System	Chester Deep River Essex	1.01	.92	.79	.42
Connecticut Water Company Guilford System	Clinton Guilford Madison Old Saybrook Westbrook Durham Haddam Killing Worth	2.79	2.0	.96	-1.63
Connecticut Water Company Naugatuck Division	Naugatuck Beacon Falls Bethany Prospect Waterbury Middlebury	.87	.33	-.69	-1.64
Cromwell Fire District	Cromwell	2.46	1.73	1.21	-0.41
Heritage Village Water Company	Oxford Southbury Middlebury	.48	.375	.25	-0.23
Meriden Water Department	Meriden	2.8	1.9	.9	-0.2
Middletown Water Department	Middletown	4.8	3.31	2.35	-1.75

TABLE 2-6 (Cont)
PROJECTED WATER SUPPLY SURPLUS OR DEFICIT
FOR EACH LARGE UTILITY BASED ON EXISTING AVAILABLE SUPPLIES

Utility Name	Community(s) Served	Projected Surplus or Deficit (mgd) 1987	1992	2000	2030
Portland Water Department	Portland	.79	.63	.60	.36
South Central Connecticut Regional Water Authority	New Haven West Haven Milford Hamden East Haven Branford Cheshire North Haven Orange North Branford Woodbridge Bethany	17.53	11.90	8.0	0.6
Wallingford Water Division	Wallingford	2.18	1.29	0.7	-0.91

in their local plans and regulations. During 1988, the Aquifer Protection Task Force was formed and it concluded that the state must develop a comprehensive regulatory framework to protect public water supplies.

Significant legislation based on recommendations from the Task Force has been passed. Public Act 88-324 requires that water utilities map aquifers provide information to guide state and municipal decisions concerning groundwater protection. Public Act 89-305 requires that individual communities become involved with establishing and administering groundwater protection programs by designating an agency that will assume responsibility for groundwater protection measures.

There are 36 municipalities within the South Central Connecticut Water Supply Management Area. Of these, 24 submitted copies of their Plan of Development and/or zoning regulations. Table 4-5 presents a summary of steps taken by responding communities to provide for aquifer and/or surface water protection. Twelve towns discuss water protection in their Plans of Development, while 18 provide for some form of water protection through their zoning regulations. This table demonstrates that more needs to be done to establish meaningful and consistent water resource protection throughout this water management area.

The WUCC looked into zoning patterns within communities in the South Central Connecticut Water Management Area. Individual town zoning classifications were grouped into seven categories that are as follows:

RH - High Density Residential Zoning
- 0-39,990 sq ft per dwelling unit
- Mobile Homes
- Planned residential development 0-39,990 sq ft per dwelling unit
- Planned residential development

RL - Low Density Residential Zoning
- Greater than or equal to 40,000 sq ft per dwelling unit
- Planned residential development - greater than 40,000 sq ft

M - Multiple Family Residential Zoning
- Apartments, condominiums, etc.

C - Commercial Zoning
- Includes planned commercial development

I - Industrial Zoning
- Includes planned industrial development

TABLE 4-5
INVENTORY OF ADAPTED OR PROPOSED
WATER SUPPLY PROTECTION MECHANISMS

Community	Watershed Supply			Aquifer Protection		
	Special District	General Use Restriction	Required Open Space	Special District	General use Restriction	Required Open Space
Ansonia	-	P	P		P	P
Bethany	-	P/Z	-	-	-	-
Branford	-	Z	Z	-	-	-
Cheshire	-	-	Z	Z	Z	-
Clinton	-	-	P	-	Z	-
Cromwell	-	Z	-	Z	Z	-
Derby	-	P	P	-	P	P
Durham	-	-	-	Z	Z	-
Essex	Z	Z	-	Z	Z	-
Guilford	Z	P/Z	-	-	P	-
Haddam	-	Z	-	Z	Z	-
Hamden	-	-	-	P	P/Z	-
Meriden	Z	-	-	Z	-	-
Middletown	-	-	-	Z	Z	-
Naugatuck	-	-	P	-	-	-
New Haven	-	-	-	-	-	-
North Branford	Z	P	P	-	-	-
North Haven	-	Z	P	Z	Z	P
Orange	-	-	P	-	-	P
Portland	-	Z	-	-	-	-
Prospect	-	Z	-	-	-	-
Seymour	-	P	P	-	P	P
Wallingford	P/Z	P/Z	P	P/Z	P/Z	-
West Haven	-	Z	Z	-	Z	Z

P = Included in Plan of Development
Z = Included in Zoning Regulations

A - Agricultural Zoning

O - Open Space (A Category)
- Includes floodplains, parks, reserves, and other designated open space

These zoning classifications were then compared with categories of risk as presented by the DEP in "Protection of High and Moderate yield Stratified Drift Aquifers." These categories are as follows:

1. **Category A** - Land uses which provide maximum protection to high and moderate yield aquifers including:

   - Water utility-owned and maintained land
   - Designated open space, passive recreation with no preeminent facilities
   - State or local government-owned forest land
   - Managed, privately-owned forest land
   - Developed recreation land uses, public parks (excluding active recreational areas such as golf courses).

2. **Category B** - Land uses posing minimal risks to high and moderate yield aquifers, including:

   - Field crops - preeminent pasture, hay crops, corn and vegetable production
   - Low density residential and certain institutional uses (density of less than one dwelling per 2 acres)

3. **Category C** - Land uses which pose slight to moderate risks to ground water including:

   - Agricultural production (livestock, tobacco crops, nurseries, and orchards
   - Golf courses
   - Medium density residential (one dwelling per one-half to 2 acres

4. **Category D** - Land uses considered to pose substantial risks to groundwater, including:

   - Institutional use (schools, colleges, hospitals, nursing homes, prisons)
   - High density housing (greater than one dwelling per half acre)
   - Certain commercial uses (conventional office buildings not including "professional" office or retail activity; banks, restaurants and other stable, domestic sewage limited uses)

5. **Category E** - Land uses which pose a major threat should be banned in drawdown areas and banned or strictly regulated in recharge areas, including:

   - Retail commercial development (discharges limited to domestic sewage)
   - Commercial uses with chemical wastes in addition to domestic sewage as a result of services offered by: (1) professional offices, medical, veterinary, etc.,

Table 4-8 demonstrates the risk category within which each of the community zoning districts fall. The permitted uses for all of the districts were reviewed and then they were matched with the appropriate risk category. Low and medium density residential zones can fall into Risk Categories A through C, depending upon the amount of acreage zoned. Risk Category A-C reflects this range of risk categories as a result of acreage included in each zoning designation. Table 4-8 also demonstrates that the vast majority of the zoning districts fall into Risk Category D, substantial risk, and Risk Category E, major threat to groundwater. This relationship indicates that there is substantial competition for higher risk land uses with water resource protection. The amount of acreage falling within each risk category could not be derived because town zoning patterns have not yet been entered into the state's geographical information data base.

Although protection of water supply resources is now being incorporated within Town Plans of Development, generally speaking, communities have not yet taken sufficient steps to ensure their protection. The legislation discussed earlier will provide the regulatory framework for increased

TABLE 4-8
COMPARISON OF DEP RISK CATEGORIES
WITH TOWN ZONING DISTRICTS

Town	Risk Categories					
	A	A-C	B	C	D	E
Ansonia					AA A B GA MM BB NR RR	C SC LI HI
Bethany		R-130 R-65				B-1
Branford		R-5			R-1 R-2 R-3 R-4 RM-1 BR CP	BC IG-1 IG-2
Cheshire		R-80 R-40			R-20 R-20A C-1	C-2 C-3 I-1
Clinton		R-80 R-40			R-10 R-15 R-20 R-30 VRD IP	B-IA B-1B B-2 B-3 B-4
Cromwell	FPD	A-40			A-15 A-25 PRD-1 PRD-2 PO	B I IP
Derby				R-5 R-10 R-15 R-20	RM P I-Z	

TABLE 4-8 (Cont)
COMPARISON OF DEP RISK CATEGORIES
WITH TOWN ZONING DISTRICTS

Town	Risk Categories A	A-C	B	C	D		E	
Durham						MR FR	C-1 C-2 HID LI	
Essex	CONS			RR RM RLC		VR	EV WF C LI WRD	
Guilford					R-1 R-2 R-3 R-4 R-5 R-6 R-7 R-8	RS-1	C-1 C-2 C-3 C-4 C-2M MR-1	I-1 I-2 C-D
Haddam		R-1 R-2		R-1/2			C I IPD	
Hamden		R-1 R-2		R-3		R-4 R-5	B-1 B-2 CDD-1 CDD-2	CDD-3 CDD-4 M-1
Madison		R-1 R-2 RU-1 RU-2					CA-1 CA-2 CB-1 CB-2	S RS LI
Meriden		R-R S-R R-1			S-R R-1 R-2 PRD	R-3 R-4 PEOD	C-1 C-2 C-3 C-4 M-1	M-2 M-3 M-4 PRD RDD
Middletown				R-30 R-45 R-60	R-15 M MX IOP ID		B-1 B-2 RF IT	I-1 I-2 I-3 IRA

TABLE 4-8 (Cont)
COMPARISON OF DEP RISK CATEGORIES
WITH TOWN ZONING DISTRICTS

Town	Risk Categories								
	A	A-C	B	C	D			E	
Naugatuck				R-30	R-15 R-8 RA-1	RA-2 RO	B-1 B-2 B-3	I-1 I-2 PDD
New Haven	PD				RS-1 RS-2 RH-1 RH-2	RM-1 RM-2	B-A B-B B-C B-D	B-E I-L I-H A-D
N. Branford				R-40 R-80		R-GA	B-1 B-2 B-3	I-1 I-2 I-3
N. Haven			R-20 R-40 RA-40	RA-20 RA-12	OA O LO	CN-20 RH-12 EH LC	CN-20 CB-20 CB-40	IL-30 IL-80 IG-80
Orange		RES				OP	C-1 C-2 LSC	BOP LI-1 LI-2
Portland				RP R-25	R-15 R-10 RMD		B-1 B-2 B-3	I IP ISM
Prospect				RA-1 RA-2			CG CD IND	
Seymour				R-6S R-40		R-15 TH GA	CBD RC C	LI GI
West Haven				OS	R-1 R-2 R3-1 R3-2 RPD	R-4 R-5 R-6 CFPD	C-1 C-2 C-3 C-4 C-5 CPD RCPD	M-1 M-2 M-3 IPD C-IPD SS

TABLE 4-8 (Cont)
COMPARISON OF DEP RISK CATEGORIES
WITH TOWN ZONING DISTRICTS

Town	Risk Categories							
	A	A-C	B	C	D		E	
Wallingford					R-18	RM-6		
		RU-160			R-15	DA	LB-11	I-40
		RU-120			R-11		CA-40	I-20
		RU-80			R-6		CA-12	IX
		RU-40			RM-40		CA-6	
					RM-11		CB-40	
							CB-12	

community involvement. For protection programs to be effective, municipalities should become involved in regional planning efforts through working with regional planning organizations. Municipalities must protect all water resources whether the end consumer is within their municipality or not.

The WUCC believes that water supply is the highest use for a water resource and that utilities should have a mandate to provide water service to meet public demands. These utilities do not have the authority to limit growth within communities and therefore, believe that it is the role of each town to assess resource needs, local availability, and consumer demands. The WUCC urges towns to take measures to protect water resources and to limit growth in water demand if resource availability is limited.

The WUCC believes that achieving compatible land use is critical to maintain the long-term viability of potable water sources. Therefore, they recommend the following:

- Existing high and moderate risk land uses should be carefully monitored by municipalities and utilities. Further expansion of such land uses should be restricted within water resource protection areas.
- Further new high and moderate risk development and land uses should be prohibited within the designated protection areas. Watershed and aquifer protection areas should be rezoned and placed into either the "low risk open space" or "low density residential" category.
- A protective overlay district, which restricts land uses and activities should be created for all aquifers and watersheds that are current or possible future sources of public water supply.
- All water purveyors should work closely with municipalities in achieving water resource protection.

The WUCC suggests that water supply and source protection be given the highest priority by state agencies in formulating guidelines and land acquisition programs. Surface water resources should be protected in the same fashion as is groundwater through the initiatives of the Aquifer Protection Task Force and the subsequently passed legislation.

Successful water resource protection programs should involve all segments of the community; the consuming public, planning and zoning commissions, industry, and the utilities. Without such universal

involvement, protection of surface and groundwater supplies becomes questionable.

E. ALTERNATIVE WATER RESOURCES FOR FUTURE SUPPLY NEEDS

Alternative surface and groundwater resources previously identified from the individual utilities' water supply plans are listed in Tables 3-1 and 3-2. These tables list all potential sources envisioned by the various utilities. However, the utilities within the SCA have further examined these potential sources, and have identified other specific sources (Table 3-3) that they are considering for further development during the 50-year planning period. Individual implementation plans for these potential sources have been developed to either meet future demand projections, to provide for a greater margin of safety in terms of supply, to avoid existing and/or future contamination problems, or to more efficiently operate individual systems.

Additional regional alternatives for future supply have been identified. These include:

- A regional pipeline to share water from SCCRWA expanded Lake Whitney facilities to Wallingford and Meriden may be required. A pipeline to transmit water daily from Wallingford to Meriden and Meriden to Wallingford is required. Water could either be sold wholesale by SCCRWA or a new expanded regional treatment plant could be built at Lake Whitney.

- An additional yield may be required at Shepaug Reservoir, which is then wheeled through Waterbury for potential joint use by some or all of the following: Naugatuck, Prospect, Bethany, Oxford, Seymour, Ansonia, and Derby. A regional joint-use treatment plant may also be required.

- Flood skimming of Salmon Brook into CWC reservoirs and a regional pipeline westward to Hammonasset Reservoir from which water would be wheeled through existing SCCRWA transmission lines for storage in Lake Gaillard. An expanded or regional treatment plant may be required in which the water could be shared among CWC, SCCRWA, Meriden, Wallingford, and others.

- Possible use of Waterbury Water Department's East Mountain and East Mountain No. 2 Reservoirs in Prospect for future regional supplies.

TABLE 3-1
SUMMARY OF POTENTIAL FUTURE SURFACE WATER SOURCES

Utility	Towns in which Source is Located	Source	Safe Yield (mgd)*	Comments	Class
Ansonia Derby	Ansonia Seymour	- Reactivate Beaver Brook Reservoir System	2.40	- Filtration plant needed - Option for distant future	AA
	Bethany	- Dam on the Hopp Brook Watershed	0.40	- ADWCo currently owns 53% watershed - Option for distant future	AA
Connecticut Water Co. (Naugatuck System)	Bethany	- Beacon Valley Brook Diversion	0.45	- Convert emergency supply to active supply - Pump water to new Naugatuck Treatment Plant - More permanent diversion structure required	AA
	Naugatuck	- New Reservoir on Meshaddock Brook	0.86	- Impound 150 mg over 29 acres - Treatment plant necessary - May be affected by EPA rulings	AA
	Naugatuck Middlebury	- Dam on Hop Brook or Diversion to Meshaddock	1.75	- Impound 300 mg over 154 acres - Extensive land acquisition necessary - Treatment plant necessary	AA

*mgd = million gallons per day

TABLE 3-1 (Cont)
SUMMARY OF POTENTIAL FUTURE SURFACE WATER SOURCES

Utility	Towns in which Source is Located	Source	Safe Yield (mgd)*	Comments	Class
	Prospect	- Prospect Diversion to Moody Reservoir	0.55	- Diversion area of 9 square mile area - Land acquisition necessary - Considered an unattractive option due to area development and land acquisition problems	AA
	Naugatuck	- Candee Reservoirs	0.05	- Upgrade this emergency source to active - Pump water to new Naugatuck Treatment Plant	AA
Connecticut Water Co. (Guilford System)	Killingworth	- Raise Killingworth Reservoir	3.30	- Raise spillway by 20 feet - Impound additional 870 mgd of flood skim water from Menunketesuck River - May be affected by EPA rulings	AA
	E. Haddam	- Connecticut River	5.0	- Class B water not currently available for water supply - Treatment required - Large investment necessary. Perhaps appropriate for joint venture operations.	B

*mgd = million gallons per day

TABLE 3-1 (Cont)
SUMMARY OF POTENTIAL FUTURE SURFACE WATER SOURCES

Utility	Towns in which Source is Located	Source	Safe Yield (mgd)*	Comments	Class
Meriden Water Bureau	Berlin	- Mine Kenmere and Hallmere Reservoirs	0.31	- To increase storage and safe yield	AA
	Cheshire	- Raise Broad Brook Dam	0.30		AA
	Meriden Berlin	- Repair Maloney & McKone Canals	0.07		AA
	Cheshire	- Increase Purchases from SCCRWA	0.5	- Subject to Quinnipiac River Flow Management Plan	
Middletown Water Dept.	Middletown Middlefield	- Upgrade Laurel Brook Reservoir	0.76	- Filtration Plant needed	
S. Central CT Regional Water Authority	W. Haven Orange	- Maltby Lakes Treatment Plant	2.00	- Maltby Lakes system not active due to color and turbidity - Land-use conflicts; recreation & transportation routes	AA

*mgd = million gallons per day

TABLE 3-1 (Cont)
SUMMARY OF POTENTIAL FUTURE SURFACE WATER SOURCES

Utility	Towns in which Source is Located	Source	Safe Yield (mgd)*	Comments	Class
	Hamden	- Expand existing Whitney Treatment Plant	13.1 to 18.1	- To handle increased withdrawals from Mill River system during high flows - Increased diversion may have impacts on downstream marshes - Potential conflicts with downstream recreational, historical, and biological resources	AA
	Killingworth	- E. Branch Hammonasset River Diversion	4.5	- Take advantage of unused storage capacity in Lake Hammonasset - Potential conflict with downstream well sites	AA
	Guilford	- Diversion into Lake Menunkatuck	0.2	- May reduce flow into Quonnipaug Lake	A
	Madison	- Cedar Swamp Diversion	0.8	- May affect White Cedar Swamp wetlands	A
	Madison	- Page Lot Brook & Lower Iron Works Stream Diversions	0.7		AA
	Madison	- N. Madison Diversion	0.5		AA

*mgd = million gallons per day

TABLE 3-1 (Cont)
SUMMARY OF POTENTIAL FUTURE SURFACE WATER SOURCES

Utility	Towns in which Source is Located	Source	Safe Yield (mgd)*	Comments	Class
	Prospect	- Reactivate Prospect Reservoir	0.5	- System currently inactive - Well protected surface water source - May affect Quinnipiac River flows	A
	Orange	- Racebrook Tract Diversion to Maltby System	0.5	- Land-use planning preserves and protects this future option - Potential impacts on Wepawaug River	A
	Unspecified	- Connecticut River Diversion		- Not allowable at this time	B
	Unspecified	- Housatonic River Diversion		- Not allowable at this time	C
	E. Haddam	- Salmon River Diversion		- This river not currently utilized for water supply	A
Wallingford Water Division	Wallingford	- Tyler Mill Reservoir or Diversion	2.6	- May be affected by EPA rulings	A
		- Farm River Diversion	2.2	- Land acquisition necessary - Additional diversion may not be necessary	
		- New Pistapaug Pond Water Treatment Plant	12.0	- Also includes supply system improvements and raw water pumping stations	

*mgd = million gallons per day

TABLE 3-2
SUMMARY OF POTENTIAL FUTURE GROUNDWATER SOURCES

Utility	Towns in which Source is Located	Source	Safe Yield (mgd)*	Comments	Class
Ansonia Derby	Seymour	- Housatonic Well Site No. 8	0.7	- Diversion permit received from DEP - Ansonia Derby owns land	GAA
Connecticut Water Co. (Naugatuck System)	Naugatuck Prospect	- Filling Mill Well Sites 1 and 2	1.0	- Land acquisition necessary - Treatment facilities necessary	GA
	Naugatuck	- Cold Spring Well Site	0.5	- Land acquisition necessary - Treatment facilities necessary	GA
Connecticut Water Co. (Guilford System)	Guilford	- Guilford Well Site	NA	- Minimum of 4 additional acres of land to be acquired - Treatment for iron and manganese necessary	GAA
	Clinton	- Rettich Well Field Wells	0.78	- CWC owns sufficient land - Treatment for iron and manganese necessary	GAA
	Old Saybrook	- Old Saybrook Well Field Site	0.20	- Piping across a swamp necessary to connect well to existing system	GAA
	Westbrook	- Expand treatment capacity for Westbrook Well	NA	- Expand treatment facilities for iron removal - Treatment plant needs modification for cold weather operation	GAA

*mgd = million gallons per day

TABLE 3-2 (Cont)
SUMMARY OF POTENTIAL FUTURE GROUNDWATER SOURCES

Utility	Towns in which Source is Located	Source	Safe Yield (mgd)*	Comments	Class
	Guilford	- Iron and manganese treatment for CLR Well	NA	- Iron and manganese treatment required for well to be used continuously - CWC currently plans use of this well only for emergency	GAA
	Killingworth	- North Weiss Well Site	2.0	- CWC owns adequate land for well and treatment facilities	GAA
	Killingworth	- Gustafson Well Site	2.0	- CWC owns adequate land for well and treatment facilities - Tests indicate good water quality	GAA
	Killingworth	- Paper Mill Well Field Site	2.0	- CWC owns adequate land to develop well site	GAA
	Madison	- Stevens Well Site	1.0	- Iron and manganese treatment anticipated, to be provided by Rettich Well Field facility - CWC owns adequate land to develop well	GAA
	Westbrook	- Holbrook Well Site	0.5	- Iron and manganese treatment anticipated	GAA

*mgd = million gallons per day

TABLE 3-2 (Cont)
SUMMARY OF POTENTIAL FUTURE GROUNDWATER SOURCES

Utility	Towns in which Source is Located	Source	Safe Yield (mgd)*	Comments	Class
	Unspecified	- Bedrock Well Sites	NA	- Fracture trace analysis used to identify potential well sites - Not currently considered attractive option, costly, low chance of success	
Cromwell Fire District	Cromwell	- Expansion of existing Gardner Well Field	Est. 4.5	- Well No. 3 constructed around 1995 - Well No. 4 constructed before to 2020 - Increase existing pump size 1989	GAA
Heritage Village Water Co.	Southbury	- 5 Pomperaug Aquifer Well Sites	NA	- 1 well planned for late 1980's - 2 wells needed prior to 2030 - Sites contingent upon development patterns	GAA
Meriden Water Bureau	Berlin Meriden	- Explore for Bedrock Wells	NA	- Generally lower yield, higher cost, and low chance for success	
	Meriden	- Platt Lincoln Well Field	1.3	- Subject to Quinnipiac River Flow Management Plan	GAA

*mgd = million gallons per day

TABLE 3-2 (Cont)
SUMMARY OF POTENTIAL FUTURE GROUNDWATER SOURCES

Utility	Towns in which Source is Located	Source	Safe Yield (mgd)*	Comments	Class
Middletown Water Dept.	Middletown	- River Road Aquifer Well Sites	3.0	- Complete wells by year 2000 - Expand River Road treatment facility - Tested capacity of 9.0 mgd	GAA
	Middletown	- Develop Canel Aquifer	4.0	- Develop around year 2010 - New treatment plant or treatment at River Road facility required	GAA
Portland Water Works	Portland	- Connecticut River Aquifer	2.2	- Expected to be a 7-well field - Tests indicate good quality water - Acreage acquisition necessary - Treatment for iron and manganese most likely necessary	GAA
S. Central CT Regional Water Authority	Cheshire	- N. Cheshire Well Sites	1.8	- SCCRWA owns significant acreage to develop - Potential land-use conflicts - DEP concern over withdrawals effect on downstream Quinnipiac River flows and wetlands - Subject to Quinnipiac River Flow Management Plan	GAA

*mgd = million gallons per day

TABLE 3-2 (Cont)
SUMMARY OF POTENTIAL FUTURE GROUNDWATER SOURCES

Utility	Towns in which Source is Located	Source	Safe Yield (mgd)*	Comments	Class
	N. Branford	- Farm River Well Field Site	1.8	- Local land use primarily residential/agricultural - To be considered when service area extends further north	GA
	Hamden	- Waite Street Well Field by the Mill River	1.5	- Hydrogeologic evaluation in progress to determine effects, if any, of possible contaminated site 2000 ft up gradient - Potential land-use conflicts	
		- No. Sleeping Giant Wellfield	2.1	- Expansion of existing wellfield	GAA
		- So. Sleeping Giant Wellfield	1.1	- Expansion of existing Wellfield	GAA
		- Mt. Carmel Wellfield	1.5	- Expansion of existing wellfield	GAA
	N. Branford	- Muddy River Well Field	1.5	- Possible industrial zoning area of contribution	GA
Wallingford Water Division	Durham	- Durham Area Aquifer Potential	NA	- To be assessed	
	Wallingford	- Muddy River Aquifer	2.0	- 1980 estimate of yield, needs to be reassessed - Land acquisition necessary	

*mgd = million gallons per day

TABLE 3-3
SOUTH CENTRAL PUBLIC WATER MANAGEMENT AREA
FUTURE WATER SUPPLY SOURCES
PROPOSED IN INDIVIDUAL DRAFT PLANS

Water Utility	Source	Additional Supply to System 1992	2000	2030
Connecticut Water Company	Beacon Valley Brook Diversion	.45	-	-
	Candee Reservoirs	.05	-	-
	Raise Killingworth Reservoir	3.30	-	-
	Filling Mill Well No. 1	.50	-	-
	Filling Mill Well No. 2	-	.50	-
	Cold Spring Well	-	.50	-
	North Weiss Well	-	2.00	-
	Holbrook Well	-	.50	-
Cromwell Fire District	Increase Gardiner Well No. 1 Capacity	.94	-	-
	Gardiner Well No. 3	-	2.88	-
	Gardiner Well No. 4	-	-	NA
Heritage Village	Pomperaug Aquifer Well No. 6	NA	-	-
	Two Additional Southbury Wells	-	-	NA
Meriden Water Bureau	Mine Kenmere & Hallmere Reservoirs	0.31		
	Raise Broad Brook Dam	0.30	-	-
	Repair Maloney & McKone Canals	0.07	-	-
	Bedrock Wells	NA	-	-
	Dredge Broad Brook Reservoir	NA	-	-
	Interconnect with the SCCRWA	1.50	-	-
Middletown Water Department	Develop River Road Aquifer Wells	1.50	1.50	-
	Develop Canel Aquifer	-	-	4.00
	Upgrade Laurel Brook Reservoir	0.75		
Portland Water Works	Develop Strongs Avenue/Bell Court Aquifer w/Treatment Plan	-	2.20	-
SCCRWA	Replace Whitney Treatment Plant	-	6.50	-
	Develop N. Cheshire Well Sites	1.80	-	-
Wallingford Water Division	Durham Area Diversion	-	-	NA
	Develop Muddy River Aquifer	-	2.00	-
	Tyler Mill Reservoir	-	-	2.60
	SCCRWA Interconnection	-	.50	-
	New Pistapaug Pond Water Treatment Plant	.92	-	-

NOTE: NA = Addition to supply estimate not available.

TABLE 3-4
SMALL UTILITY SUMMARY

Utility	Expansion Plans	Single Source of Supply	Supply Problems	Water Quality Problems	New Sources Considered
Aaron Manor	No	No	No	Yes	
Amston & Beseck	Yes	No	No	Yes	Yes - Unidentified
Beechwood MHP*	No	No	Yes	No	
Bernice's Court*	No	Yes	Yes	Yes	
Bittersweet Ridge	No	No	No	No	
Blue Trails Assoc.	No	Yes	No	No	
Bradley Home*	No	Yes[1]	No	No	
Cedar Grove MHP*	No	Yes	Yes	Yes	
Country Manor*	No	No	No	Yes	
Crestview Condo. Assoc.*	No	No	Yes	Yes	
Descrocher Apts.	No	Yes	No	No	
Dogwood Acres	No	Yes	No	No	
Durham Center	No	No	No	Yes	Yes - Unspecified Well
Ed's Trailer Park	No	Yes	No	Yes	
Evergreen Trailer Park	No	No	No	Yes	
Gendrons Valley MHP	No	No	No	Yes	
Green Springs*	No	No	Yes	No	
Grove School	No	No	No	Yes	
Haddam Elderly Housing	No	No	No	Yes	
Happy Acres	No	Yes	No	No	
Harmony Acres MHP	No	No	No	Yes	Yes - New Well, Same Aquifer
Hawkstone Terrace	No	Yes	No	No	
Hemlock Apts.	No	Yes	No	No	
Henry's Trailer Park*	No	Yes	No	Yes	
Heritage Cove Condos	No	No	No	Yes	Yes - Proposed CWC Interconnection

[1]Also interconnects with Meriden Water Bureau.
* Utilities located within a D.E.P. Basin of Concern.

TABLE 3-4 (Cont)
SMALL UTILITY SUMMARY

Utility	Expansion Plans	Single Source of Supply	Supply Problems	Water Quality Problems	New Sources Considered
Highland Heights	No	No	No	Yes	
Hillview Water Assoc.*	No	Yes	Yes	Yes	
Idleview MHP*	No	No	No	Yes	Yes - Possible CWC Interconnection
Krayeske Water Supply	No	Yes	No	Yes	
Lakeside Water Co.*	No	Yes	No	No	
Lake Grove	No	Yes	No	Yes	
Leetes Island	No	Yes	No	No	
Legend Hill Condos*	No	No	Yes	Yes	
Lorraine Terrace	No	Yes	No	No	
Meadowbrook Rest Home	No	Yes	No	Yes	
Mill Pond Elderly Housing	No	No	No	Yes	
Mt. St. John School	No	No[2]	No	No	
New Lakeview Convalescent Home*	No	No	Yes	Yes	Yes - Interconnect with Waterbury
Nod Hill Apts.*	No	Yes	No	Yes	
Northford Glen Condos	No	No	No	Yes	
Our Lady of Grace Monastery*	No	Yes	No	Yes	
Quonnipaug Park Water*	No	No	No	No	
Ridgewood Hill Condos	No	No	Yes	No	
Rivercrest Water Co.	No	No	Yes	Yes	Yes - Connect up 3-4 Private Wells
Sugarloaf Elderly Housing	No	Yes	No	No	
Sylvan Ridge Condos	No	No	No	No	
Twin Maples Nursing	No	No	No	Yes	
Walden III Condos	No	No	No	Yes	
Westlake Lodge Nursing*	No	No	No	No	

[2]CWC provides additional supply during emergencies and drought.
* Utilities located within a D.E.P. Basin of Concern.

The State IWRPB has identified a number of options for potential future water supply that are within the SCA. These options included:

- Potential Reservoirs
  - Parmalee Brook in Durham
  - Sawmill Brook in Durham
- Potential Diversions
  - Cogichaug River in Durham
  - Menunketesuck River in Killingworth
  - Pond Meadow Brook in Killingworth
  - Muddy River in North Haven
  - Dowd Hollow Brook in Madison
  - Iron Stream in Madison
  - Neck River in Madison
- Potential Expansion of Existing Reservoirs or Diversions
  - Killingworth Reservoir in Killingworth
  - Hopp Brook Diversion in Bethany

This WUCC, in conjunction with various state agencies, has reviewed the collective recommendations for new sources of supply to assess their compatibility with an integrated approach to regional water supply planning for the South Central Connecticut Water Supply Management Area. The WUCC recommends that future sources of water supply first be developed on a local basis. Regional sources of supply would then be utilized as local sources are exhausted. Therefore, the WUCC recommends a new source development program that is essentially outlined in Table 3-3.

Each of the large utilities has identified options for increasing water supply to respond to future demand growth. Each option is appropriate to the particular utility planning to develop it. However, it is possible that more than one utility has identified future options that may cause utilities interfere with one another if all are developed. The options identified to date are:

- SCCRWA has proposed additional North Cheshire Well Field wells whose withdrawals may impact the River. SCCRWA is also considering reactivating the Prospect Reservoir diversion which may reduce flows to the river. Wallingford is evaluating the option of developing a Muddy River well field which may further reduce flows into the

Quinnipiac River. While these plans are under consideration, the Meriden Water Department water supply report states that their ability to pump groundwater is restricted by current low flow characteristics in the Quinnipiac River. These options may all affect low flow characteristics of the Quinnipiac River.

- Both the SCCRWA and the Wallingford Water Division propose to develop additional groundwater wells along the Muddy River. These two utilities hope for increased safe yields of 1.5 mgd and 2.0 mgd, respectively. It is possible these two projects may interfere with each other.

- Wallingford identified the Farm River diversion option as a potential new source. This may conflict with the SCCRWA, which currently uses this River for public water supply through diversions to Lake Gaillard and Lake Saltonsall.

- The SCCRWA currently has contractual agreements to provide the Bridgeport Hydraulic Company, the Ansonia Derby Water Company, and the Meriden Water Bureau with up to 9.5 mgd of wholesale water via interconnections. Due to constraints on increased future diversions within the Quinnipiac River Basin, the Meriden Water Bureau and the Wallingford Water Division have both identified the SCCRWA as a source of additional future supplies. Such continued reliance on the SCCRWA for increased water supplies may necessitate the development of an areawide source to meet these demands, without which, towns within the Quinnipiac River Basin may have to limit growth which increases water consumption. Options for such a regional source of supply may include an expanded Lake Whitney Treatment Plant or a newly developed diversion along the Salmon River.

Although the above list of examples is not intended to be totally inclusive, it does demonstrate that the possibility exists that projects developed independently by utilities may result in competition for the same resources. Utilities will have to jointly identify potentially conflicting projects and institute a cooperative process to best manage the development and utilization of the resources.

Within the South Central Connecticut Water Supply Management Area, there are 49 small water suppliers which serve 1,000 people or less. Table 3-4 presents a summary of these utilities. As this table indicates, 21 of these suppliers rely on a single source of supply, most of which do not have an alternative source should their primary source of supply be lost. Ten of the small suppliers have reported having periodic supply disruptions, and 30 have reported having some form of contamination problem requiring treatment.

The WUCC membership acknowledges the responsibility of the larger utilities to aid small suppliers and resolve supply and water quality problems. The WUCC recommends that should satellite management become necessary to ensure quality service to small utility customers, this function would fall to the large utility closest to the troubled utility. If there is a question as to which large utility should assume responsibility for the troubled company, the DPUC would assign the management responsibility.

The WUCC is sensitive to the fact that several of the proposed new sources of supply are located within DEP Basins of Concern, and that water resource management plans within these basins may have to be developed to protect their continued integrity. However, the WUCC also believes that public water supply is the highest use of a water resource and therefore, should be granted the highest priority in water resource planning and management.

The utilities within this WUCC recognize the need for water resource planning and planning update efforts. To continue to effectively plan for future demands and appropriate supply alternatives, utilities need to know that water resources that are currently allocated for water supply will remain so in the future. Therefore, the WUCC strongly recommends that once a water resource is dedicated for water supply, it will not be reallocated for other uses. This certainly should apply not only to newly proposed diversions, but also to existing grandfathered diversion registrations.

The WUCC is concerned about the future availability of Class A water bodies that are not currently allocated fully, or in part, for public water supply. The WUCC recommends that all current plans that do not include water supply considerations, should not preclude future reallocation of those resources to water supply if increasing demands so necessitate.

The WUCC recognizes the beneficial role that water conservation has on the existing sources' ability to meet demand and on the possibility of postponing the development of some options for additional water supplies. The WUCC, therefore, encourages all utilities to fully support and foster conservation programs within their systems and to routinely budget funds for the continued development and refinement of conservation programs and education. The WUCC strongly endorses these three significant bills passed

during 1989 regarding water conservation, preservation, and protection: Public Act 89-327, "An Act Establishing a Water Resources Policy," Public Act 89-226, "An Act Establishing a Residential Water Saving Program," and Public Act 89-303, "An Act Concerning Minimum Efficiency Standards for Plumbing Fixtures."

The WUCC recognizes the number of public and environmental issues that must be addressed before the implementation of most of the proposed future source options. Such concerns, as discussed in the Integrated Report include:

- The ability to meet the demands and concerns of municipalities having a new source to be developed
- The potential impacts of new source development on nearby surface and groundwater resources, and on sensitive habitats and/or plant and animal species
- The water quality and treatment requirements of the proposed sources
- The land-use compatibility of new source development with other cultural demands on surrounding lands
- The potential affect of new source development on recreational uses of a water body.

The WUCC is addressing these concerns along with preparing diversion permit applications for future sources of supply.

The WUCC feels that although water supply needs are to be given a high priority in diversion policy and decisions, this may not always be so. The DEP should more actively solicit input from water suppliers on resource needs and allocation before setting a policy. The WUCC has agreed that there are several areas of concern within the proposed Water Diversion regulations, such as:

1. The DEP proposes to regulate withdrawal capacities even though the structural capacity of public water supplies is already regulated by the Department of Health Services and/or the Department of Public Utility Control.
2. The DEP has not established a time frame for the Commissioner of Environmental Protection to review registered diversions.

3. The DEP is establishing factors for diversion review that are different from the explicit information required when the existing diversions were registered.

4. Stream flow recurrence intervals imposed on public water suppliers are far more restrictive than those imposed on other users of the water resource.

5. The DEP wishes to regulate interconnections between water systems.

6. The DEP continues to categorically exempt the Connecticut Department of Transportation, regardless of the fact that the Department' activities have had water quality impacts, with costs to the state and the utilities for remedial actions.

7. The DEP has not established a strict standard for "low flow needs" and or a requirement for all competing uses of a water resource to be subject to that standard.

8. System extension and expansions within a defined services area, and emergency interconnections between water suppliers, were also not exempted form the Diversion Policy Act.

9. DEP has proposed provisions which would allow them to review, and potentially revoke, existing grandfathered diversion registrations.

The WUCC is concerned about the future availability of Class A water bodies not currently used for public water supply, such as the Salmon River. As other surface water sources, such as the Quinnipiac River, become increasingly stressed, the need for access to Class A rivers will also increase.

The WUCC considers the Salmon River as a viable future supply option. However, they are concerned that DEP's fisheries and other environmental projects within this basin may be committing the Salmon River to water resource uses other than water supply. This commitment may conflict with the adopted state policy as outlined within the Plan of Conservation and Development, which states that plans and projects must not irreversibly commit any significant potential water supply source to other water resource users.

Constructing new surface supply reservoirs or creating additional storage by enlarging existing reservoirs are often considered by public water supplies to be means for meeting the growing demands of a service area. The WUCC believes that under current regulatory constraints, it is becoming more difficult and risking for water utilities to continue realistically planning these types of source expansions.

The growing regulatory requirements for considering the development of surface water supplies include a comprehensive evaluation that must unequivocally substantiate the need for the supply by concluding that no other supply alternatives exist. Based on these imposed requirements, the WUCC suggests that a public water utility's plan for developing surface supplies take into consideration the potential for a more prolonged and expensive regulatory process.

As the Amendments of the Safe Drinking Water Act (SDWA) begin to take effect, treatment required for both surface and groundwater sources will become increasingly restrictive. At a minimum, these amendments will require filtration for all surface sources and disinfection of water from all sources. Above these, many sources may also need additional treatment for specific water quality characteristics.

As future demand for water increases, many towns and utilities may need to consider cleaning up and using sources having water quality problems. The treatment required will significantly impact the costs of bringing such sources on-line and may, in fact, become an increasingly major factor in the decision to use or not use such sources. Also, the frequent monitoring, chemical analyzing and water quality reporting which will be required will be beyond the financial and technical capabilities of many of the smaller utilities within the SCA. This will, in turn, place more responsibility on the larger water suppliers to monitor water quality of smaller companies through some form of satellite management or joint-use arrangement.

F. INTERCONNECTIONS

Interconnections currently play a significant role in providing water to many large systems in the SCA. Tables 5-1 through 5-5 summarize the continuous and emergency system interconnections in the SCA.

The largest number of interconnections are in the Housatonic and Quinnipiac River Basins. Significant interconnections for regular supply purposes exist between the SCCRWA and Ansonia Derby Water Company, Bridgeport Hydraulic Company, and the Meriden Water Department. Also, a full-time connection exists between the Ansonia Derby Water Co. and the Derby Water Department.

TABLE 5-1
ANSONIA DERBY WATER COMPANY (ADWCo)
EXISTING INTERCONNECTIONS

	Purchased Water		Sales of Water[3]
	Grassy Hill[1] Tank	Woodbridge[2] Seymour	Bridgeport Hydraulic Co. (BHC)
Date Completed	November 1984	December 1985	
Direction of Flow	SCCRWA* to ADWCo*	SCCRWA to ADWCo	BHC
Length	6,060 feet	27,395 feet	
Material		Ductile iron	
Pipe Diameter	12 inch	20 & 24 inch	8 inch
Treated	Yes	Yes	Yes
Town (from)	Orange	Woodbridge	Ansonia
Location	Grassy Hill Road	Route 313 & Clinton Road	No. Main Street
Service Area (To)	Derby Low[4] Service Area	Ansonia Low Service Area Service Area and BHC Seymour	Seymour
Storage	4.3 mg	1 mg	
Pump Capacity		7 mgd	
Flow Line Elev.	303 USGS[5]	450 USGS	
Avail. Capacity	0.8 mgd	3.0 mgd	0.3 mgd
Min. Yearly		600 mg (includes Grassy Hill)	
Min. Monthly	5 mg	30 mg	

*South Central Connecticut Regional Water Authority

TABLE 5-1 (Cont)
ANSONIA DERBY WATER COMPANY (ADWCo)
EXISTING INTERCONNECTIONS

	Purchased Water		Sales of Water
	Grassy Hill Tank	Woodbridge-Seymour	Bridgeport Hydraulic Co. (BHC)
Min. Ave. Flow	---	3 mgd	
Min. Peak Flow	---	6 mgd	
Max. Flow	2 mgd	---	
Length of Contract	10 years	30 years	None
Expiration Date	12/3/2001	12/31/2015	N/A
Renewal Option	Yes[6]	Yes[7]	N/A
Whose Option	RWA & ADWCo	ADWCo	N/A
Renewal Period	10 years[6]	2 or 10 years each	N/A
Sale of Excess Water Permit	N/A	N/A	No

6-7 See footnotes at the end of this table.

TABLE 5-1 (Cont)
ANSONIA DERBY WATER COMPANY (ADWCo)
EXISTING INTERCONNECTIONS

	Derby Water Company
Date Completed	1971
Direction of Flow	ADWCo to City of Derby Pumping Station
Pipe Diameter	10 inch
Treated	Yes
Location	Corner of Sodom Lane and New Haven Ave.
Avail. Capacity	700,000 gpd
Min. Ave. Flow	160,000 gpd
Max. Flow	700,000 gpd
Length of Contract	Indefinite with no time restrictions
Expiration Date	City of Derby may terminate with a 2-year notice to ADWCo.
Status	Active

Source of Information: ADWCo Individual Water Supply Plan, 1987.

N/A = Not Applicable

1 20-inch main from RWA's Grassy Hill tank and pump station located on Route 121 in Orange to the ADWCo. Pressure reducing valve chamber located on Derby Avenue (Route 34) between Sodom Lane and Platt Street. Overall length of connection is 6,060 feet. In use full-time. Pump station not required for interconnection to work.

2 20-inch and 24-inch transmission main from RWA's West River Water Treatment Plant to the ADWCo 24-inch main to Ansonia at the intersection of Route 313 and Clinton Road. Total length of connection is 27,395-feet, with 4,480-feet of 24-inch and 22,915-feet of 20-inch ductile iron pipe. In use full-time.

3 8-inch connection from ADWCo's 10-inch main in North Main Street to BHC's Seymour Distribution system at Robin Road. Rarely in use.

4 City of Derby High Service Area Pumping Station draws from pressure reducing valve.

5 Pressure reducing valve required to serve Derby low service area at grade of 277.

6 May be extended for additional 10-year periods with the written consent of both ADWCo and SCCRWA. ADWCo must give written notice to SCCRWA of intent to extend 2 years prior to expiration. Thus, extension must be requested in 1989.

7 Renewable at option of ADWCo for two additional periods of 10 years each after expiration date. Renewal is automatic. Supply appears to be assured by contract for a 50-year planning period.

TABLE 5-2
BRIDGEPORT HYDRAULIC COMPANY (BHC)
VALLEY DIVISION
EXISTING INTERCONNECTIONS

	South Central Connecticut Regional Water Authority (SCCRWA)	Ansonia Derby Water Company (ADWCo)
Date Completed	January 1986	
Direction of Flow	SCCRWA to BHC	ADWCo to BHC
Length	22,500 feet/4,500 feet	
Material	ductile iron	
Pipe Diameter	20 inch/24 inch	
Treated	Yes	Yes
Location	Route 313 & Clinton Road Seymour	North Main Street Seymour
Storage	1.0 mg	
Pump Capacity	7.0 mgd	
Avail. Capacity	4.0 mgd	0.3 mgd
Min. Yearly	200 mg	
Min. Monthly	10.0 mg	
Min. Ave. Flow	4.0 mgd	
Max. Flow	4.0 mgd	
Length of Contract	30 years	None

TABLE 5-8
SUMMARY OF POTENTIAL INTERCONNECTION FACTORS - SYSTEMS SERVING MORE THAN 1,000 PEOPLE

Name of Utility	Town	1987 Available Supply (mgd)	1987 Ave. Daily Demand (mgd)	2030 Available Supply (mgd)	2030 Ave. Daily Demand (mgd)	Other Utility(s Located Within 1/2-Mile Radius
Ansonia Derby Water Co.	Ansonia Derby Seymour	6.45 (system total)	4.1 (system total)	6.45	4.1	BHC-Seymour SCCRWA-Orange BHC-Seymour BHC-Main System
Bridgeport Hydraulic Company-Valley Division	Beacon Falls Seymour	4.9 (system total)	1.65 (system total)	4.9	2.86	CWC-Naugatuck Division ADWCo - Ansonia
Connecticut Water Co. Naugatuck Division	Beacon Falls Naugatuck	4.06 (system total)	3.19 (system total)	12.8	6.0	Waterbury BHC-Seymour BHC-Seymour
Cromwell Fire District	Cromwell	3.88	1.3	10.66	4.2	Middletown Wate Dept. MDC
Meriden Water Department	Meriden	9.6	6.8	12	10	SCCRWA-Cheshire Wallingford Wat Division

TABLE 5-8 (Cont)
SUMMARY OF POTENTIAL INTERCONNECTIONS
FACTORS - SYSTEMS SERVING MORE THAN 1,000 PEOPLE

Name of Utility	Town	1987 Available Supply (mgd)	1987 Ave. Daily Demand (mgd)	2030 Available Supply (mgd)	2030 Ave. Daily Demand (mgd)	Other Utility(s Located Within 1/2-Mile Radius
Middletown Water Department	Middletown	9.35	4.5	21.2	13.2	Cromwell Fire D Portland Water
Portland Water Department	Portland	1.5	.71	3.5	1.05	Cromwell Fire D Portland Water
South Central Connecticut Regional Water Authority	Cheshire North Haven Orange	74.3 (system total)	56.77 (system total)	82.6	73.7	Meriden Water D Wallingford Wat ADWCo-Derby
Wallingford Water Division	Walling-ford	8.12	6.02	12.2	11.0	SCCRWA-North Ha Meriden Water D

[1] Would require Connecticut River crossing.

Engineering
Management of day-to-day operations and business functions
Financial and fund-raising consulting
Agency correspondence and coordination
Requisition assistance for wholesale water agreement

- Provides fee laboratory analytical services.

Meriden Water Bureau

- Has a contract to provide water to a portion of Wallingford's exclusive service area, principally along South Broad Street.
- Has an agreement with Southington to supply water to the Johnson Hill area contiguous to Meriden until Southington extends their distribution system to that area.
- Provides water to the Bradley Home's area in the center of Meriden although Bradley Home is a separate exclusive service area unto itself.

Portland Water Works

- Has been contacted by Rivercrest Water Company for preliminary conversations regarding how Portland Water could provide assistance, if necessary.

SCCRWA

- Provides recordkeeping and billing functions for the New Haven Water Pollution Control Authority.
- Provides contract meter testing services for Ansonia Derby Water Company and Bridgeport Hydraulic Water Company.
- Provides, or has recently provided, fee laboratory analytical services on an as needed basis for:

Ansonia Derby
Berlin Water Control Commission
Bridgeport Hydraulic
City of Danbury
City of Groton
New Canaan Water Company
Norwalk District No. 2
City of Norwich Public Utilities
Plainville Water Company
Southington Water Department
Stamford Water Company
Wallingford Water Department

The WUCC investigated the potential for expanding joint use of facilities and services. Tables 6-1 through 6-3 summarized which goods and services are available to be provided by the large utilities either on a

TABLE 6-1
ELEMENTS OF INFRASTRUCTURE AVAILABLE FOR JOINT USE

Utility	Source and Supply	Storage	Mains		Treatment
			Transmission	Distribution	
Ansonia/Derby Water Company	*	o	*	*	*
Bridgeport Hydraulic	*	*	*	*	*
Connecticut Water Company	*	*	*	*	*
Cromwell Fire District	*	o	*	NA	o
Heritage Village Water Company	*	*	o	o	NA
Meriden Water Bureau	NA	o	NA	NA	NA
Metropolitan District Commission	o	o	*	*	o
Middletown Water Department	NA	NA	NA	NA	NA
Portland Water Works	o	NA	NA	NA	o
SCCRWA	*	*	*	*	*
Wallingford Water Division	NA	o	o	o	NA
Waterbury Water Department	NA	NA	NA	NA	*

* Elements which can be provided.
o Elements which can be provided only on a short-term or emergency basis.
NA - Not Available to be provided.

TABLE 6-2
ELEMENTS OF EQUIPMENT AND SUPPLY AVAILABLE FOR JOINT USE

Utility	Excavation Equipment	Pipe Stores	Fittings	Jointing/ Cutting Equipment	Meters and Testing	Compressors/ Generators	Leak Detection	Water Tanks	Pumping Equipment
Ansonia/Derby Water Company	*	*	*	*	*	*	*	*	*
Bridgeport Hydraulic	*	*	*	*	*	*	*	*	*
Connecticut Water Company	*	*	*	*	*	*	*	*	*
Cromwell Fire District	*	o	o	*	*	*	o	NA	*
Heritage Village Water Company	NA	o	o	*	*	*	o	NA	NA
Meriden Water Bureau	*	o	o	*	o	*	NA	*	*
Metropolitan District Commission	*	o	o	*	*	*	NA	*	*
Middletown Water Department	NA	NA	NA	NA	NA	NA	NA	NA	NA
Portland Water Works	*	*	*	*	*	*	*	*	*
SCCRWA	*	*	*	*	*	*	*	*	*
Wallingford Water Division	o	o	o	o	*	o	o	NA	NA
Waterbury Water Department	*	*	*	*	o	*	NA	NA	o

* Elements which can be provided.
o Elements which can be provided only on a short-term or emergency basis.

TABLE 6-3
ELEMENTS OF MANPOWER AND BUSINESS FUNCTIONS AVAILABLE FOR JOINT USE

Utility	Meter Reading	Recordkeeping	Billing	Computer Services	Engineering/ Design	Skilled Manpower	Laboratory Testing
Ansonia/Derby Water Company	*	*	*	*	o	o	NA
Bridgeport Hydraulic	*	*	*	*	*	*	*
Connecticut Water Company	*	*	*	*	*	*	NA
Cromwell Fire District	NA	NA	NA	NA	NA	NA	NA
Heritage Village Water Company	o	*	*	*	NA	o	*
Meriden Water Bureau	NA	NA	NA	NA	o	o	NA
Metropolitan District Commission	*	*	*	*	o	*	NA
Middletown Water Department	NA	NA	NA	NA	NA	NA	NA
Portland Water Works	NA	NA	NA	NA	NA	NA	NA
SCCRWA	*	*	*	*	*	*	*
Wallingford Water Division	o	NA	NA	NA	NA	o	NA
Waterbury Water Department	NA	NA	NA	NA	NA	*	o

* Elements which can be provided.
o Elements which can be provided only on a short-term or emergency basis.

TABLE 6-5
IDENTIFIED PROBLEMS OR NEEDS

Utility	Supply Shortfalls	Treatment	Leak Testing	New Equipment	Maintenance Equipment	Maintenance Labor	Expansion	Storage	Emergency Power	W Te
Aaron Manor		X	X							
Amston & Beseck Water Company				X	X	X			X	
Beechwood Mobile Home Park		X		X				X	X	
Bittersweet Ridge Water Company		X		X						
Blue Trails Acres Association				X					X	
Bradley Home									?	
Cedar Grove Mobile Home Park	X	X		X	X	X		X	?	
Connecticut Valley Hospital			X							
Crestview Condominium Association	X	X		X						
Dogwood Acres								X		
Durham Center Water Company	X	X		X	X	X				

TABLE 6-5 (Cont)
IDENTIFIED PROBLEMS OR NEEDS

Utility	Supply Shortfalls	Treatment	Leak Testing	New Equipment	Maintenance Equipment	Maintenance Labor	Expansion	Storage	Emergency Power	W Te
Evergreen Trailer Park		X								
Gedron's Valley Mobile Home Park		X							X	
Green Springs Water Company	X		X						X	
Hemlock Park Apartments			X							
Heritage Cove Condominium									X	
Harmony Acres			X							
Highland Heights Water Company		X	X						X	
Hillview Water Association	X	X							X	
Idleview Mobile Home Park		X	X				X		X	

TABLE 6-5 (Cont)
IDENTIFIED PROBLEMS OR NEEDS

Utility	Supply Shortfalls	Treatment	Leak Testing	New Equipment	Maintenance Equipment	Maintenance Labor	Expansion	Storage	Emergency Power	W Te
Krayeske Water Supply	X	X							X	
Lake Grove at Durham		X	X							
Lorraine Terrace			X							
New Lakeview Convalescent	X	X						X	X	
Nod Hill Apartments		X								
Northforo Glen Condominium		X								
Rivercrest Water Association	X	X	X	X					X	
Westlake Lodge				X				X		

long-term basis, or only in the case of an emergency. Table 6-5 presents needs that have been identified by the small water utilities within this Water Supply Management Area.

These tables demonstrate that there are current needs for joint use of facilities, equipment, etc., as well as organizations which can provide for those needs.

Considering the high costs of new source development and the treatment needs of many of the small utilities, future joint-use agreements will likely be dominated by infrastructure. However, sharing of equipment and manpower skills should help utilities conduct business in a more cost-effective fashion. Increasing water testing and monitoring costs resulting from the 1986 Amendments to the Safe Drinking Water Act should make some form of joint use of laboratory facilities attractive, especially to the smaller utilities.

H. SATELLITE MANAGEMENT

Satellite management is defined in the Regulations Concerning Coordinated Water System Plans pursuant to Section 25-33h of the Regulations of Connecticut State Agencies as: "management of a public water supply system by another public water system." Satellite management can take many different forms, ranging from the simple provision of technical, managerial, and operational assistance based on oral agreement, to outright purchase and operational responsibility of an individual utility.

Public Act 85-535 requires each water supply management area to prepare a plan for satellite management. The plan should identify utilities that are currently operating under satellite management type agreements and also utilities that might be willing to accept or offer satellite management services.

In general, satellite management agreements are appropriate for small utilities that may need help in providing adequate service to their customers. Satellite management can provide administrative, technical, and/or operational assistance for the receiving utilities. The state's desire to limit the proliferation of new water systems will provide an incentive for increased satellite management.

Satellite management should play a more significant future role in the SCA. Although 13 small utilities currently operate under off-site management agreements, a number of utilities could benefit from the assistance that satellite management can give them in the future. For example, many small utilities will be facing additional operational burdens associated with the requirements of the 1986 SDWA Amendments, and satellite management agreements could alleviate this burden.

In accordance with WUCC policy, any utility claiming an exclusive service area that surrounds other existing utilities would be the appropriate provider of satellite management services. Information regarding systems that are currently interested in receiving satellite management services is unavailable; however, Table 7-4 is a matrix of the potential needs of the individual small utilities. Utilities in the assessment were selected based on an indication that they had single or inadequate sources of supply, provided no fire protection, and/or experienced water quality problems.

I. MINIMUM DESIGN STANDARDS

The new DPUC regulations for issuing certificates of public convenience and necessity for small utilities set forth minimum design criteria under Section 16-262m-8. These criteria provide a framework from which to build the design standards for both small and large utilities. These criteria have the advantage that they are set in law, and thus are legislatively supported.

However, the WUCC believes that individual utilities have the right to impose their own standards that meet or exceed the DPUC minimum design criteria within their existing or exclusive service areas, and that the regulatory agencies support them in doing so.

J. FINANCIAL DATA

Table 9-1 provides a summary of the capital costs (in present dollars) associated with the development of new water resources that have been identified by the WUCC and are currently included within their respective 50-year plans for development. These capital cost figures have all been obtained from the utilities' individual water supply plans or have been estimated by the utilities apart from the individual planning process.

TABLE 7-4
UTILITIES POTENTIALLY REQUIRING SATELLITE MANAGEMENT IN SOUTH CENTRAL AREA [1]

Name of Utility	Adjacent Exclusive Service Area	1987 Population Served	Single Source Supply	Fire Protection Capacity	Adequacy of Supply[2]	Emergency Power Availability	Water Quality Status
Aaron Manor Home	Connecticut Water Company (CWC) Guilford-Chester Division	78	No	No	Yes	Yes	Elevated manganese, one incident of elevated coliform levels.
Beechwood Mobile Home Park	CWC-Guilford Chester Division	750	No	No	Yes	No	All three wells fail in required separation distance from septic systems.
Bernices Court	CWC-Guilford Chester Division	29	Yes	No	Maximum hourly demand exceeds available supply.	No	Elevated sodium.
Bittersweet Ridge	Amston Beseck Water Company	40	No	No	Yes	No	No problems indicated
Blue Trails Assoc.	South Central, CT Regional Water Authority (SCCRWA)	216	Yes	No	Yes	No	Extreme hardness.
Bradley Home	Meriden Water Department	151	No	No	Yes Interconnection with Meriden Water Department.	No	Both Home's supply and Meriden water approved by DOHS. for consumption.

[1,2]See footnotes at end of this table.

TABLE 5-2 (Cont)
BRIDGEPORT HYDRAULIC COMPANY (BHC)
VALLEY DIVISION
EXISTING INTERCONNECTIONS

	South Central Connecticut Regional Water Authority (SCCRWA)	Ansonia Derby Water Company (ADWCo)
Expiration/Renewal Date	12/31/2015	Not Applicable
Renewal Date	2 of 10 years each	Not Applicable
Status	Active	Emergency

NOTES: 8-inch connection from ADWCo's 10-inch main in North Main Street to BHC's Seymour Distribution System at Robin Road. Rarely in use.

Previous interconnection between BHC Main System and ADWCo across Housatonic River; heavily damaged by storm and now considered obsolete.

Source of Information: Connecticut Department of Health Services, Interconnection Summaries, 1987

TABLE 5-3
CROMWELL FIRE DISTRICT
EXISTING INTERCONNECTIONS

	Berlin Interconnection	Middletown Interconnection
Direction of Flow	Cromwell to Berlin	Middletown to Cromwell
Date Completed	April 1987	
Length	2,800 feet	
Material		
Pipe Diameter	12 inch	10 inch
Treated	Yes	Yes
Location	West Cromwell	Mattabassett District Water Pollution Control Facility, Southeast Corner of Cromwell Serving the Pollution Control Facility
Storage	None	
Max. Flow	300,000 gpd	
Average Rate	300,000 gpd	
Length of Contract		
Expiration Date	June 30, 2006	

TABLE 5-3 (Cont)
CROMWELL FIRE DISTRICT
EXISTING INTERCONNECTIONS

	Berlin Interconnection	Middletown Interconnection
Status	Active	Active
Priority	Berlin Pressure Maintenance	

NOTES: Metropolitan District Commission System

- MDC Distribution System terminates in Rocky Hill (8-inch main).
- Main Street. 600 feet north of Cromwell 12-inch main.
- Limited emergency supply using fire hoses and fire pumper truck.
- Not economically feasible for hook-up at this time.

Berlin Interconnection

- Responsibility for meter pit maintenance and related equipment will alternate in 5-year period (Cromwell until June 30, 1991).

Source of Information: Connecticut Department of Health Services, Interconnection Summaries, 1987

TABLE 5-4
SOUTH CENTRAL CONNECTICUT REGIONAL WATER AUTHORITY (SCCRWA)
EXISTING INTERCONNECTIONS

	City Of Meriden Interconnection	Bridgeport Hydraulic Company Valley Div. Interconnection	Ansonia Derby[1] Water Company (ADWCo) Woodbridge Seymour Inter-connection	Ansonia Derby[1] Water Company (ADWCo) Sentinel Grassy Hill Inter-connection	Wallingford Water Division Interconnection
Date Completed	7/85	1/86	12/85	11/84	1986
Direction of Flow	SCCRWA in Cheshire to Meriden	SCCRWA in Seymour To BHC	SCCRWA in Orange to ADWCo	SCCRWA in Seymour to ADWCo	SCCRWA in North Haven to Wallingford
Length	811'/1,729' (Phase I only)	22500'/4,500'	27,395'	71'/5,946'	Not Given
Material	Ductile Iron	Ductile Iron	Ductile Iron	Ductile Iron	Not Given
Pipe Diameter	12"/16"	20"/24"	20+24"	12"	12"
Treated	Yes	Yes	Yes	Yes	Yes
Location	Wolf Hill & Blacks	Route 313 & Clinton Road	Route 313 & Clinton Road	Grassy Hill Road	East of Quinnipiac
Service Area (To)	East Meriden	Seymour Div. Ansonia Low Area	Ansonia Low Area & BHC Seymour	Derby Low Service Area	---
Storage	None	1.0 mg	1.0 mg	4.3 mg	Not Given
Pump Capacity	Not Given	7.0 mgd	7.0 mgd	3.0 mgd	Not Given

[1] See footnote at the end of this table.

TABLE 5-4 (Cont)
SOUTH CENTRAL CONNECTICUT REGIONAL WATER
AUTHORITY (SCCRWA)
EXISTING INTERCONNECTIONS

	City Of Meriden Interconnection		Bridgeport Hydraulic Company Valley Div. Interconnection	Ansonia-Derby[1] Water Company (ADWCo) Woodbridge Seymour Interconnection	Ansonia-Derby[1] Water Company (ADWCo) Sentinel Grassy Hill Interconnection	Wallingford Water Division Interconnection
Flow Line Elev.	Not Given		Not Given	495' USGS	306.3' USGS	Not Given
	Phase I	Phase II				
Avail. Capacity	0.5 mgd	2.0 mgd	4.0 mgd	3.0 mgd	2.0 mgd	Not Given
Min. Yearly	80 mg	200 mg	200 mg	600 mg	(Included in Woodbridge)	None
Min. Ave. Flow	None	None	None	3.0 mgd	None	None
Min. Peak Flow	None	None	None	6.0 mgd	None	None
Max. Flow	0.5 mgd	2.0 mgd	4.0 mgd	None	2.0 mgd	None
Min. Monthly	5.0 mg	5.0 mg	10.0 mg	30 mg	10 mg	None
Length of Contract	30 years		30 years	30 years	7 years	None
Date of Expiration/ Renewal	12/31/2015 Meriden & SCCRWA		12/31/2015 BHC & SCCRWA	12/31/2015 Automatic	9/91 Notification Required	None ---
Whose Option	Meriden & SCCRWA		SCCRWA & BHC	ADWCo	RWA & ADWCo	---
Renewal Period	2 of 10 years each		2 of 10 years each	2 or 10 years each	10 yrs	---

[1] See footnote at the end of this table.

TABLE 5-4 (Cont)
SOUTH CENTRAL CONNECTICUT REGIONAL WATER AUTHORITY (SCCRWA)
EXISTING INTERCONNECTIONS

	City Of Meriden Interconnection	Bridgeport Hydraulic Company Valley Interconnection	Ansonia Derby[1] Water Company (ADWCo) Woodbridge Seymour Interconnection	Ansonia Derby[1] Water Company (ADWCo) Sentinel Grassy Hill Interconnection	Wallingford Water Division Interconnection
Sale of Excess Water Permit	Yes	N/A	N/A	N/A	None
Priority for Use Sales Restrictions	Constraints by SCCRWA	N/A	N/A	N/A	None
Status	Active	Active	Active	Active	Disconnected Emergency Fire Flow Only

N/A = Not Applicable

Source of Information: Connecticut Department of Health Services, Interconnection Summaries, 1987

[1] The Woodbridge Seymour Interconnection serves both BHC-Seymour Division and the Ansonia Derby Water Company and is listed separately here to indicate contract differences.

TABLE 5-5
WALLINGFORD WATER DIVISION
EXISTING INTERCONNECTIONS

	City of Meriden Interconnection	South Central Connecticut Regional Water Authority (SCCRWA) Interconnection
Date Completed	1980	1986
Direction of Flow	Meriden to Wallingford	SCCRWA (in North Haven) to Wallingford
Pipe Diameter	12-inch in Wallingford	12-inch
Treated	Yes	Yes
Location	The Caldor Shopping Center Route 5	South Wallingford, not Connected, Defco Industrial Park
Avail. Capacity	As Available	Not Given
Min. Ave. Flow	No Minimum	Not Given
Max. Flow	As Available	Not Given
Length of Contract	Indefinite	None
Expiration Date	None	None
Status	Active	Inactive (Physically Disconnected)

NOTE: Additional pumping needed to alleviate existing hydraulic problem if continuous flow is to be developed.

Source of Information: Connecticut Department of Health Services, Interconnection Summaries, 1987

TABLE 5-6
PROPOSED INTERCONNECTIONS IN THE SOUTH CENTRAL AREA[1]

Utilities		
From	To	Comments
Cromwell	Middletown	The proposed interconnection would connect an existing 8-inch water main on Route 3 (Shunpike Road) to the Middletown system. Middletown is currently evaluating the operation of the Berlin-Cromwell interconnection, prior to making a decision.
Middletown	Berlin	A feasibility study is underway.
Middletown	Portland	Crossing of Connecticut River is required.
Metropolitan District Commission	Portland	Proposed interconnection would require extending along the Glastonbury Turnpike.
	Cromwell	Emergency connection possible, pumping would most likely be required because of MDC's lower hydraulic gradient at Rocky Hill.
Connecticut Water Company - Chester System	Connecticut Water Company - Guilford System	Interconnection between the two systems is being considered for the year 2000. This connection would help supply water to meet growing demand in Guilford.

[1] The proposed interconnections were identified via Individual Water Supply Plans as planned system improvements.

TABLE 5-6 (Cont)
PROPOSED INTERCONNECTIONS IN THE SOUTH CENTRAL AREA[1]

Utilities From	To	Comments
-	Southington	The Bristol, Meriden, Plainville and New Britain Water Department and South Central Connecticut Regional Water Authority have finished water mains passing through or near a Southington Water Department main. It is recommended in the Southington Water Supply Plan that these utilities interconnect with other systems where feasible. This would allow them to assist each other in a water shortage emergency.
SCCRWA	Wallingford	The interconnection would be in Cheshire and provide an additional 0.5 mgd to Wallingford. The interconnection, if determined to be feasible, would supplement the Division's total safe yield.

Source of Information: Individual Water Supply Plans

[1] The proposed interconnections were identified via Individual Water Supply Plans as planned system improvements.

Several of the utilities in the SCA plan to develop future interconnections in order to supplement their available supplies (Table 5-6). Detailed information regarding some of these planned interconnections was generally not available since many of the planned interconnections were not to be implemented for several years.

Most of the large systems in this area have identified the need to develop additional sources of supply to meet future demand. Many of the small systems in the area, which are currently dependent on single sources of supply, are vulnerable to future source contamination, have experienced or are experiencing water quality problems, do not have emergency backup power, and/or do not have adequate fire-flow capacity. The use of interconnections, where feasible, could alleviate some of these utilities' water supply needs.

Systems that are located within about one-half mile of each other are possible candidates for future interconnection. Table 5-7 summarizes the characteristics of the small utilities in the WUCC that are within one-half mile of each other (those serving less than 1,000 people). Table 5-8 summarizes the characteristics of the large utilities in the WUCC that are within one-half mile of each other (those serving 1,000 people or more).

Five public water supply systems are on the outskirts of the South Central Management Area: the Bridgeport Hydraulic Company Main System, the Waterbury Water Bureau, the Berlin Water Control Commission, the Southington Water Department, and the Metropolitan District Commission (MDC). Additional interconnections between the South Central utilities and these five systems could be developed to provide water for emergency backup or continuous use.

G. JOINT-USE MANAGEMENT

Currently, there are a number of existing and proposed interconnections within the South Central Connecticut Water Supply Management Area, most of which have joint-use management arrangements. Additional joint-use management or services that have been, or are being provided by larger utilities are listed below.

Bridgeport Hydraulic

- Provides management consulting services to Plainville Water Company on function's including:

TABLE 5-7
SUMMARY OF POTENTIAL INTERCONNECTION FACTORS
SYSTEMS SERVING LESS THAN 1,000 PEOPLE

Name of Utility	Town Where Located	Available Supply (gpd)	Utility(s) Within 1/2-Mile Radius
Crestview Condo. Association	Cheshire	11,700	SCCRWA[1]
Aaron Manor Conv. Home	Chester	36,000	CWC[2] - Guilford Division
Beechwood Mobile Home Park	Killingworth	61,200	CWC - Guilford Division
Bernice's Court	Guilford	7,800	CWC - Naugatuck Division
Bradley Home	Meriden	240,000	Meriden Water Department
Cedar Grove Mobile Home Park	Clinton	2,900	CWC - Guilford Division
Evergreen Trailer Park	Clinton	50,000	CWC - Guilford Division
Grove School	Madison	48,600	CWC - Guilford Division
Gendrons Valley Mobile Home Park	Naugatuck	52,500	CWC - Naugatuck Division
Heritage Cove Condos	Essex	80,700	CWC - Guilford Division
Highland Heights Water Co.	Prospect	28,700	CWC - Naugatuck Division
Henry's Trailer Park	Wallingford	17,500	Wallingford Water Division
Krayeske Water Supply	Guilford	unknown	CWC - Guilford Division
Leetes Island	Guilford	unknown	CWC - Guilford Division
Idleview Mobile Home Park	Naugatuck	25,200	CWC - Naugatuck Division
Lorraine Terrace	Middletown	34,000	Middletown Water Department
Meadowbrook Rest Home	Essex	7,800	CWC - Guilford Division
Mt. St. John School	Deep River	26,200	CWC - Guilford Division
Nod Hill Apartments	Clinton	19,400	CWC - Guilford Division
Ridgewood Hill Condos	Deep River	17,500	CWC - Guilford Division
Walden III Condos	Guilford	32,400	CWC - Guilford Division
West lake Lodge	Guilford	51,800	CWC - Guilford Division
	TOTAL	934,900	

[1] South Central Connecticut Regional Water Authority
[2] Connecticut Water Company

TABLE 7-4 (Cont)
UTILITIES POTENTIALLY
REQUIRING SATELLITE MANAGEMENT
IN SOUTH CENTRAL AREA[1]

Name of Utility	Adjacent Exclusive Service Area	1987 Population Served	Single Source Supply	Fire Protection Capacity	Adequacy of Supply[2]	Emergency Power Availability	Water Quality Status
Country Manor	Not Determined	150	No	Yes	Yes	Yes	Nearby subsurface disposal system failures.
Descrocher Apts.	Amston Beseck Water Company	25	Yes	No	Available supply unknown.	No	No problems indicated.
Dogwood Acres	Amston Beseck Water Company	35	Yes	No	Available supply unknown.	No	No problems indicated.
Durham Center Water Company	Amston Beseck Water Company	154	No	No	Available supply unknown.	Yes	Historically poor water quality in Durham area - existing surface supply to be abandoned.
Ed's Trailer Park	Undetermined	138	Yes	No	Available supply unknown.	No	Low pH, numerous nearby septic systems
Gendron's Valley Mobile Home Park	CWC - Naugatuck Division	195	No	No	Yes	No	Elevated sodium and coliform.

[1,2]See footnotes at end of this table.

TABLE 7-4 (Cont)
UTILITIES POTENTIALLY
REQUIRING SATELLITE MANAGEMENT
IN SOUTH CENTRAL AREA[1]

Name of Utility	Adjacent Exclusive Service Area	1987 Population Served	Single Source Supply	Fire Protection Capacity	Adequacy of Supply[2]	Emergency Power Availability	Water Quality Status
Green Springs Subdivision	CWC - Guilford Chester Division	105	No	No	Yes, except during summer	No	No problems indicated.
Grove School	CWC - Guilford Chester Division	94	No	No	Yes	No	Sodium levels elevated.
Happy Acres	Amston Beseck Water Company	130	Yes	No	Available supply unknown	No	No problems indicated.
Hawkstone Terrace	Bridgeport Hydraulic Company	56	Yes	No	Yes	No	No problems indicated.
Henry's Trailer Park	Wallingford Water Division	65	Yes	No	Yes	No	Two GAC filters to remove VOCs, high levels of TCE detected.
Hillview Water Supply	SCCRWA	36	Yes	No	Yes	No	Coliform count elevated, disinfection provided.
Krayeske Water Supply	CWC - Guilford Chester Division	50	Yes	No	Available supply unknown	No	Supply determined unsafe for consumption by DOHS.

[1,2]See footnotes at end of this table.

TABLE 7-4 (Cont)
UTILITIES POTENTIALLY
REQUIRING SATELLITE MANAGEMENT
IN SOUTH CENTRAL AREA[1]

Name of Utility	Adjacent Exclusive Service Area	1987 Population Served	Single Source Supply	Fire Protection Capacity	Adequacy of Supply[2]	Emergency Power Availability	Water Quality Status
Lake Grove at Durham	Amston Beseck Water Co.	150	Yes	Yes	Yes	Yes	Sodium elevated, one incident of coliform violation.
Lakeside Water Company	CWC - Guilford Chester Division	27	Yes	No	Yes	No	No problems indicated.
Leetes Island	CWC - Guilford Chester Division	40	Yes	No	Available supply unknown.	No	Dug well, color violations, nearby septic systems.
Legend Hill Condos	CWC - Guilford Chester Division	270	No	No	Yes	No	Elevated sodium.
Lorraine Terrace	Middletown Water Dept.	20	Yes	No	Yes	No	No problems indicated.
Meadowbrook Rest Home	CWC - Guilford Chester Division	30	Yes	No	Yes	No	High copper levels, pH adjustment provided.
Mount St. John School	CWC - Guilford Chester Division	144	No - CWC	No	Yes	No	No problems indicated provides emergency backup.

[1,2]See footnotes at end of this table.

TABLE 7-4 (Cont)
UTILITIES POTENTIALLY
REQUIRING SATELLITE MANAGEMENT
IN SOUTH CENTRAL AREA[1]

Name of Utility	Adjacent Exclusive Service Area	1987 Population Served	Single Source Supply	Fire Protection Capacity	Adequacy of Supply[2]	Emergency Power Availability	Water Quality Status
Nod Hill Apartments	CWC - Guilford Chester Division	30	Yes	No	Yes	Yes	Second well abandoned due to pH violations.
Northford Glen Condos	SCCRWA	84	No	No	Yes	No	Recent high levels of nitrate and sodium.
Our Lady of Grace Monastery	CWC - Guilford Chester Division	45	Yes	No	Yes	No	Elevated sodium.
Quonnipaug Park Water Supply	CWC - Guilford Chester Division	456	No	No	Yes	No	No problems indicated.
Ridgewood Hill Condos.	CWC - Guilford Chester Division	72	No	No	Yes	No	No problems indicated.
Rivercrest Water Company	Portland Water Department	72	No	No	Available supply unknown.	No	Bacteria levels high at times.
Sugarloaf Elderly Housing	Amston Beseck Water Company	40	Yes	No	Yes	No	No problems indicated.

[1,2]See footnotes at end of this table.

TABLE 7-4 (Cont)
UTILITIES POTENTIALLY
REQUIRING SATELLITE MANAGEMENT
IN SOUTH CENTRAL AREA[1]

Name of Utility	Adjacent Exclusive Service Area	1987 Population Served	Single Source Supply	Fire Protection Capacity	Adequacy of Supply[2]	Emergency Power Availability	Water Quality Status
Twin Maples Nursing Home	CWC - Guilford Chester Division	50	No	No	Yes	No	GAC filters in operation, sodium levels are elevated.
West Lake Nursing Home	CWC - Guilford Chester Division	75	No	Yes	Yes	Yes	No problems indicated except elevated sodium in one well.

[1]Utilities currently under satellite management are not listed (see Table 6-2).

[2]Adequacy of supply is based on a comparison of existing available supply to current daily demand.

Capital costs to be incurred early within the planning process, i.e., within 5 years or less, have been estimated in some detail. However, estimates tend to become increasingly speculative as they progress further into the planning period. Therefore, these later estimates should be considered speculative and for conceptual purposes only. They may change significantly as design details and future constraints become more fully known.

The capital costs in Table 9-1 are significant. However, when these development and/or treatment costs are considered over their payback period, their impact to annual budgets will likely be overshadowed by inflated operation, maintenance, repair, and system upgrade costs. Through effective financial planning and management, utilities should be able to accommodate these inflated costs and also provide for additional funds for principal and interest capital project costs.

Table 9-2 provides a summary of financing options that utilities have identified in their individual water supply plans. These options range from internally generated funds from net income, depreciation, sale of company assets, to external sources such as taxable and tax exempt bonds, notes, federal, and state grants and loans. Projects anticipated during the 50-year planning period could selectively be financed through these standard and accepted methods.

TABLE 9-1
ESTIMATES OF PROPOSED CONSTRUCTION PROJECTS WITHIN THE 50-YEAR PLAN
(IN 1989 DOLLARS)

Utility	Project	Capital Costs 1992	2000	2030
Connecticut Valley Hospital	- System Improvements	840,000		
Connecticut Water Company	- Beacon Valley Brook Diversion	600,000		
	- Candee Reservoirs	60,000		
	- Raise Killingworth Reservoir	5,570,000		
	- Filling Mill Well No. 1	2,900,000		
	- Filling Mill Well No. 2		2,100,000	
	- Cold Spring Well		2,500,000	
	- North Weiss Well	1,200,000		
	- Holbrook Well		1,400,000	
Cromwell Fire District	- Gardiner Well Field Sites	105,000	400,000	400,000
Heritage Village	- Southbury Aquifer Well Site No. 6	250,000		
Meriden Water Department	- Mine Kenmere & Hallmere Reservoirs			500,000
	- Raise Broad Brook Dam	800,000		
	- Repair Maloney & McKone Canals	110,000		
	- Bedrock Wells	650,000		
	- SCCWRA Interconnect	750,000		
Middletown Water Department	- 3 River Road Aquifer Wells		225,000	
	- Develop Canel Aquifer			7,100,000
	- Upgrade Laurel Brook Reservoir and construct Filtration Plant	1,100,000		

TABLE 9-1 (Cont)
ESTIMATES OF PROPOSED CONSTRUCTION PROJECTS WITHIN THE 50-YEAR PLAN
(IN 1989 DOLLARS)

Utility	Project	Capital Costs 1992	2000	2030
Portland Water	- Develop Strong Ave. Well Field & Treatment Plant		3,000,000	
	- Reopen Portland Reservoir w/wtp			3,000,000
SCCRWA	- Replace Whitney Treatment Plant	1,100,000	22,900,000	
	- N. Cheshire Wells	800,000		
Wallingford	- Durham Area Diversion			NA
	- Muddy River Aquifer		750,000	
	- Tyler Mill Reservoir		2,000,000	
	- Distance WTP & Supply Improvements	19,900,00		

TABLE 9-2
FINANCING OPTIONS IDENTIFIED BY LARGE WATER SUPPLY COMPANIES

Ansonia Derby

- Internally generated funds from depreciation and amortization
- Sale of company-owned land associated with abandoned sources at:

  Great Hill Reservoir (not currently approved for abandonment)
  Fountain Lake
  Bungay Reservoir
  Upper Sentinel Hill Reservoir
  Lower Sentinel Hill Reservoir

Connecticut Valley Hospital

- All funds for projects and improvements pertinent to the water supply system will be allocated by the State of Connecticut.

Connecticut Water Company

- Equity financing
- Long-term dept

  1. Promissory notes on 1st mortgage bonds, taxable
  2. Promissory notes on 1st mortgage bonds, tax exempt

- Internal sources including:

  1. Net income
  2. Depreciation net of dividends paid

- Interim loans
- Maturity of investments
- Rate increases

Cromwell Fire District

- Issuance of long-term bonds
- Tax revenues

Heritage Village

- Water sale revenues
- Sewer charges
- Connecticut Development Agency low interest loans

TABLE 9-2 (Cont)
FINANCING OPTIONS IDENTIFIED BY LARGE WATER SUPPLY COMPANIES

Meriden Water Department

- Issuance of general obligation bonds and notes
- Increase in water usage charges

Middletown Water Department

- General obligation bonds
- Rate and fee structure increases to match required funds

Portland Water Works

- Revenue bonds
- State and Federal grants and loans

SCCRWA

- Revenue from internally generated funds in excess of current operations and investment requirements
- Issuance of bonds
- Sale of land not essential for water supply protection

Wallingford

- Revenue bonds
- General obligation bonds
- State and Federal grant and loan funds
- Sale of nonessential land
- Rate increases

A. OVERVIEW OF THE ACHIEVEMENTS OF THE PLANNING PROCESS

The major accomplishments of the Coordinated Planning Process are:

- Exclusive service areas, within which service will be provided by a single utility, were delineated. This allows future supply needs to be defined clearly, while giving municipal officials and developers an understanding of how water service will be developed.
- Sources that could meet the projected water supply demands of the management area were identified, in accordance with the individual utility plans and review of the plans by the state, WUCC, and citizen's groups.
- The status of watershed and aquifer protection measures in each municipality in the management area was assessed, and suggestions were made for improvement in zoning controls or plans of development where appropriate.
- The common interests and concerns of the WUCC utilities were brought to light. The WUCC meetings have allowed utility managers to get to know each other better, and to discuss long-standing problems and potential solutions.

B. WUCC - RECOMMENDED SOLUTIONS TO KEY WATER SUPPLY PROBLEMS

Many of the issues raised in the Water Supply Assessment involve complex, site-specific problems. In general, such problems are most appropriately investigated by water supply professionals retained by the individual utilities. For the more general issues raised during the planning process, the WUCC formulated possible solutions or approaches, which are summarized in the following sections.

1. Data Availability and Consistency

The absence of data and data discrepancies were taken into consideration when the Water Supply Assessment conclusions and recommendations were formulated. Because lack of data and inconsistencies were most common for the small utilities, the consequences were deemed insignificant in terms of regional totals and trends. More complete data should be available in the future, when individual supply plans are finalized, and Level B and A mapping of aquifers is completed.

2. Population Projections

Because the OPM projections are the only statewide projections available through the year 2030, they were used to provide a consistent base for all the utilities in the management area. The WUCC believes the projections of the Integrated Report are as accurate as possible, but there is some potential for change as the individual water supply plans are finalized.

3. Water Quality Issues

Public health issues and the aesthetic aspects of problems associated with water quality degradation are significant concerns of WUCC participants. The numerous existing interconnections in the SCA and the potential for additional interconnections can help offset potential shortages due to water contamination problems.

The WUCC supports the work of the Aquifer Protection Task Force and subsequent legislation that requires aquifer mapping and establishes a regulatory framework for groundwater protection programs. They also support efforts at both the local and state level to increase source protection measures. In addition, information concerning water supply protection programs must be dispersed throughout the communities to educate residents on the threat of water resource contamination.

4. Land use and Water Supply Protection

Many municipalities are creating a Plan of Development for their communities. The discussion of water resources in this plan should include:

- Information regarding water resources in the community
- Present and projected use of the resources
- Conservation needs for the resources
- Protection mechanisms to prevent surface and groundwater contamination

While the Plan deals with intent and future actions regarding water supply protection, it is through the municipalities' zoning regulations that protection actually will occur. Appropriate water resource protection zones must be established to ensure long-term water quality for public water supply. In formulating policies and

regulations for protection of this resource, the WUCC recommends use of DEP's Hierarchy of Land Uses, which ranks land-use categories by their risk to water quality.

All members of municipal planning and zoning commissions must be educated and made aware of the critical importance of water resource protection so they will implement proper regulations. For a successful protection program, all facets of the community must be involved.

5. Coordination Between Utilities/Municipalities

Utilities and municipalities must coordinate to maintain adequate water supplies, since the individual systems must interact with local officials to ensure adequate source protection, compatible development in water supply areas, and satisfactory land-use policies. Representative advisory boards, utility policies stressing local involvement, and responsive local action are ways of maintaining cooperation in relation to water supply management.

Although coordination between most of the communities and area water utilities is good, coordination between adjacent communities and area utilities, among the smaller utilities and between small utilities and municipalities must be improved. In addition, municipalities must cooperate more to ensure the protection of and adequate provision of water supplies to downstream communities.

6. Regulatory Issues

The WUCC strongly favors Public Act 89-327, which requires agencies to establish a single set of guidelines regarding water conservation and supply emergencies, and recommends that this approach be expanded into other areas where there is regulatory overlap. The WUCC opposes the proposed regulations for diversions, as currently formulated.

The WUCC:

- Recognizes the need for water resources planning.
- Believes that water supply is the highest potential use of a water resource.
- Desires assurance that water that currently is allocated for water supply will not be reallocated for other purposes in the future.

- Believes that diversions should be regulated based on actual amounts of water withdrawn, rather than on the sizes of structures involved.
- Recognizes the need to balance water supply needs with environmental concerns.

The WUCC supports the need for additional personnel within the Water Supplies Section of the DOHS. State agencies must assist, overview, and respond timely to properly implement the coordinated and individual water supplies. In addition, a resource pool must be created to provide technical assistance to small utilities.

The WUCC recommends that the Water Supplies Section be elevated to a Bureau level within the Department of Health Services, similar to the Water Bureau under the DEP's reorganization. This will increase recognition of the role of water supply. State agencies must actively participate and advocate on behalf of utilities.

7. Supply Management and Allocation Issues

Water supply projects developed independently by utilities may result in competition for the same resources. Utilities will have to identify jointly projects that may potentially conflict, and cooperate to best manage the development and use of the resources.

The WUCC recommends that conflicts and disagreements be handled in the following manner:

- Negotiate a solution agreeable to all entities involved.
- If negotiation fails to resolve the issue, the WUCC would attempt to negotiate resolution while seeking advice from appropriate state agencies, and with the aid of a disinterested third party or panel appointed by the WUCC to be the mediator.
- Lastly, present the conflict to the Commissioner of health for final resolution.

If the future alternative source options currently contained within individual utilities' water supply plans are developed and contribute the expected yields, then the companies should have sufficient supply to meet anticipated demand through the year 2030.

However, if some of the options cannot be developed, additional options would have to be considered. A number of the future source options identified fall within water bodies that are on DEP's List of Basins of Concern.

The WUCC recognizes the principle of multiple use and the need to apply it to water resources. The reasons water bodies have been placed on the List of Basins of Concern are important and must be considered in planning and development programs. However, the WUCC also believes that of all competing uses for water resources, public water supply must be given the highest priority, especially in the future as demand continues to grow and new high quality source alternatives become increasingly limited.

Resolution of water supply management and water allocation needs involves several controversial solutions. Where only limited supplies are available, interbasin transfer or demand reduction may be required to ensure adequate water supply. In addition to these difficulties, the cost to implement interbasin transfers may be high. Demand management may be an alternative to interbasin transfers as a resource allocation solution. Methods of reducing demand to potentially eliminate the need for interbasin transfers include growth restrictions, water conservation, and system efficiency improvements.

8. Small Utilities

The WUCC acknowledges the responsibility of larger utilities to help resolve supply and water quality problems experienced by smaller organizations. Companies experiencing such problems may be candidates for satellite management by a larger organization. The WUCC recommends that should satellite management become necessary, this function would fall to the large utility closest to the troubled utility. For those which are questionable by being located between the exclusive service areas of two larger utilities, DPUC would assign the management responsibility to one of the large utilities.

Although these small utilities volumetrically comprise only a small portion of the total water needs of the South Central Public Water Supply Management Area, their requirements must be assured. Therefore, the above suggested satellite management solution and/or

other forms of joint-use arrangements must be carefully considered to provide for continued fulfillment of their water supply needs.

9. Role of Regional Planning

The WUCC recognizes that issues involving water resource planning and protection are regional in nature. Aquifer and watershed boundaries frequently cross municipal boundaries, and public water supply sources are not always located within the same municipality as the consumer. Therefore, the WUCC welcomes and encourages municipal input to the planning process.

Due to the regional nature of water resources and related planning efforts, this WUCC believes that regional planning organizations offer the most appropriate forum through which municipal contributions can be made. Through these organizations, local concerns may be expressed, and local planning and resource protection efforts can be coordinated with utilities.

This WUCC strongly believes that in the future, municipalities must address water supply issues more on a regional basis than has been common in the past. The regional planning organizations offer the best mechanism for such a regional approach to planning and coordination.

10. Adequacy of Supplies

The long-term adequacy of areawide supplies is insufficient to meet either average or peak demand levels. With the exception of two systems, most of the large utilities must pursue additional sources of supply to ensure an adequate margin of safety. The sources of supply used in the area's small utilities are generally adequate to meet average daily demand in the short-term, but expansion of these systems would frequently require development of additional sources.

During the planning process, sources of supply were identified in addition to those which are planned for development by the year 2030. This recognizes that additional supplies may be necessary after that date and that future potential sites must be identified and protected now. Also, because some supply options may prove unfeasible, more long-range source options might need to be considered and developed. The philosophy of the WUCC is to, where possible, develop local sources of supply first, then expand into more regional programs as local

alternatives are exhausted. Some reasons for options being dropped from current consideration include water quality issues, environmental concerns, extensive competition for water resources within stressed basins of concern, source distance from the service area and economic consideration, i.e., high cost of development compared with expected yield.

In identifying alternatives for future water supply, necessary steps for the development of the resource and potential constraints and/or conflicts should be identified by the various utilities. Types of issues include water quality and treatment concerns, potential impacts on other resources, multiple-use conflicts, and aquifer and watershed protection.

The goals of the WUCC are to establish and ensure future water supplies in the most cost-effective manner possible, and to anticipate and mitigate any potential negative effects of the increased water supply development. By following this plan, the WUCC believes these goals can be achieved.

C. CONTINUATION OF THE WUCC

The continuing statutory responsibilities of the WUCC will be to review and approve all significant changes to the Coordinated Plan and to provide a comprehensive update of the plan at least once every 10 years. The consensus of the WUCC is that it will be appropriate to reconvene each November to review any water supply issues, including requests for changes in exclusive service area boundaries, that may have arisen during the previous year. They will determine if it is necessary to update the Coordinated Plan to address these issues, and will submit any proposed revisions for regulatory and public review. During the first reconvening of the WUCC, it is likely that the major task to be undertaken will involve modifications to the Integrated Report and Executive Summary to account for changes made in draft individual plans during the state's review and approval process. The WUCC notes that technical assistance will be needed in pursuing these future activities, and requests that the state provide support in the form of staff assistance or funding.