# SOUTH CENTRAL CONNECTICUT WATER SUPPLY MANAGEMENT AREA

## FINAL

## Water Supply Assessment

## PART 1


## October 1988

Whitman & Howard, Inc.

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# SECTION I.

# SUMMARY

# I. SUMMARY

This assessment was conducted to evaluate conditions and problems of the water supplies within the South Central Public Water Supply Management Area. The evaluation provided information regarding the area's existing water supply systems, the availability and adequacy of future water sources, existing service area boundaries, present and projected growth rates, and the status of water system and land-use planning in the South Central Area. This assessment was prepared in accordance with the Connecticut Department of Health Services (DOHS) Regulations Concerning Coordinated Water Supply Plans, pursuant to Public Act 85-535.

The South Central Area is comprised of 36 towns served by 64 public water systems, or public utilities. There are actually 64 utilities participating in the areawide planning process; however, one utility owns property in the South Central Area but does not provide service. Of these 64 individual utilities, the predominate number (49) are utilities servicing less than 1000 people. In the context of the Assessment, the small utility references mean those serving less than 1000 people. The utilities range in size from the smallest serving only 25 people, to the largest serving over 380,000 people. The term "utilities" is used throughout the report synonymously with the term "public water system."

The water supply situation in the South Central Area varies considerably due to the wide variety of land-use activities and the types of water utilities. This summary provides an overview of pertinent issues and findings related to the quality and adequacy of water supplies in this area.

## A. POPULATION AND CONSUMPTION TRENDS

### 1. Population Trends

Population trends and projections were evaluated in the assessment to determine projected levels of water demand. Although available population information varied in consistency, trends indicated population increases over the 5-, 20-, and 50-year planning period from a current level of 780,440 people to approximately 896,400 people in the year 2030. Only one of the 36 communities in the South Central Area showed an actual decline in population based on Office of Policy and Management data; this was the Town of Prospect. The remaining communities are expected to experience varying rates of population growth indicating a need for comprehensive water resource planning to accommodate the increased water demand.

### 2. Water Consumption

Depending on the utility, information on existing water consumption was obtained from either the Water Utility Questionnaire, the Individual Water Supply Plan or records on file at the Department of Health Services (DOHS). Projected consumption was based on information supplied by the utility (e.g., questionnaire, individual plan or other correspondence) or estimated using population projects prepared by the Office of Policy and Management and an assumed per capita rate of use. For many of the smaller systems in the region, information on file at DOHS related to consumption was limited. Consequently,

for these smaller systems, expansion of service is not anticipated and consumption is projected to remain unchanged.

Water demand and consumption are expected to increase for 12 area utilities.

## B. STATUS OF AREA WATER SYSTEMS

### 1. Adequacy of Supply

Problems and issues related to adequacy of existing supplies such as meeting peak demand, need for increased supplies, storage requirements, and pump capacity were identified by both large and small utilities. These concerns are being addressed primarily through the development of new supplies or the expansion of existing supplies. Supply conservation and demand reduction have been used intermittently by large and small utilities to alleviate shortage problems; however, long-term mandatory demand-reduction programs to ensure adequacy of supply are not common. Difficulty in meeting supply needs was not highlighted by the area utilities in the data they submitted to the water utility coordinating committee (WUCC).

### 2. Future Sources of Supply

The need for additional supplies was identified by a number of large utilities in their individual supply plans. The majority of their current supplies were adequate to meet current supply requirements; however, the adequacy of supplies that were targeted for future use were not well described in the plans. Further discussion of these issues follows in the main text.

The need for additional sources of supply was also reported by some of the small utilities via the returned questionnaires. Issues regarding adequacy of supply will most likely be resolved through expansion of existing supplies, development of new supplies, or interconnections with nearby systems..

3. **Water Quality History**

Available data showed that approximately 14 of the area's 51 small systems have experienced or are experiencing water quality problems that are of a permanent or contamination type such as VOC contamination. Approximately 21 utilities have experienced "aesthetic" type water quality problems such as elevated sodium or manganese levels. Other water quality problems such as low pH and high turbidity were identified. The majority of the utilities that have identified water quality issues, are addressing their problems through treatment or assessment of new supplies.

Potential water quality problems, however, are not as easily evaluated. Although not required as a specific part of the WUCC's Assessment, potential water quality problems are discussed in Section III. E. of this report. Approximately 15 small and large utilities found septic systems in the vicinity of their supply sources. Four of the large utilities have identified potential sources of contamination in the vicinity of their groundwater supplies.

**4. Fire Protection Capabilities**

Large utilities generally provide adequate fire-flow capacity, often as a community service. [redacted]

addressing this need as part of their general capital improvements program.

**5. System Reliability**

The large utilities do not express any major problems with system reliability. However, where minor problems exist, such as low pressure service areas, steps are being taken by them to alleviate the problem via system improvements.

Also, several small utilities do experience system reliability problems. Problems identified include: lack of emergency power in the event of a power outage, inadequate pumping or storage capacity, and single-source supplies. While these issues are being addressed by some of the affected utilities, the majority did not indicate plans to implement system improvements. The lack of planned system improvements by small utilities is often due to their small customer base producing inadequate revenues which severely restrict the availability of funds for improvements.

### 6. System Needs

Several large utilities identified major facilities that require expansion, alteration, or replacement. Small utilities requiring system improvements were identified primarily through review of DOHS records. Again, as part of the Individual Supply Plan process, the large utilities included information regarding facility needs such as additional storage capacity, main replacement, source expansion, and additional pumping requirements.

As discussed in paragraph 5, the DOHS records indicate that a number of the small utilities need to improve or expand their existing facilities with regard to emergency power generation, storage capacity and pumping capacity. Also, approximately 20 utilities use only one source of supply, and should consider the possible need for a secondary emergency source.

## C. SERVICE AREA BOUNDARIES

### 1. Existing Service Area Delineation

As part of the Water Supply Assessment, public utilities in the South Central Area were asked to delineate their existing service area boundaries which are defined as areas in which infrastructure is already in place, and where public water systems are currently providing water. These delineations are illustrated in Plates 1A and 1B (in rear pocket). They show the most recent service area delineations of the South Central Areas.

The original delineations for the large utilities were provided by each utility and then mapped at a scale of 1:24,000 (1" = 2000 feet). Delineations of the small

utility service areas were obtained from DOHS records, and were mapped at a scale of 1:24,000. Following the original mapping of all existing service areas at a scale of 1:24,000, the large utilities were asked to verify their delineations for publication in this Water Supply Assessment. The verified maps showing existing service areas were then compiled into two 1:50,000 scale maps for this Assessment.

**2. Franchise Area and Exclusive Service Area Delineation**

The Regulations Concerning Coordinated Water System Plans specify that "existing service area boundaries and public water system limits established by statute, special act, or administrative decision. . ." be included as they relate to public water systems in the Water Supply Assessment. Public water system limits established by statute include franchise agreements and other enabling legislation that determine the boundaries of a particular public water system. Franchise areas differ from existing service areas in that future areas available for service are defined, but infrastructure may not be present throughout. Following a review of the available enabling legislation and franchise agreements in force in the South Central Area, it became evident that there are a good deal of overlapping franchise areas in the South Central Area. For example, the franchise area defined by legislative action for the Connecticut Water Company encompasses the entire state. As part of the coordinated planning process, future exclusive service area boundaries for each individual utility in the WUCC area will be defined in the

next phase of the planning process. The applicability of franchise areas vs existing and exclusive service area delineations will be more thoroughly reviewed in Part Two of the Coordinated Plan. The issues associated with the franchise agreements in place and various existing and exclusive service area delineations will be reviewed.

## D. STATUS OF LAND-USE AND WATER SUPPLY PLANNING

The status of land-use and water supply planning was determined as part of this Assessment. Local, regional, and statewide land-use planning efforts were reviewed as were planning efforts on the part of the public water utilities. Also, coordination between public water utilities and area municipalities was reviewed.

Overall, the planning efforts vary in scope and comprehension. Land-use planning at the local level is typically outlined in the local plan of development. The zoning ordinances also reflect the implementation of land-use objectives. Local land-use planning is influenced by the status of local plans of development. Although a number of communities are presently updating their plans, the majority do not have recent, comprehensive, planning documents available. Land-use planning is being addressed by several communities with implementation of water supply protection zoning overlay districts.

There are five regional planning agencies in the South Central Area that provide planning assistance to the local communities. The types of land-use planning work carried out by these agencies includes assistance in local plans of development, in water supply and open-space planning, and in economic- and transportation-related planning. A review of

recent regional land-use planning showed the need for more regional efforts in land-use planning as it relates to water supplies.

Statewide land-use planning has been extensive, policy-oriented, and comprehensive in scope. The State's land-use goals appear in various planning documents and are implemented through legislative and agency action.

A review of land-use planning indicates that implementation of available planning documents would encourage more appropriate land use, especially as it relates to water supply protection. The continued preparation and revision of local plans of development is also recommended to encourage appropriate land-use planning.

Water utility planning by the large utilities in the South Central Area is quite comprehensive. The small utilities generally do not have extensive planning programs since most do not intend to expand. Coordination of utilities and municipalities appears to be good. However, more participation of some communities in water supply-related planning would improve the level of coordination. Several large utilities participate in and monitor local activities affecting water supplies. Most of the small utilities remain uninvolved in local planning related issues. Although coordination efforts are currently ongoing, the level of coordination should be improved to ensure long-term protection of water supplies.

In summary, the Assessment of water supply issues in the South Central Area indicates that the overall situation is generally positive. Section VI of this report describes the issues of concern identified by the WUCC that will be more

fully addressed as the planning process progresses. The majority of current problems are being addressed through positive action by the utilities; however, more work is needed to ensure adequate supplies and water quality, especially with regard to the small utilities. Some problems were identified with regard to land use in existing service areas; therefore, additional effort in the areas of local land-use planning and implementation appear to be needed. As the statewide coordinated plans progress, these issues will receive continued attention. This report serves as an Assessment of the existing situation and describes additional water supply issues identified by the South Central Water Utility Coordinating Committee.

# SECTION II.

# INTRODUCTION

# II. INTRODUCTION

## A. BACKGROUND INFORMATION

### 1. 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 25-33 initiating a procedure to coordinate the planning of public water supply systems. Administration of the planning process is the responsibility of the Department of Health Services (DOHS) in consultation with the Departments of Public Utility Control and Environmental Protection, and the Office of Policy and Management. The objective of Public Act No. 85-525 is the efficient and effective development of the state's public water supply systems through a coordinated planning approach.

The coordinated planning process consists of the following four major steps described below:

#### a. Delineation of Regional Water Supply Management Areas

In accordance with Public Act No. 85-535, the DOHS developed seven regional water supply management areas to consider the following significant factors (see Figure 2-1):

- Similarity of water supply problems
- Population density and distribution
- Location of existing sources of public water supply, service areas, or franchise areas
- Existing interconnections between systems

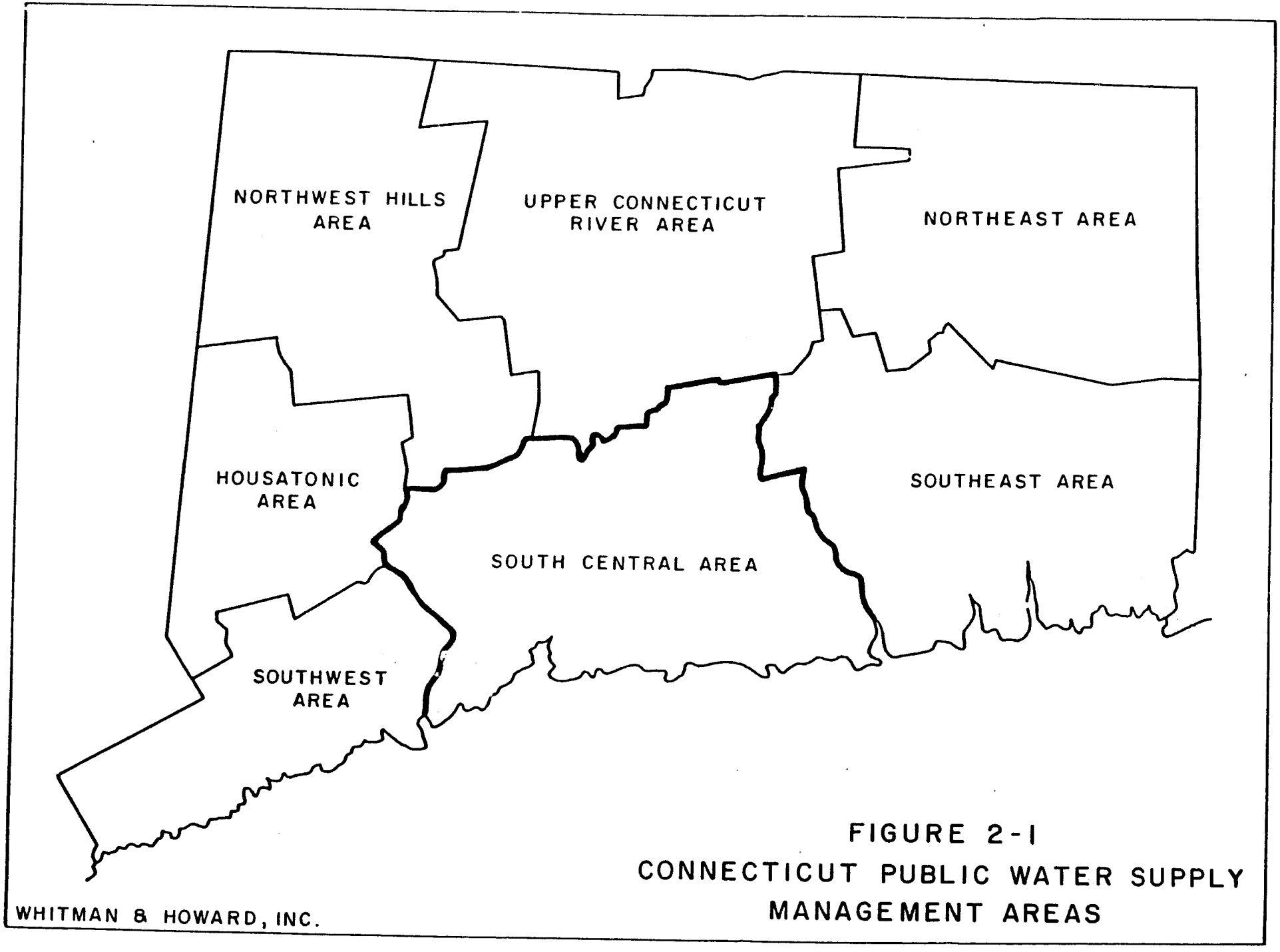


FIGURE 2-1
CONNECTICUT PUBLIC WATER SUPPLY MANAGEMENT AREAS

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- o Municipal or regional planning agency boundaries
- o Natural drainage basins
- o Topographic and geologic characteristics

**b. Establishment of Regional Priorities Regarding Start-up of the Planning Process**

After identifying the seven management areas, the DOHS set priorities regarding implementation of the Coordinated Water System Planning Process. According to priority, the following areas have been convened by the State DOHS. The Water Utility Coordinating Committee (WUCC) then initiated the actual planning process:

- o Housatonic Area (June 11, 1986)
- o Upper Connecticut River Area (March 24, 1987)
- o South Central Management Area (November 4, 1987)

**c. Implementation of the Coordinated Planning Process**

The establishment of the various Water Utility Coordinating Committee's (WUCC's) is the first step in implementing the coordinated planning process. Each WUCC is comprised of representatives from area utilities and regional planning organizations, and meets on a monthly basis, or as required. Each meeting is open to the public. The WUCC in each of the seven water supply management areas is responsible for preparing the required Areawide Supplement as part of the Coordinated Water System Plan. In addition to the Areawide Supplement, individual water systems plans will be prepared by the large utilities in each area, and/or utilities required by the DOHS to prepare a plan.

(Large utilities in this context are public water systems serving 1000 people or more). The South Central Water Supply Management Area WUCC is made up of the following members listed in Table 2-1.

**d. Adoption of the Coordinated Water System Plan**

In accordance with Public Act 85-535, the Coordinated Water System Plans must be submitted to the Commissioner of the Department of Health Services (DOHS) for approval within two years of the initial meeting of each of the WUCC(s). Comments must be solicited from the DOHS, the Department of Environmental Protection (DEP), the Department of Public Utility Control (DPUC), the Office of Policy and Management (OPM) and from any municipal regional planning agency or from any other interested individual within the management area.

In conjunction with the Commissioner's approval, any permit issued by the Commissioner, pursuant to Chapter 474 of the Connecticut General Statutes, shall be consistent with any adopted, coordinated plan. A public water supply may not be approved in a management area after a WUCC has been convened unless (1) an existing public water supply system is unable to provide service or (2) the committee recommends such approval.

**2. Major Components of the Coordinated Water System Plan**

In addition to the Individual Water System Plans, the coordinated plan includes the Areawide Supplement.

TABLE 2-1
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 Lake Water Company, Middlefield
Bittersweet Ridge, Middlefield
Blue Trail Acres, North Branford
Bradley Home, Meridan
*Bridgeport Hydraulic Company
Cedar Grove MHP, Clinton
°Central Naugatuck Valley COG
°Connecticut 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
Descrocher 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 MHP, Prospect
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
°Midstate 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
°South Central Regional COG
*Southington Water Department
Sugarloaf Elderly Housing, Middlefield
Sylvan Ridge Condos, Middlefield
Twin Maples Nursing Home, Guilford
°Valley TPA
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 |
| °Regional Planning Agencies | 5 |
| TOTAL MEMBERS | 69 |

The components of the Areawide Supplement are shown in Figure 2-2 and below:

- o Water Supply Assessment
- o Exclusive Service Area Boundaries Report
- o Integrated Report
- o Executive Summary

These components are to be prepared by the WUCC in accordance with the time frames established in the Regulations, and are described briefly as follows:

a. Each WUCC will initiate a two-year planning process by developing a Water Supply Assessment which evaluates water supply conditions and problems within the public water supply management area.

b. After completion of the Assessment, the WUCC will establish Exclusive Service Area Boundaries for each public water system within the management area. In accordance with the regulations for the establishment of such boundaries, existing service areas must be maintained. The overall goal is to provide the orderly and efficient development of public water supplies.

c. The third product of the WUCC is the Integrated Report. This report will provide an overview of individual public water systems within the management area, and will address areawide supply issues.

At a minimum the Integrated Report must contain the following:

- o Population and Consumption Projections
- o Sources of Supply, Safe Yield, and Amount of Purchased Water Available

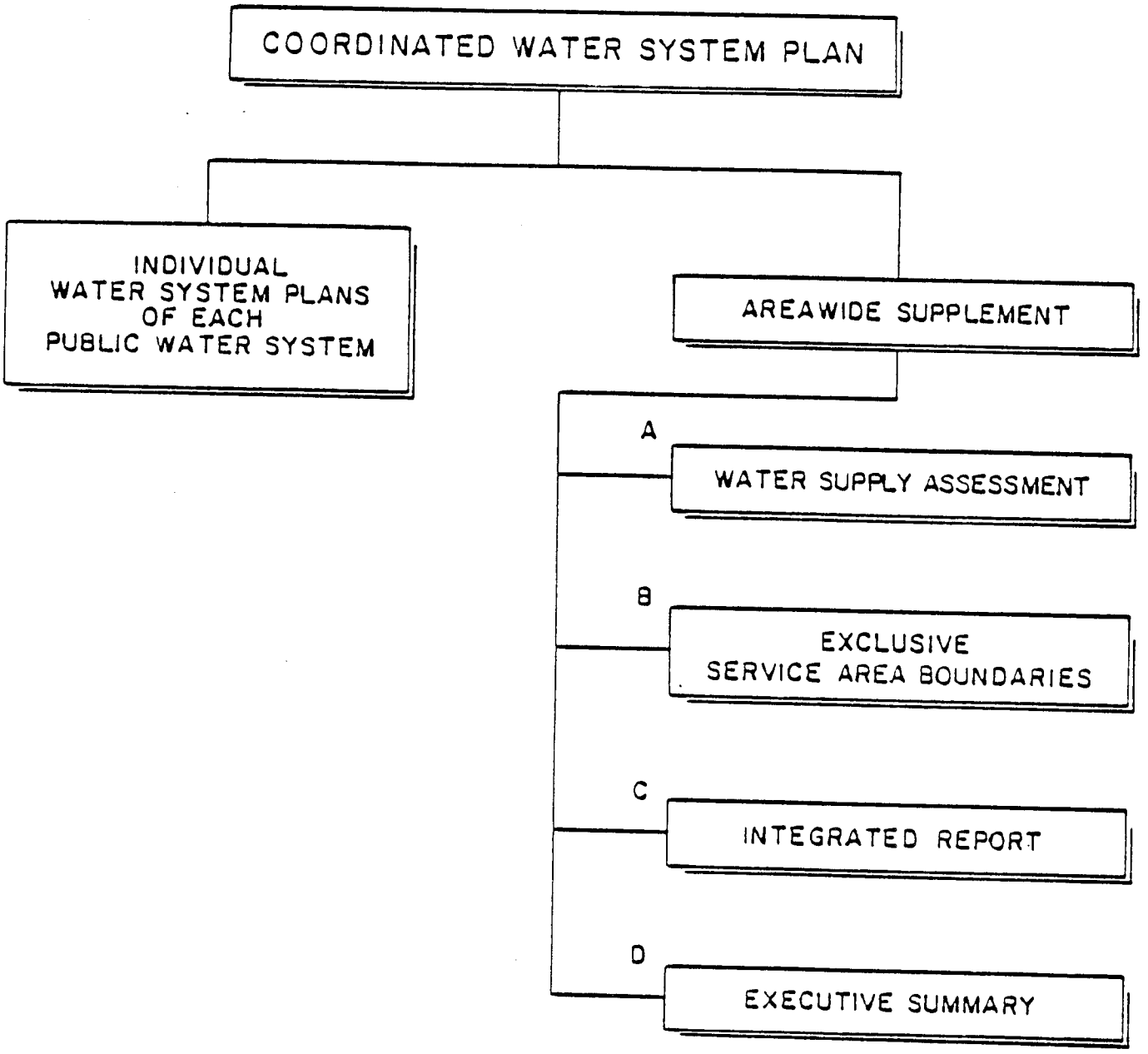


Figure 2-2

Coordinated Water Supply Plan

- o Identification of Areas Not Within Exclusive Service Area Boundaries
- o Discussion of Compatibility of Coordinated Plan with Land-Use Planning and Growth Policies
- o Evaluation and Prioritization of Alternative Water Sources
- o Plan for Interconnections
- o Plan for Joint Use, Management or Ownership of Systems and Facilities
- o Plan for Satellite Management
- o Minimum Design Standards
- o Presentation of Financial Data Pertinent to Area-wide Projects
- o Review of Potential Impacts on Other Water Resource Uses
- o Executive Summary

d. The fourth product of the WUCC is the Executive Summary, which will serve as an abbreviated overview of the coordinated water system plan. The Executive Summary will contain appropriate summaries, tables and maps.

**3. Purpose/Scope of Water Supply Assessment**

The first component of the Coordinated Plan, the Water Supply Assessment, is the subject of this report. The Assessment shall include:

- o Description of existing water systems
- o Description of future water sources including their availability and adequacy.
- o Existing utility service area boundaries.
- o Present and projected growth rates.
- o Status of water system planning and coordination with local land-use planning.
- o Identification of key water supply problems.

The purpose of the Assessment is to evaluate water supply conditions and problems within the South Central Public Water Supply Management Area. The format of the Assessment generally follows the regulatory requirements as described in the DOHS Regulations Concerning Coordinated Water Systems Plans, Section 25-33h of the Connecticut General Statutes. For example, the description of the existing water systems shall include a history of water quality, reliability, service and supply adequacy, the general firefighting capabilities of the utilities, and, identification of major facilities that need to be expanded, altered or replaced.

## B. DESCRIPTION OF SOUTH CENTRAL WATER SUPPLY MANAGEMENT AREA

### 1. Composite Area

The South Central Public Water Supply Management Area is bordered to the south by Long Island Sound, to the north by the Upper Connecticut River and Northwest Hills Management Areas, to the west by the Housatonic and Southwest Management Areas, and to the east by the Southeast Management Area. (See Table 2-2 for summary of area communities.)

Commerce and industry are major enterprises in the South Central Area. This activity is located primarily in the Quinnipiac River Valley from Meriden to New Haven, in the Naugatuck River Valley from Derby to Waterbury, and in the communities bordering Long Island Sound from Branford to Milford. Some towns have little industry, but are heavily populated residential communities. Principal manufactured goods include wire, brass products, silver products, aircraft engines, and firearms.

The South Central Area is comprised of 36 municipalities, served by 64 public water utilities. (See Figure 2-3.) Of the 64 utilities, only 15 public water systems serve more than 1,000 people. These systems supplied water to approximately 627,128 people in the South Central Area, or 80.35 percent of the 1987 population. The three largest systems, the South Central Connecticut Regional Water Authority (SCCRWA) and the Connecticut Water Company, (CWC), and the Meriden Water Department supply approximately 497,085 people or 79 percent of the region's 627,128 people served by public water supply.

Of the 64 public water systems in the management area, only 15 serve a customer-base of more than one thousand people. One of these fifteen, the Southington Water Works Department has a service area in the WUCC limited to a small amount of distribution piping south of the Southington-Cheshire Town line, serving only 200 people. Similarly, the Metropolitan District Commission, which is one of the fifteen large purveyors, serves a limited area in the WUCC immediately over the Cromwell/ Rocky Hill town line, consisting of 20 users. Also, the Waterbury Water Bureau involvement in the South Central Area is limited to ownership of a surface water supply and surrounding watershed area in Prospect.

Table 2-2 (located at the end of this section) provides a listing of the South Central Area communities and the respective utilities that serve them. It also indicates the size of the average household for each community and the estimated population served by the utilities.

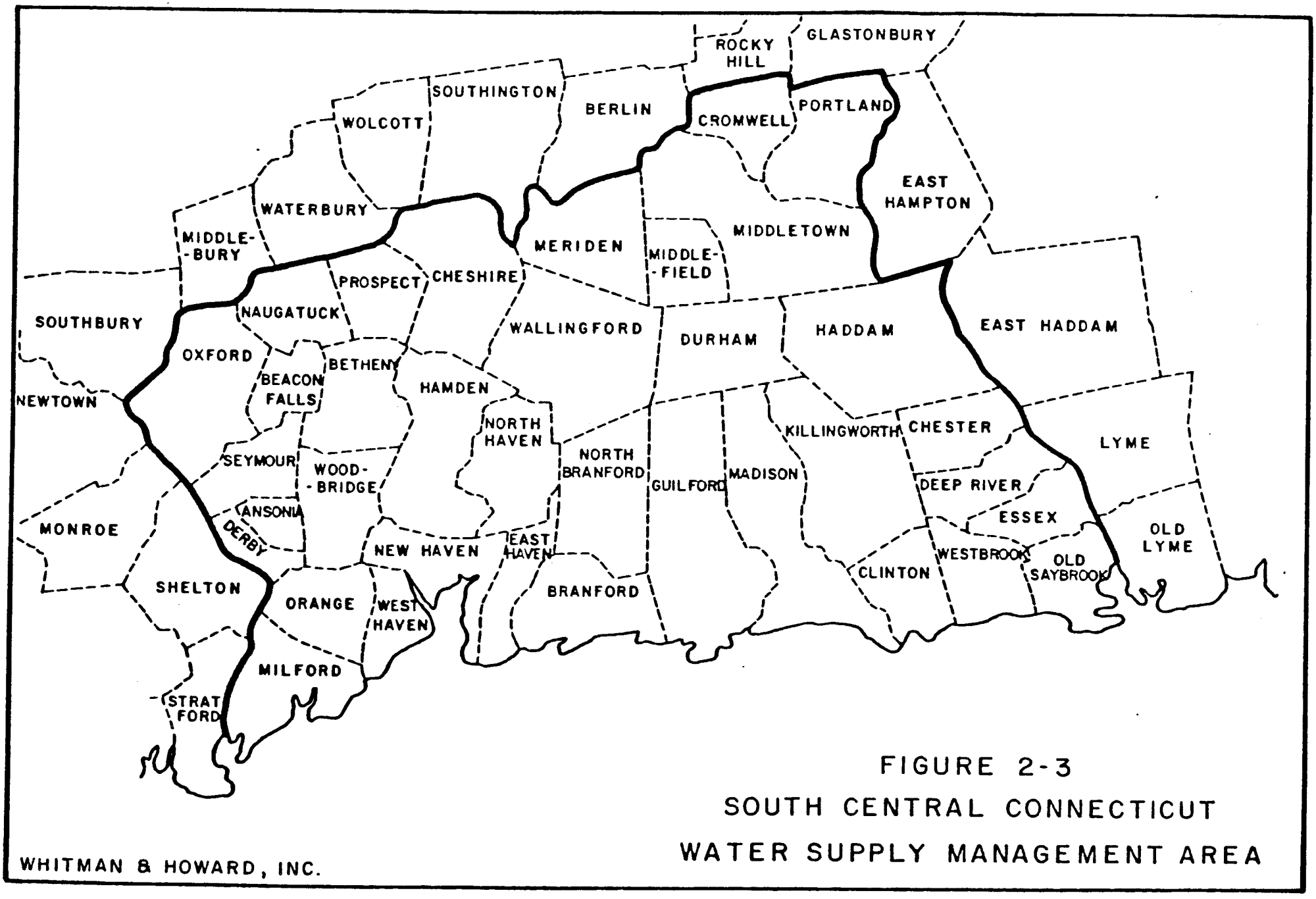


FIGURE 2-3

SOUTH CENTRAL CONNECTICUT

WATER SUPPLY MANAGEMENT AREA

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The two major utilities in the South Central Area serve communities in the New Haven, Milford, Guilford, Chester and Naugatuck areas. Major population concentrations tend to follow a central path starting in Hartford and heading south, then following the coast in a southwesterly direction.

Approximately 65-70 percent of the population served by public water supplies are using surface water sources. The SCCRWA is the largest utility in the area, and approximately 85 percent of its total capacity comes from surface supplies. In addition, the Wallingford Water Division, the Connecticut Water Company, the Meriden Water Department, and other large utilities in the area rely extensively on surface supplies, bringing the area total to an estimated 65-70 percent dependency.

The remaining 30-35 percent of the serviced population, i.e. 200,000 people, are dependent upon groundwater supplies. The majority of this group is serviced by stratified drift groundwater supplies yielding an average .5-2.0 million gallons day 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. The majority of the small utilities are dependent upon ground water supplies located in bedrock aquifers that have limited yields averaging 5000 - 200,000 gallons per day. Of the 49 small utilities, i.e., those servicing 1000 people or less, 39 are served exclusively by drilled wells, indicative of a bedrock aquifer. Four of the small

utilities currently utilize a combination of drilled and dug wells; [redacted] stratified draft deposits. Only two systems currently utilized gravel packed wells located in stratified draft deposits; Hawkstone Terrace Corporation and New Lakeview Convalescent Home.

Table 2-3 summarizes the use of groundwater and surface supplies by the large utilities in the area. Because the Waterbury Water Bureau, Southington Water Department, Heritage Village Water Company, and Metropolitan District Commission do not serve significant numbers of customers in the South Central Area, these four large utilities are not included in the table. The term "available water" signifies supplies that are currently available for use by the utilities. Those supplies that need additional treatment, pumping capacity, or regulatory approval are not considered "available." Demand figures provided in Table 2-3 signify average daily demand.

The major sources of surface water are reservoir systems located in Woodbridge, Bethany, North Branford, Branford, Hamden, Meriden, Cheshire, Wallingford, Middletown, Portland, Naugatuck and Killingworth. The major sources of groundwater supplies are located in the vicinity of the major rivers in the South Central Area.

TABLE 2-3
USE OF GROUNDWATER AND
SURFACE WATER SUPPLIES BY
LARGE UTILITIES

| Utility Name | Population Served in S.C. Area | Current Average Demand in MGD | Available Water in MGD | % Surface Supply | % Groundwater Supply |
|---|---|---|---|---|---|
| Cromwell Fire District | 9500 | 1.5 | | | 100% |
| Meriden Water Department | 59,100 | 6.8 | | 57% | 43% |
| Middletown Water Department | 34,300 | 4.5 | | 25% | 75% |
| Portland Water Department | 5,860 | .708 | | 67% | 33% |
| South Central Connecticut Regional Water Authority | 386,520 | 56.77 | | 83% | 17% |
| Wallingford Water Division | 27,107 | 6.02 | | 76% | 24% |
| Ansonia Derby Water Company | 30,747 | 4.06 | | (59% Inter-connection with SCCRWA) | 41% |
| Bridgeport Hydraulic Company - Valley Division | 13,838 | 1.65 | | (82% Inter-connection with SCCRWA) | 18% |
| Connecticut Valley Hospital | 2,200 | .165 | | 100% | |
| Connecticut Water Company - Chester System | 4,710 | .589 | | 19% | 81% |
| Connecticut Water Company - Guilford System | 29,861 | 3.58 | | 31% | 69% |
| Connecticut Water Company - Naugatuck System | 16,984 | 3.19 | | 76% | 24% |

The South Central Area has long supported a variety of industrial, commercial, agricultural, and residential land-use activities. Centrally located along a major transportation route, the area has been experiencing rapid growth trends and is faced with the associated competing demands for its water resources.

## 2. Topography

The topography of the South Central Water Supply Management Area ranges from nearly flat to steep. The area was formed through glacial activity, resulting in a varying terrain that consists of unconsolidated deposits of glacial till and stratified drift.

### a. Hydrogeologic Characteristics

The South Central Connecticut Water Supply Management Area is bisected by the sedimentary-igneous rock aquifer system in the Connecticut Valley lowland. On either side of the valley lies a region known as the New England Upland section, which is comprised of crystalline-metamorphic bedrock aquifer formations. The Connecticut Valley lowland area is primarily a sedimentary region which possesses variable thicknesses of unconsolidated deposits that result in poorly defined hydrologic characteristics. Located in the Connecticut Valley area, however, are isolated deposits of stratified draft which provide for large water yields. These areas are located near major rivers and commonly have elevated levels of iron and manganese.

The stratified-drift aquifers are increasingly susceptible to contamination due to population concentrations and geologic conditions. These aquifers are the most productive sources of groundwater in the state and were formed during the deglaciation of Southern New England. Within the South Central Region they are located in the Quinnipiac, Hammonasset, Mill River, and Connecticut River Basins. If stratified-drift aquifers are adjacent to saltwater basins, excessive pumping can result in saltwater contamination. Additionally, due to widespread dependence on induced recharge to sustain withdrawals from stratified-draft aquifers, the most significant impact of growth development is the depletion of stream-flow.

The remainder of the South Central Region is primarily underlain by bedrock aquifers which are the principal source of water for self-supplied homes, small public systems, commercial establishments and industries. The bedrock aquifer is subdivided into the sedimentary-igneous aquifer system and the crystalline aquifer system.[1]

**b. Soil Characteristics**

The New England Upland areas, which are found on the eastern and western edges of the South Central

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1 National Water Summary, 1984, U.S.G.S. Water Supply Paper 2275, Pages 161-166, prepared by Robert L. Melvin.

Area, generally possess soils that vary from well to poorly drained. Since the terrain ranges from nearly level to steep, and soils range from loamy to sandy, potential water supply conditions vary. Most of the soils were formed in glacial till or in glacial outwash. The majority of farmland and woodland land-use activity can be found in these perimeter regions.

Soils of the Connecticut Valley Lowland Area, which run north to south through the center of the South Central Area, were also formed in glacial till or outwash. Considerable acreage of alluvial soils are present, allowing for productive agricultural use of the outlying areas. Again, soils range from well to poorly drained, with terrain ranging from steep to level. Most of the urban population and many industries are found in this area.[2]

**c. Drainage Characteristics**

The main rivers flowing through the South Central Area are the Housatonic River along the western edge of the area, the Quinnipiac River flowing from north to south through the central region, and the Connecticut River marking the eastern perimeter. The three major drainage basins of interest in this study

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2 Soil Survey of New Haven County, U.S.D.A., Soil Conservation Service, July 1979.

are the Lower Housatonic River Basin, the Quinnipiac River Basin, and the Lower Connecticut River Basin.[3]

Although precipitation in the area is a major source of replenishment for groundwater recharge, some dependence on induced recharge to sustain withdrawal during extended low precipitation periods is necessary. Therefore, the potential for depletion of streamflow in certain drainage basins may become a significant issue in local areas.

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3 Water Resources Inventory of Connecticut, Part 10, Lower Connecticut River Basin, by Weiss, Bingham and Thomas, U.S.G.S., 1982.

TABLE 2-2
SOUTH CENTRAL WATER SUPPLY
MANAGEMENT AREA
COMMUNITY 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 |
| 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 |

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

TABLE 2-2 (Cont.)
SOUTH CENTRAL WATER SUPPLY
MANAGEMENT AREA
COMMUNITY SUMMARY

| Community | 1987 Total Population[1] | Average Size of Household[2] | Public Utilities | 1987 Population Served[3] | 1987 Percent Population Served |
|---|---|---|---|---|---|
| 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 |
| 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 |

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

TABLE 2-2 (Cont.)
SOUTH CENTRAL WATER SUPPLY
MANAGEMENT AREA
COMMUNITY SUMMARY

| Community | 1987 Total Population[1] | Average Size of Household[2] | Public Utilities | 1987 Population Served[3] | 1987 Percent Population Served |
|---|---|---|---|---|---|
| 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 |
| Meriden | 59,700 | 2.60 | Bradley Home | 151 | 0.2 |
| | | | Meriden Water Dept. | 59,000 | 98.8 |
| | | | | 59,151 | 99.0 |

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

TABLE 2-2 (Cont.)
SOUTH CENTRAL WATER SUPPLY
MANAGEMENT AREA
COMMUNITY SUMMARY

| Community | 1987 Total Population[1] | Average Size of Household[2] | Public Utilities | 1987 Population Served[3] | 1987 Percent Population Served |
|---|---|---|---|---|---|
| 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 |
| 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 |

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

TABLE 2-2 (Cont.)
SOUTH CENTRAL WATER SUPPLY
MANAGEMENT AREA
COMMUNITY SUMMARY

| Community | 1987 Total Population[1] | Average Size of Household[2] | Public Utilities | 1987 Population Served[3] | 1987 Percent Population Served |
|---|---|---|---|---|---|
| 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 |
| Seymour | 14,120 | 2.66 | Ansonia Derby Water Co. | 803 | 5.7 |
| | | | BHC Valley Division | 11,276 | 79.8 |
| | | | | 12,079 | 85.5 |

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

TABLE 2-2 (Cont.)
SOUTH CENTRAL WATER SUPPLY
MANAGEMENT AREA
COMMUNITY SUMMARY

| Community | 1987 Total Population[1] | Average Size of Household[2] | Public Utilities | 1987 Population Served[3] | 1987 Percent Population Served |
|---|---|---|---|---|---|
| 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.

# SECTION III.

# STATUS OF AREA WATER SYSTEMS

# III. STATUS OF AREA WATER SYSTEMS

## A. BASIC OBJECTIVES

The primary objective of this section is the assessment of existing water supply systems in the South Central Area. Data was gathered from a number of sources in order to assess the systems of 65 utilities in the region. The status and adequacy of existing sources of supply, water quality history, distribution system adequacy, individual facility needs, and general firefighting capabilities for all the area utilities were reviewed and are included in this Assessment.

In addition, data regarding potential water supply availability and future supply requirements was reviewed and is presented in this section. The goal of the Water Supply Assessment was to evaluate water supply conditions and problems within the public water supply management area. This section provides information regarding the present status of the area utilities for comparison with future water supply and distribution needs.

## B. INVESTIGATION METHODS

The primary method of gathering data for the Water Supply Assessment was via a questionnaire distributed to all community public water systems in the area. The questionnaire requested information from the utilities regarding supply sources, consumption, fire protection, water quality, and water system planning. This questionnaire, distributed to the utilities by the Water Utility Coordinating Committee (WUCC), was further supplemented by information obtained from Individual Water System Plans prepared by area utilities and other sources.

The data obtained from the returned questionnaires was used throughout the assessment as the definitive source of information. In cases where supplemental data was required, additional information was obtained from the Individual Water System Plans when available. The Regulations Concerning Water Supply Plans, Section 25-32(d)-1 of the Connecticut General Statute, require utilities serving more than 1,000 people to submit individual supply plans to the Department of Health Services (DOHS). In addition, utilities must submit an Individual Plan to DOHS at the request of the Commissioner. The individual supply plans are a significant component of the Connecticut Plan for Public Water Supply Coordination. Water companies serving 1000 or more people, 250 service connections, and those specifically identified by the DOHS are required to submit Individual Plans.

At the time the Water Supply Assessment of the South Central Area was initiated, approved individual supply plans were not available. Draft individual plans were used as data resources, under direction of the WUCC. The Individual Water Supply Plans are extremely comprehensive documents prepared by the individual utility to assess the present and future status of the particular system. For example, these plans include an analysis of the present system, future system needs, financial status, utility structure and projected populations. The Individual Plans also provide recommendations for future system improvements and define future utility service area boundaries.

Presently, the South Central Management Area utilities that are required to submit individual supply plans are as follows:

- Ansonia Derby Water Company
- Beseck Lake Water Company
- Bridgeport Hydraulic Company
- Connecticut Valley Hospital
- Connecticut Water Company
- Cromwell Fire District
- Derby Water Department
- Heritage Village Water Company
- Meriden Water Department
- Metropolitan District Commission
- Middletown Water Company
- Portland Water Department
- South Central Connecticut Regional Water Authority
- Southington Water Department
- Wallingford Water Division
- Waterbury Water Bureau

In addition to the WUCC questionnaire and the individual supply plans, data was obtained from the Department of Environmental Protection (DEP) Water Supply Shared Data Base. Copies of the Data Base were distributed to the larger utilities with a request that the data be updated and revised as necessary. This updated information was used throughout the preparation of the Assessment. With regard to the small utilities in the South Central Area, the major source of information proved to be records from DOHS inspection reports.

Information from the Department of Public Utilities Control (DPUC) and the Office of Policy and Management (OPM) was also utilized.

## C. RESULTS OF QUESTIONNAIRE SURVEY

Fundamental to the assessment of water supplies in the South Central Area is the determination of population levels, demand, and source availability. A discussion of the results of the WUCC's efforts to generate data on these three issues follows.

In November, a questionnaire was forwarded to all utilities in the South Central Area requesting information regarding sources of supply, population served, storage capacity, and a host of other system related subjects (see Appendix G). Appendix H illustrates the level of response to the questionnaire. The number of returned questionnaires includes the submittal of individual supply plans to the WUCC instead of or in addition to questionnaires. The forwarding of system information to the WUCC was quite high for the larger utilities. The response from small utilities was not high, although a reminder notice and individual phone calling did produce several additional submittals.

The degree of completeness of returned questionnaires varied since the small utilities typically did not answer the questions regarding water consumption, safe yield, source withdrawal, and facility needs. The larger utilities generally cited their respective individual supply plans with partial completion of the questionnaire, which was provided as needed.

Information obtained directly from the utilities, whether from the questionnaire or from individual supply plans, was used as the primary data. The absence of data and data discrepancies had to be taken into account when assessment conclusions and recommendations were formulated. Data regarding safe yield, future expansion, fire protection capacity, and demand projections was not provided by a number of the smaller utilities, and was therefore obtained from DOHS records.

A small number of discrepancies were noted between certain utility-supplied information and DOHS inspection report records. For example, information supplied by Krayeske Water Supply in Guilford indicated that 50 people are served by the supply. However, recent DOHS records state that 25 people are served. Both ranges of data are supplied in the Appendices.

The available data concerning present and future water demand was derived primarily from individual supply plans and DOHS records. The lack of available information regarding small utility demand projections is not significant in terms of regional totals because the populations they serve are not large.

## D. POPULATION INFORMATION

The following discussion of population information includes a description of the available data and the anticipated future population levels.

Approximately 80 percent of the South Central Area population in 1987 was served by public water supply sources. Public water supply sources are defined here as systems supplying water to 15 connections or to 25 or more people.

### 1. Population Data

Population information was obtained from two major sources, the Office of Policy and Management, and the Department of Health Services. DOHS figures are used for 1987 total community population values. Office of Policy and Management figures are used for the population projections corresponding to the years 1992, 2000, and 2030.

Information regarding the utility population served was derived from the most recent data available for each utility. Individual supply plans, utility questionnaires, and DOHS inspection reports were consulted for the most recent information.

### 2. Population Projections

Population projections are derived from OPM figures for the planning horizons of 1992, 2000, and 2030. Table 3-1 illustrates past, present and future population levels as estimated by the U.S. Census Bureau, DOHS and OPM. The projected population for 1992 was calculated using a straight interpolation method based on the 1990 and 1995 OPM population projections. It should be noted that the 1987 DOHS population estimates sometimes exceed those of OPM for the year 1992.

## E. INVENTORY OF PUBLIC WATER UTILITIES

The following inventory of South Central Area public water utilities includes a description of issues related to individual utility supplies and systems.

It should be noted that in addition to the utilities described throughout the Water Supply Assessment, the Powder Ridge Ski Area supply in Middlefield is also currently

TABLE 3-1
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 3-1 (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 |

Sources of Information:

[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.

monitored by DOHS and DPUC. Although not included in the matrix list of areawide utilities, this utility serves approximately 5 people in the summer and a maximum of 15 people in the winter. On-site zoning in the vicinity limits the total number of residences to 10 people. The utility is not currently listed with the other 65 utilities; however, DPUC and DOHS will continue to monitor it on a seasonal basis.

**1. Supply Summary**

The primary surface and groundwater sources of supply in the South Central Area have been identified in the individual supply plans and in Appendix B of this Assessment. Regional drainage basins in the area are the Connecticut Main Stem Basin, the South Central Shoreline Basin, the South Central Eastern Complex, the Quinnipiac Basin, the South Central Western Complex, the Mattabesset Basin, and the Naugatuck Basin.

Groundwater supplies are located throughout the area, in a number of various stratified-drift deposits and bedrock formations. The more productive supplies are located adjacent to the Quinnipiac River, the Housatonic River, and the Connecticut River.

**a. Consumption Information**

Individual utility consumption information is shown in Appendix F.

In summary, the available data shows increasing levels of consumption over the 50-year planning period for 12 of the utilities in the South Central Area:

- Ansonia Derby Water Co.
- Bridgeport Hydraulic Co.

- Connecticut Water Co.
  Chester System
  Guilford System
  Naugatuck Division
- Cromwell Fire District
- Heritage Cove Condominiums
- Heritage Village Water Company
- Meriden Water Department
- Middletown Water Department
- SCCRWA

Utility consumption information was derived from DOHS records, from returned questionnaires, and from individual supply plans. Where projected consumption information was not available, consumption was estimated using the following methodology.

Population projections as supplied by OPM for 2000, and 2030 and as calculated for 1992, were multiplied by an average per capita consumption rate of 75 gallons per day. This average is used by DOHS and DPUC in their minimum design standard evaluations and is accepted as an average residential consumption figure.

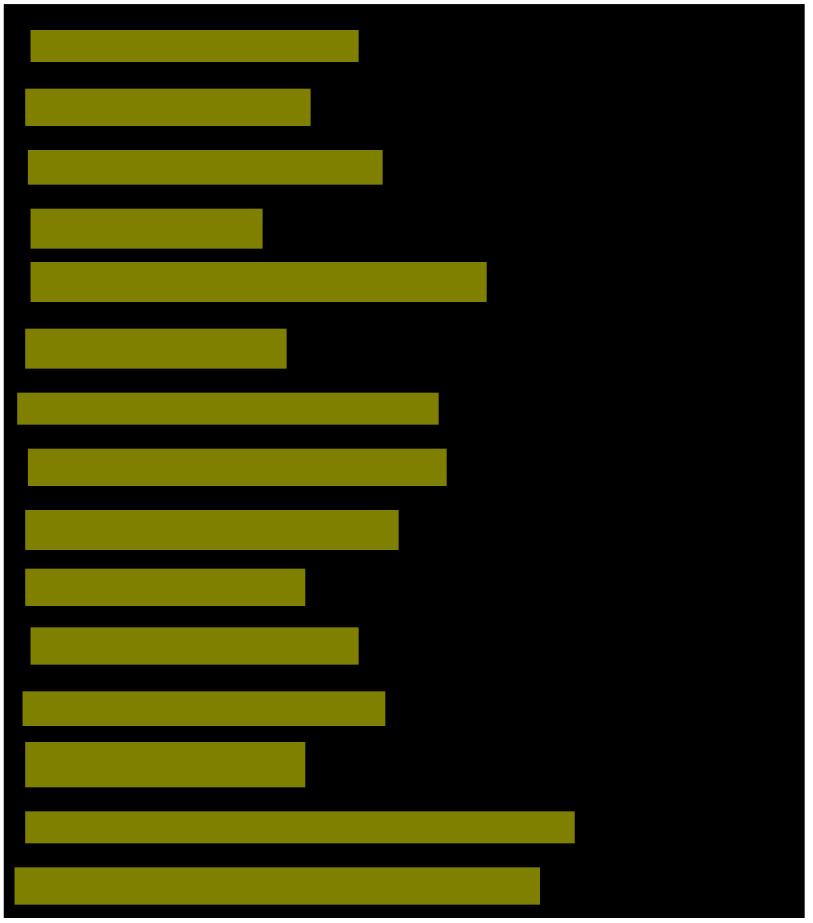
Information regarding the intended expansion of the majority of small utilities was not available; therefore, a projection of historical trends was derived for the 50-year planning period. Water consumption for these utilities was projected to remain at 1987 levels throughout the planning period reflecting the unchanged future service area status of most small utilities.

The results of the data search revealed that quantification of residential vs nonresidential demand is essential for accurate forecasting. This problem was addressed by requesting residential and nonresidential consumption information from the individual utilities. In cases where data was not supplied from the utility, information was obtained from DOHS inspection reports for existing demand levels.

Other utility officials expressed difficulty in supplying projected consumption information due to the draft status of their individual supply plans. Similarly, officials from the Southington Water Department, a large utility that provides very little service in the South Central Area stated that projected expansion and its associated consumption could not be estimated. Information regarding the method used for each utility is shown in the comments section of Appendix F.

**b. Supply Source Adequacy**

As indicated in Appendices B and C several utilities should be considering additional or alternative sources of supply to meet present levels of demand. Nineteen utilities are presently dependent upon a single source each and are listed below:



A number of supplies have experienced water quality problems. Problems in the area relative to water quality were identified in terms of both aesthetic and contamination problems.

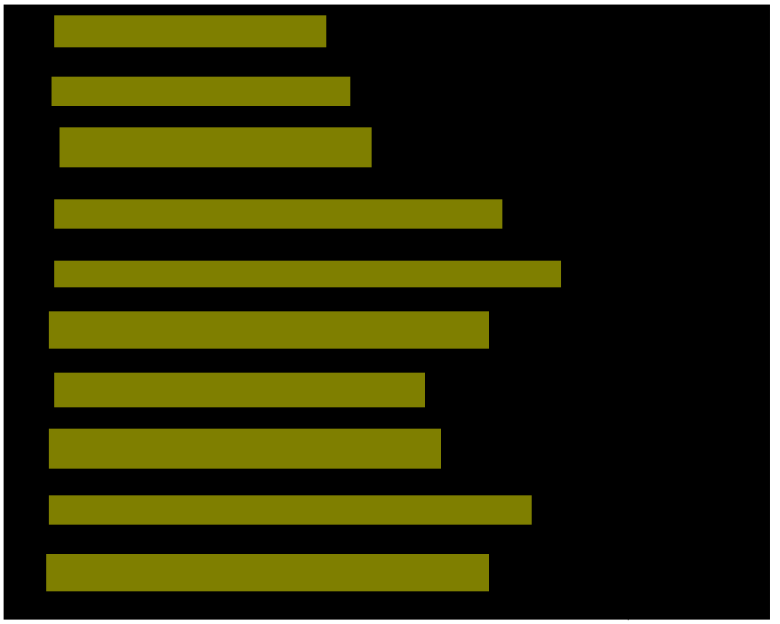
For example, [redacted] in Killingworth has three active wells which do not meet the required separation distance of 75 feet from onsite septic systems, while Country Manor in Prospect and the Westview Condo Association in Cheshire have experienced subsurface disposal system failures in the vicinity of their well supplies.

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.

The adequacy of sources of supply is dependent upon the vulnerability of the existing supply to contamination or to a capacity loss. Adequacy is also dependent upon the estimated yield of the supply. Appendix C provides information regarding estimated yield and storage capacity of surface water supplies.

Appendix C also provides a summary of available data regarding peak hourly demand per utility. This data was obtained from DOHS records, from utility records, and from DEP sources. Approximately 13 utilities have experienced problems meeting peak demand, reflecting a need for increased supplies, storage, or pumping capacity; these are listed below:



**c. Description of Future Sources of Supply**

Future sources of supply are listed in Appendices D and E, and in Table 3-2. Surface supplies are listed as they were described by individual utilities in their supply plans. Existing withdrawal figures are derived from the DEP-shared Data Base or when available, from the individual supply plans. Potential surface supply sources were not examined unless they were listed in the individual plans or questionnaires.

Groundwater supply information was derived from several sources. Some aquifer locations were derived from the DEP map entitled "Groundwater Yields for Selected Stratified-Draft Areas in Connecticut" dated 1986, by David L. Mazzafero which identifies those aquifers or parts thereof that have been evaluated for their long term yield. DEP Leachate and Wastewater Discharge information is used, in addition to DEP Water Quality Standards information, to evaluate the potential groundwater sources shown in Appendix D. In addition, potential groundwater supplies that were identified in the utility individual supply plans are shown in Table 3-2.

TABLE 3-2
POTENTIAL GROUNDWATER SOURCES
IDENTIFIED BY SOUTH CENTRAL
AREA UTILITIES

| Name of Utility | Name of Drainage Basin | Proposed Additional Sources | Estimated Additional Yield (mgd) | Estimated Total Safe Yield[1] (mgd) | Comments |
|---|---|---|---|---|---|
| Ansonia Derby Water Company | | | 0.75 | | |
| Connecticut Water Company, Guilford Chester Division | | | 0.78<br>0.2<br>2.0<br>2.0<br>1.0<br>0.5<br>2.0 | | Development of these wells, will necessitate additional treatment for iron and manganese. |
| Connecticut Water Company Naugatuck Division | | Fulling Mill Brook<br>Site I (new)<br>Site II (new)<br>Cold Spring Site (new) | <br>0.5<br>0.5<br>0.5 | | Development of these supplies will necessitate land acquisition, treatment, and transmission mains. |

[1]Total safe yield including proposed additional supply

TABLE 3-2 (CONT.)
POTENTIAL GROUNDWATER SOURCES
IDENTIFIED BY SOUTH CENTRAL
AREA UTILITIES

| Name of Utility | Name of Drainage Basin | Proposed Additional Sources | Estimated Additional Yield (mgd) | Estimated Total Safe Yield[1] (mgd) | Comments |
|---|---|---|---|---|---|
| Cromwell Fire District | [redacted] | | | | |
| Heritage Village | | | | | |
| Meriden Water Department | Quinnipiac River | | | | Exploration for new water supplies is proposed. Bedrock wells, and Traners Wells. |
| Middletown Water Department | [redacted] | | | | |
| | | Canel Aquifer (expansion) | 4.0 | 4.0 | Aquifer and Canel Aquifer are developed. |
| Portland Water Department | Connecticut Main Stem | Anderson Farm Wells | 1.5 | 1.5 | Development of additional wells, no anticipated additional treatment. |

[1]Total safe yield including proposed additional supply

TABLE 3-2 (CONT.)
POTENTIAL GROUNDWATER SOURCES
IDENTIFIED BY SOUTH CENTRAL
AREA UTILITIES

| Name of Utility | Name of Drainage Basin | Proposed Additional Sources | Estimated Additional Yield (mgd) | Estimated Total Safe Yield[1] (mgd) | Comments |
|---|---|---|---|---|---|
| South Central Connecticut Regional Water Authority | | Waite Street Well | 1.5 | 1.5 | |
| Wallingford Water Division | Quinnipaic Basin | Muddy River Aquifer (new) | 2.0 est. | 2.0 | Development of Muddy est. River Aquifer with unknown capacity. |

[1]Total safe yield including proposed additional supply

Sources of Information:

Individual Water Supply Plans

"Community Water Systems, in Connecticut, a 1984 Inventory" Connecticut Department of Environmental Protection, Howard W. Steinberg III, 1984

"Groundwater Yields For Selected Stratified - Drift Areas In Connecticut" United States Geological Survey in cooperation with Connecticut Department of Environmental Protection, David L. Mazzafero, 1986.

The issue of estimated yield of individual aquifers has brought up data discrepancy problems. Small utilities responding to the questionnaire generally did not provide information on existing or potential safe yield. Therefore data was obtained from the DOHS records where available. Estimated yield information for the larger utilities was generally obtained from individual supply plans. The yield data taken from DOHS inspection reports was multiplied by 90 percent as a safety factor. The DOHS estimated yield estimates were calculated based on 100 percent pump capacity operation for 18 hours only using 90% safety factor as required by the Public Health Code.

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. A number of small utilities, now dependent on one groundwater supply need to evaluate and obtain additional sources. (See list in prior paragraph b.) System improvements, water conservation measures, and treatment of existing supplies could help mediate the need for additional sources.

**d. Water Quality History**

Water quality information was obtained from DOHS files and from individual supply plans. As shown in Appendix B, water quality problems varying in severity, have been experienced by some of the South

Central Area utilities. Types of water quality problems that have been 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 as indicated below:

Approximately 15 utilities have supplies that exceed the recommended state standard of 20 mg/L of sodium, an aesthetic problem. Three utilities, Krayeske Water Supply, the Bradley Home, and the Twin Maples Nursing Home have customers that utilize bottled water for personal consumption. 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. (See Appendix B for details.) Fifteen utilities have identified septic systems in the near vicinity of the supply sources, resulting in potential water quality problems. Approximately ten wells in the South Central Area 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.

Competing uses of available land have resulted in existing and potential water quality situations in the South Central Area. Contamination problems have long- and short-term impacts on system users. In response to water quality problems, additional supply capacity can be provided via treatment of the existing source, via installation of new groundwater supplies, or via interconnection with a nearby system.

**2. System Summary**

Some areas of the water distribution systems in the South Central Area may date back a century. Appendix A provides a brief description of the individual characteristics of systems in the area. Information regarding the small utility systems was derived primarily from DOHS inspection reports. Available storage capacity for all utilities is noted in Appendix C.

System characteristics vary in accordance with system size and age. Based on Department of Public Utility Control (DPUC) report data, individual supply plans, and DOHS records, it is apparent that there are a wide variety of pipe sizes, ages, and materials in the area distribution systems.

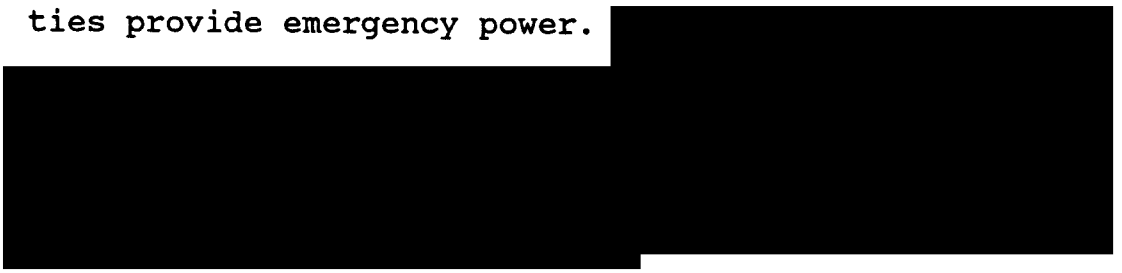
In general, most of the systems serving smaller residential or cluster housing developments have little piping greater than four to six inches in diameter. The larger distribution systems consist of a wide range of pipe size and type, with a wide variety of pumping and storage facility capacities.

**a. Fire Protection Capability**

At present, there are no state regulatory requirements governing the provision of fire protection capability. Municipalities rely on their local regulatory requirements and/or the fire-flow recommendations published by the Insurance Services Office (ISO). Appendix A provides available information regarding the ability of individual utilities to supply capacity for fire flow. Many of the smaller utilities have systems that were not designed for fire fighting, as evidenced by the average small size of their mains. In that event, alternate means of fire protection must be utilized. Should these systems be expanded, the need for fire-flow capability should be weighed against the economic cost of distribution system expansion and/or looping. Generally, larger utilities follow local practices for provision of fire flow.

**b. System Reliability**

Information pertaining to the status of system reliability was obtained primarily from individual supply plans and from DOHS records. This information is summarized in Appendices A, B and C. Upon review of Appendix A, it can be seen that in the event of a major power outage, the majority of the large utilities provide emergency power.



source of information for the smaller utilities has been the DOHS records. Information from the larger utilities indicates that, generally, there are few system reliability problems. In addition, all large utilities are using more than one source of supply.

Several large and small utilities experience low-pressure problems during high-demand periods due to inadequate supply, limited storage, and/or distribution system characteristics. Of these, insufficient storage capacity is often the major factor in disruption of system reliability.

Many of the communities in the South Central Area have older distribution systems that can create or aggravate system reliability problems. In addition, many smaller utilities using groundwater supplies do not have alternate sources available, should their primary source be lost. Many of the existing sources are vulnerable to source contamination.

Reliability of marginal systems will most likely be strained during heavy demand or drought periods. Several large and small utilities experience reliability problems during the summer months that require demand reduction efforts. The reliability of systems that use a single source of supply will be affected if that supply is lost. Similarly, utilities that do not provide back-up power for system operation face a reliability problem if the primary source of power is lost.

**c. Facility Needs**

A number of utilities have identified the need to provide additional storage, supply, pumping or treatment facilities to meet present and projected system needs. The majority of the large utilities maintain some form of regular planning to identify facility needs and associated costs. For example, the

[redacted]

In addition, a number of utilities, including the

[redacted]

to construct system improvements to meet future demand requirements.

Due to limited utility-supplied data, information regarding planned system improvements for the small utilities came from DOHS files. These records indicate that a number of small utilities are presently in need of system improvements. This includes Beechwood Mobile Home Park in Killingworth, New Lakeview Convalescent Home in Cheshire, Crestview Condo Association in Cheshire, Bernice's Court in Guilford, and Cedar Grove Mobile Home Park in Clinton.

In general, the large utilities have an ongoing system improvement and implementation policy. Additional storage and pump capacity, pipe replacement, and treatment facilities are the types of system improvements recommended in the various individual supply plans that were reviewed.

# SECTION IV.

# EXISTING SERVICE AREA BOUNDARIES

## IV. EXISTING SERVICE AREA BOUNDARIES

One element of the Water Supply Assessment process was the delineation of all existing utility service area boundaries on a map at a scale of 1:50,000. Water service areas represent the areal extent of water distribution systems and include regions where homes, businesses, and other buildings are presently served by water utilities. Establishments outside of these regions are on private wells. The process of delineation of service boundaries is summarized below.

At the time of the distribution of the questionnaire, all utilities were asked to supply the WUCC with maps showing their existing areas of service. The large utilities, those serving more than 1,000 people, were asked to delineate their existing service areas on overlay maps provided to them by DEP. These 1:24,000 scale overlay maps illustrated the service area boundary of the utility as it was in 1984. Following receipt of the updated maps and other available distribution maps, DEP then plotted updated water service areas at a scale of 1:50,000, using the department's automated Geographic Information System (GIS).

Where information regarding the service areas of small utilities was not supplied to the WUCC, DOHS engineers mapped the location of the service areas on USGS base maps. These small service areas were then plotted using the GIS.

As a last step, all the large utilities were again mailed copies of their existing service areas, mapped at a scale of 1:24,000. These utilities were asked to verify the boundaries shown, prior to final plotting on the Water Supply Assessment Map.

Maps, included with this Assessment, illustrate the existing service areas of all 65 area utilities, at a scale of 1:50,000. The base information includes town boundaries, and federal, state and interstate roads. See Plates 1A and 1B in rear pocket.

# SECTION V.

# STATUS OF LAND-USE AND WATER-SUPPLY PLANNING

## V. STATUS OF LAND-USE AND WATER-SUPPLY PLANNING

This section discusses the status of land-use and water utility planning in the South Central Area. It includes a review of planning efforts/programs by individual water utilities and by local municipal agencies and a review of regional and statewide planning policies.

Information on the status of land-use and water utility planning in the South Central Water Management Area was obtained through a variety of sources. Several water supply plans and/or utility planning documents were consulted for information regarding individual utility planning efforts. The status of municipal planning programs was determined by consulting with the South Central Area regional planning agencies. Where available, local plans of development were reviewed to determine the status of local planning especially as it pertains to water supplies.

Statewide water supply planning policies were obtained from a variety of published documents produced for the State of Connecticut. For example, the "State Policies Plan for the Conservation and Development of Connecticut, 1987-1992" prepared by the Office of Policy and Management, revised and approved by the General Assembly in May, 1987, was reviewed to determine the status of statewide planning efforts.

Regional planning information pertaining to water supplies was generally unavailable since most of the area regional planning agencies are presently updating their regional plans. A few regional studies, such as the "Quinnipiac River Corridor, a Program for Implementation," produced by the Regional Planning Agency of South Central Connecticut in March 1982, have been recently prepared and were reviewed as part of this section.

Clearly, the statewide coordinated water supply planning process, of which this assessment is a part, is the state's major planning program that is being implemented to address water resources management. This program involves coordination of local, utility, and regional water supply planning efforts.

## A. STATUS OF LOCAL, REGIONAL AND STATEWIDE LAND-USE PLANNING

### 1. Local Land-use Planning

The status of local land-use planning is summarized in Table 5-1 (located at the end of this section). This table lists the available land-use planning documents for each of the 36 communities in the South Central Area. The information pertains to local land-use planning activities that are relative to water supply management. The status of municipal land-use planning as it relates to water supplies is also described.

The primary local planning activity relating to water supplies appears to be the enactment of zoning by-laws 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.

Land-use ownership by water utilities also functions as a local land-use activity that impacts water supplies; this is detailed in Table 5-1.

A review of Table 5-1 indicates that 14 of the 36 communities in the South Central Area have enacted source protection measures in the form of protective zoning. An

additional six communities have fairly current Plans of Development indicating a need for implementation of source protection measures. Approximately 17 out of 36 communities have Plans of Development that date 10 years or more. Seven communities have no record of any Plan of Development. The incorporation of water supply protection into local planning and zoning is essentially limited to policies included in individual Plans of Development.

Another land-use action that functions as source protection measure is the type of ownership of watershed and water supply land area. The extent to which land ownership functions as a source protection measure varies from town to town. The majority of surface supplies in the South Central Area are protected by at least a marginal landbuffer owned by individual utilities. Land ownership in the vicinity of groundwater supplies was less, and even inadequate in some cases. Additional analysis of land use in the vicinity of area water supplies is needed.

**2. Regional Land-Use Planning**

Five separate regional planning agencies serve the 36 towns in the South Central Water Supply Management Area. These are the:

- o Central Naugatuck Valley Council of Elected Officials
- o Connecticut River Estuary Regional Planning Agency
- o Midstate Regional Planning Agency (Midstate RPA)
- o South Central Regional Council of Governments
- o Valley Regional Planning Agency (Valley RPA)

Regional planning in relation to land-use and water supply management is fairly limited due to funding constraints. The Midstate Regional Planning Agency (Midstate RPA) and the Central Naugatuck Valley Council of Elected Officials are presently updating their regional plans.

Additional regional land-use analysis has been conducted primarily with regard to regional transportation concerns. However, land-use planning and water supply management was the subject of several reports produced in the 1970's and 1980's. A partial listing of these reports is provided below:

- "Water Supply" prepared by the Central Naugatuck Valley Regional Planning Agency, July 1975.
- "Inventory and Analysis of Existing Water Supply Systems and Potential Sources of Supply" prepared by Malcom Pirnie Engineers for the Valley Regional Planning Agency, February 1970.
- "Assessment of Ansonia Derby Water Co. Municipal Purchase" - two reports prepared for the Valley RPA.
- "Quinnipiac River Corridor, A Program for Implementation," prepared by the Regional Planning Agency of South Central Connecticut, March 1982.
- "Regional Water System Study" by Charles A. Maguire and Associates, Inc., for the Connecticut River Estuary Regional Planning Agency, 1973.
- "Master Plan - Water Supply, Sanitary Sewerage and Storm Drain Facilities" by Cahn Engineers, for the Midstate Regional Planning Agency, 1972.
- "Toward Improvement of Local Water Quality Management in South Central Connecticut" by the Regional Planning Agency of South Central Connecticut, May 1979.
- "The Need for Groundwater Protection in South Central Connecticut," by the Regional Planning Agency of South Central Connecticut, 1980.
- Aquifer Protection plan, Bridgeport Hydraulic Co. and YWC, Inc. 1988

Areawide water supply planning is taking place primarily through the coordinated water supply planning process. Regional planning agencies 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.

3. **State Land-Use Planning**

The State Office of Policy and Management prepared, and the General Assembly in 1987 adopted, the State Policies Plan for the Conservation and Development of Connecticut, 1987-1992 (C & D Plan). This document is a statement of the State of Connecticut's growth, resource management, and public investment policies. One of the 12 chapters of the C & D Plan focuses on the topic of water supply and provides a discussion of the background issues, pertinent ongoing programs and goals for this subject. In addition, there are a series of policies and strategies directed toward the purity of drinking water, provision of an adequate supply, effective management of the resource and promotion of conservation practices and programs.

Relative to water supply planning, the C & D Plan recommends policies that support strong urban centers, infill and staged contiguous growth, i.e., take advantage of infrastructure, including the economical extensions of water service. Conversely, in rural areas, the State Plan promotes policies for the protection and indefinite functioning of individual wells to meet water-supply needs. Further, the C & D plan recognizes existing and potential sources of water supply as areas where State-supported actions should conform to the Class I and Class II criteria and standards of the Department of Health Services for the protection of drinking-water sources. The C & D Plan designates utility-owned Class I land as Existing preserved Open Space, other Class I lands as Preservation Areas, and Class II lands as Conservation Areas.

There are a number of other significant State-planning activities which affect land-use and water supply protection. Environment 2000, by the State Department of Environmental Protection, is a comprehensive overall view of the Department's environmental strategies and goals. The Agency's overall strategy for drinking water is the provision of adequate quantities of high quality drinking water by conserving and protecting existing and potential sources of potable supply and by enhancing proper delivery and use.

Another significant effort is the State of Connecticut's Clean Water Program. A major component of this Program is the State's Water Quality Standards and Classifications. A significant purpose of these standards

is the protection of drinking-water supplies from pollution. In this regard, the classifications "AA" and "GAA" for surface and groundwater respectively are utilized to protect existing and potential drinking-water sources from waste-water discharges.

Representatives from the regional planning organizations and certain State agencies have prepared a working draft of a Water Supply Watershed Protection Handbook. The purpose of this handbook is to assist local officials with guidance on ways their surface water supplies can be protected through their municipal land-use plans and regulations. The State Department of Environmental Protection also has prepared a guide to groundwater protection by local officials entitled, Protecting Connecticut's Groundwater.

The State of Connecticut is presently involved in efforts both to identify aquifers with potential for providing public drinking water and to arrive at management programs to protect existing and potential groundwater supplies. DEP has made progress in the identification of the hydrogeologic components of moderate and high yield aquifers while a Task Force, authorized by the General Assembly, has been involved in the development of strategies to protect the State's groundwaters for potable water use in the future.

In addition to adopting goals and policies relating to water resources and land use, the State of Connecticut is implementing the Coordinated Water System Planning

Process. Although geared towards protecting water supplies, the coordinated planning process includes an assessment of land-use planning in each of the water supply management areas. Land-use planning as it relates to water resources management is a major focus of the coordinated planning process.

## B. STATUS OF WATER UTILITY PLANNING

Individual supply plans were the primary sources of information regarding utility planning in the South Central Water Supply Management Area. Available planning documents prepared by the individual utilities were also consulted.

The extent of water system planning by the utilities in the South Central Area 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.

The larger utilities typically address planning issues using a five-year planning horizon. Detailed planning is generally limited to this five year period, while long range planning becomes more general. 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.

The status of individual utility planning is presented in Table 5-2 (located at the end of this section). This table lists recently completed planning-related studies and provides a brief summary of each utility's planning objectives. As discussed earlier, a number of the larger utilities have projects underway, and have taken steps to implement their capital improvements programs. As can be seen in Table 5-2, twenty-one of the utilities in the Area provided information regarding their planning programs. The majority of Area utilities are small and, typically, they do not conduct planning programs.

## C. COORDINATION BETWEEN WATER UTILITIES AND MUNICIPALITIES

The review of available planning information indicates a high degree of coordination between the water utilities and the municipalities in the South Central Area. A variety of means of ownership of utilities in the South Central Area has led to different types of coordination. For example, several communities are served by municipally-owned water utilities, such as Wallingford, Meriden, Cromwell, and Portland. Other communities rely primarily on private household supplies and do not have many people served by public water systems. In addition to these scenarios there are large, investor-owned

water companies that provide service to more than one community such as the Ansonia Derby Water Company, the Connecticut Water Company, and the Bridgeport Hydraulic Company. A large portion of the South Central Area is served by the South Central Connecticut Regional Water Authority, which has its own planning process and system for ensuring local coordination.

The following communities rely primarily on well supplies at their individual sites: Durham, Middlefield, Bethany, Haddam, Killingworth, and Prospect. Coordination between representatives of the small utilities (located in these towns) and local municipal officials is minimal.

Large, investor-owned utilities 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. This level of coordination needs improvement. 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.

The Ansonia Derby Water Company, the Bridgeport Hydraulic Company, and the Connecticut Water Company maintain a high degree of contact with the towns they serve. For example, the Bridgeport Hydraulic Company recently prepared and distributed an aquifer protection program package to encourage the adoption of source protection measures. Similarly, the Ansonia Derby Water Company has been working with the towns of Ansonia

and Derby to encourage them to adopt source protection measures. The Connecticut Water Company monitors proposed developments and provides water supply protection guidance to its service communities.

The majority of the population in the South Central Area is served by the South Central Connecticut Regional Water Authority (SCCRWA). Coordination between the Regional Water Authority and the twelve communities served is maintained through an advisory board made up of representatives from each community. This board regularly meets with SCCRWA staff to discuss water management issues. Representatives from each community can then relay pertinent information back to their respective towns, to insure that local concerns are addressed. This process is effective as long as the local representatives communicate with their individual communities. A weakness in this process at the local level has been identified, with better coordination between the local SCCRWA representative and the town officials needed. The advisory board process is conceptually excellent for maintaining municipal and utility coordination. With improvement at the local level, SCCRWA coordination with these 12 communities appears to be adequate.

In summary, due to the variety of situations occurring in the South Central Area, a variety of types of coordination must be maintained in order to ensure adequate water supplies. Representative advisory boards, pro-active utility policies stressing local involvement, and responsive local action are ways of maintaining cooperation in relation to water supply management. In addition, regional planning offices, which can serve as a forum for sharing local concerns, are presently

working to maintain such municipal coordination. Although coordination between the majority 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. Specifically, available information indicates that coordination could be improved between the following municipalities and utilities:

- The Towns of Wallingford and Meriden. Better coordination between the two municipalities is needed to ensure water supply protection.
- The SCCRWA municipalities need to take a more active and responsive role in keeping the public up to date.

Improvements are also needed with coordination between the smaller utilities with each other and with municipalities. Small utilities do not have an organizational voice such as the Connecticut Water Works Association. Better coordination between the utilities themselves would also be beneficial in terms of efficiency and needs determination.

In addition, better intermunicipal coordination is needed in the South Central Area in order to ensure the protection of and adequate provision of water supplies. For example, little incentive currently exits for municipalities to consider downstream uses of water resources, other than the unenforceable "good neighbor" policy.

**TABLE 5-1**
**STATUS OF MUNICIPAL LAND-USE AND WATER SUPPLY PLANNING**

| Community | Available Planning Documents | Summary of Water Supply Planning Information |
|---|---|---|
| Ansonia | No current Plan of Development. | No water supply protection [redacted] development in Ansonia are difficult to determine. High density development is discouraged, but high demand for housing exists. Presently assessing feasibility of municipal takeover of Ansonia Derby Water Co. A half-acre or greater residential zoning within residential area. |
| Beacon Falls | No current Plan of Development (original dates from 1960's). | No water supply protection districts. Types of future development to include commercial and high density development. No water supply planning information available. Specific information can be obtained from Planning and Zoning Commission. |
| Bethany | No current Plan of Development. | No existing water supply protection zoning. SCCRWA owns watershed area protecting surface supplies. Continued medium density residential development anticipated. Some Conn. Water Co. ownership of watershed areas, continued management to protect surface supplies. |
| Branford | Plan of Development dated July 1972. | No water supply protection districts. Surface water supply landholdings owned by South Central Connecticut Regional Water Authority (SCCRWA). Majority of Town already served by SCCRWA, continued |

**TABLE 5-1 (Cont.)**
**STATUS OF MUNICIPAL LAND-USE AND WATER SUPPLY PLANNING**

| Community | Available Planning Documents | Summary of Water Supply Planning Information |
|---|---|---|
| Brandford (cont.) | | [redacted] |
| Cheshire | No Plan of Development dated approximately 1976, by Planning and Zoning Commission. | Zoning district protecting primary aquifer area in place. Continued residential development [redacted] |
| Chester | Last Plan of Development 1969, by Raymond May, Parish and Pine. May, Parish and Pine Plan of Development being updated. | Town encourages extension of Connecticut Water Co. (CWC) system. Increased residential development anticipated, low density. Water supply planning to be included in updated Plan of Development. Most of watershed areas are owned by CWC or Town, land uses being monitored by CWCo. Two-acre residential zoning within watershed area. |
| Clinton | Plan of Development being updated. Most recent Plan of Development dated July 1978. | Local land-use planning encourages high density industrial, commercial development. High growth rate anticipated. Town wants additional water main extension to service new development. Water supply protection districts not presently in place. Commercial district overlays secondary recharge |

**TABLE 5-1 (Cont.)**
**STATUS OF MUNICIPAL LAND-USE AND WATER SUPPLY PLANNING**

| Community | Available Planning Documents | Summary of Water Supply Planning Information |
|---|---|---|
| Clinton (cont.) | | area. Town is investigating sewerage options (80,000 square feet residential zoning, with water supply facilities allowed only as an exception, within watershed area). |
| Cromwell | Plan of Development by Town of Cromwell-Mid-state Regional Planning Agency. | Plan objectives include guidance of residential, commercial and industrial growth. Undeveloped land in all categories remains. Extended water service anticipated. Groundwater water supply protection district in place. |
| Deep River | Plan of Development 1972. | Slower growth rate than surrounding towns. Town wants to limit additional development by not providing public water or sewer. Allowed growth will be low density residential. Watershed management program needed. Two acres residential zoning within watershed area. |
| Derby | No existing Plan of Development. | No water protection zoning districts, much pressure to develop remaining open land. (Balance of undeveloped watershed land owned primarily by Ansonia Derby Water Co.). Presently assessing feasibility of municipal takeover of Ansonia Derby Water Co. Local water supply management program needed (20,000 square feet residential zoning within watershed area). |
| Durham | Plan of Development 1981. | Presently served by a few small public utilities. Majority of population serviced by private wells. Aquifer protection zoning measure in place. |

**TABLE 5-1 (Cont.)**
**STATUS OF MUNICIPAL LAND-USE AND WATER SUPPLY PLANNING**

| Community | Available Planning Documents | Summary of Water Supply Planning Information |
|---|---|---|
| East Haven | No Plan of Development information available. | No municipal water supply protection zoning [redacted] office/institution development indicated in SCCRWA Land-Use Plan, March 3, 1983. |
| Essex | Plan of Development 1971. Presently Plan of Development being revised by E.H. Lord-Wood Associates. | Anticipated low density residential growth, probably 4-500 acres. Water supply protection district in place. Plan of Development to include water supply planning measures. |
| Guilford | Plan of Development 1978, by Planning and Zoning Commission. | Surface and aquifer protection zoning in place. Additional commercial, industrial, residential development anticipated. Plan of Development encourages orderly extension of water system. Plan recommends water supply protection, including sewerage assessment (160,000 square feet residential zoning within watershed area). |
| Haddam | Currently updating Plan of Development. | Continued residential development. Aquifer source protection measures in place. Water supply management to be addressed in new Plan of Development. Primarily serviced by private water supplies, Town plans to continue with that policy. |

**TABLE 5-1 (Cont.)**
**STATUS OF MUNICIPAL LAND-USE AND WATER SUPPLY PLANNING**

| Community | Available Planning Documents | Summary of Water Supply Planning Information |
|---|---|---|
| Hamden | Plan of Development, 1981, by Planning and Zoning Commission. | Plan recommends aquifer source protection measures. Goal is to maintain residential character of Town. Plan recommends continued main extension. Aquifer Protection Zoning district currently in place. |
| Killingworth | Plan of Development, 1985 Planning and Zoning Commission with Connecticut River Estuary Regional Planning Agency. | Planning and Zoning Commission recommends regulating future land use based on the soil capability to support additional development. Recommends maintaining a minimum two-acre lot size for residential districts to protect water supplies. Town does not encourage development. Not presently served by public utilities. Aquifer protection zoning is also recommended in Plan of Development. Two-acre residential zoning within watershed area. |
| Madison | No Plan of Development available; recent zoning regulations serve as Plan of Development. | [redacted] supply protection zoning in place. |
| Meriden | Plan of Development, 1960; Parks/Open Space Plan, 1971; Land-Use Survey 1981 | No existing water protection districts. The remaining vacant land is zoned 33% residential, 8% industrial, and 6% commercial. Most of the remaining vacant land would be used for rural residential development. Water supply |

**TABLE 5-1 (Cont.)**
**STATUS OF MUNICIPAL LAND-USE AND WATER SUPPLY PLANNING**

| Community | Available Planning Documents | Summary of Water Supply Planning Information |
|---|---|---|
| Meriden (cont.) | | protection plan identified in Master Plan prepared for Meriden Public Utilities Commission, 1983 (40,000 square feet residential zoning within watershed area). |
| Middlefield | Plan of Development, 1978, currently updating. | Continue primarily residential development using individual rock wells. No aquifer protection zoning due to bedrock predominance. Remaining land has mixed zoning, agricultural and recreational land use to continue. Middletown owns watershed area in Middlefield. |
| Middletown | Plan of Development Mid-1970's. Currently updating Plan of Development. | Planning and zoning Commission updates land use annually. Thirty-five percent of the Town is presently undeveloped with the majority of the remaining land zoned residentially as of 12/86. Water supply management to be addressed in updated Plan of Development. Majority of watershed land owned in Middlefield. Aquifer protection zoning in place, however some existing uses are incompatible. |
| Milford | Plan of Development, June 1985. | No water protection zoning districts in place. SCCRWA provides service to majority of city, and is disposing of acreage in accordance with SCCRWA land-use plan. |
| Naugatuck | No Plan of Development. Presently pursuing additional planning staff | Sewer and water extensions anticipated for entire Town. Increased commercial, residential and industrial development is |

**TABLE 5-1 (Cont.)**
**STATUS OF MUNICIPAL LAND-USE AND WATER SUPPLY PLANNING**

| Community | Available Planning Documents | Summary of Water Supply Planning Information |
|---|---|---|
| Naugatuck (cont.) | | anticipated. No water supply zoning in place, CWC owns a portion of watershed land in Town. |
| New Haven | No Plan of Development available. | No water supply protection zoning in place. Over ninety-nine percent of city is serviced by SCCRWA. No significant landholdings related to water supply indicated in SCCRWA Land-Use Plan, 1983. |
| North Branford | Plan of Development, 1971. | Surface water supply protection district in place, some limited uses in local "Official Inland Wet[redacted] |
| North Haven | Plan of Development, 1982, by Frederick P. Clark, Assoc. | Goal of the Plan of Development is to lower density. Continued absence of public water is to be maintained. Aquifer protection zoning is in place. Very few landholdings of water supply areas, no major surface supplies. |
| Old Saybrook | Plan of Development being updated. | Town goals include extension of water service to developed areas. Additional land to be developed is to be low density residential. Aquifer protection regulations in place, current land use near well needs rezoning. |
| Orange | Plan of Development, June 1985. | [redacted] |

**TABLE 5-1 (Cont.)**
**STATUS OF MUNICIPAL LAND-USE AND WATER SUPPLY PLANNING**

| Community | Available Planning Documents | Summary of Water Supply Planning Information |
|---|---|---|
| Oxford | Plan of Development currently being updated. | Has a large amount of undeveloped industrially zoned land. Present population is low, Town intends to encourage industrial and residential land development. |
| Portland | Plan of Development dates from 1960's. | Historical development pressure has been less than surrounding towns. Surface water supply is primary, with back-up well supply. Currently assessing new groundwater supplies. Watershed land owned by Town, no aquifer protection zoning. Growth will be mixed, residential and industrial. |
| Prospect | No Plan of Development available. | Development is primarily residential. No public sewerage, current land-use policy is to encourage development. Some ownership of watershed areas by CWC and SCCRWA. No existing watershed protection districts. Two-acre residential zoning within watershed area. |
| Seymour | Currently updating Plan of Development by Raymond, Parish, Pine & Weiner, Inc. | No existing water supply protection zoning. Water supply management to be evaluated is pending Plan of Development. Development trends will be primarily residential, there is much pressure to supply more housing. Zoning includes 25,000 to 65,000 square feet for Controlled [redacted] |

**TABLE 5-1 (Cont.)**
**STATUS OF MUNICIPAL LAND-USE AND WATER SUPPLY PLANNING**

| Community | Available Planning Documents | Summary of Water Supply Planning Information |
|---|---|---|
| Wallingford | Plan of Development update July 1983 by Raymond, Parish, Pine and Weiner, Inc. | Goal of Plan of Development is to guide continued growth including additional residential, industrial, and commercial development. Goal is to protect surface and groundwater supplies. Surface and groundwater supply protection zoning districts are in place. Developments will be served by public utilities when possible. |
| Westbrook | Plan of Development, 1982, by Edmund J. | Aquifer protection regulations in place. Goal of Plan of Development is to preserve Town's rural character. |
| West Haven | No Plan of Development available; presently revising zoning regulations. | [redacted] will continue to be managed to maintain public water supply. |
| Woodbridge | No Plan of Development available. Most recent Plan dated 1974. | Zoning district in place providing use restrictions on inland wetlands and watercourses. Water supplies in Woodbridge also supply West Haven. No groundwater source protection measures. [redacted] |

**Sources of Information: (over)**

**Sources of Information:**

Valley Regional Planning Agency

Central Naugatuck Valley Region Council of Elected Officials

South Central Connecticut Council of Governments

Connecticut River Estuary Regional Planning Agency

Midstate Regional Planning Agency

Water Supply Master Plan - Guilford, Chester Division Connecticut Water Company, Metcalf and Eddy, 1987.

Water Supply Master Plan - Naugatuck Division Connecticut Water Company, Metcalf and Eddy, 1987.

Land-Use Plan, South Central Connecticut Regional Water Authority, March 3, 1983.

Comprehensive Water Supply Plan, Ansonia Derby Water Company, Roald Haestad, Inc., 1987.

Wallingford Plan of Development Update, Phase 1 and 2 Summary Report, July, 1983, Raymond, Parish, Pine and Weiner, Inc.

TABLE 5-2
STATUS OF UTILITY PLANNING

| Utility | Recent Planning Documents | Summary of Planning Objectives |
|---|---|---|
| Amston Lake Beseck Water Co. | Individual Water Supply Plan, (currently being prepared.) | |
| Ansonia Derby Water Co. | "Comprehensive Water Supply Plan", Roald Haestad, Inc., 1987 "Diversion Permit Application, [redacted] Inc., 1985. | o [redacted]<br>o General improvements to improve efficiency and reliability to reduce losses and unaccounted-for water.<br>o DEP-required dam repairs.<br>o [redacted] |
| Beechwood Mobile Home Park | Water Supply Study - Angus MacDonald. | o No expansion is planned. |
| Bridgeport Hydraulic Company | [redacted] and McKee, 1983. "Individual Water Supply Plan," Hazen and Sawyer, 1987. | o General improvements/rehabilitation relating to compliance with regulatory standards and increase in demand.<br>o Continued evaluation and assessment of groundwater supplies.<br>o Comprehensive Aquifer Protection Plan recently presented to Town officials. |
| Connecticut Valley Hospital | [redacted] | o Continued maintenance.<br>o No expansion is planned.<br>o Treatment plant under construction, to be completed in 1989. |
| Connecticut Water Company (Guilford-Chester Division) | "Water Supply Master Plan, Volumes 1 and 2", Metcalf and Eddy, 1987. | o System improvements including development of additional sources of supply in Guilford and Chester systems, reinforcement of mains, Killingworth dam project, and additional storage tank in Essex.<br>o Proposed connection of Guilford and Chester systems.<br>o [redacted] |

TABLE 5-2 (Cont.)
STATUS OF UTILITY PLANNING

| Utility | Recent Planning Documents | Summary of Planning Objectives |
|---|---|---|
| Connecticut Water Company (Naugatuck Division) | "Water Supply Master Plan", Metcalf and Eddy, 1987. | o System improvements to alleviate pressure problems, provide treatment, extend service area, and provide additional supply.<br>o [redacted] |
| Cromwell Fire District | "Water Supply Plan", Camp, Dresser and McKee, Inc., 1987. | o General improvements to improve efficiency include pump replacement and distribution system improvements.<br>o Groundwater testing program proposed.<br>o Construction of new wells and pumping stations proposed to meet demand.<br>o [redacted] |
| Green Springs Water Company | Connecticut Dept. of Health Services (DOHS) Inspection Reports. | o Planning consists of one service expansion proposal. |
| Heritage Cove Condominiums | Connecticut DOHS Inspection Reports. | o Planning limited to continued maintenance, no expansion. |
| Heritage Village Water Company | "Individual Water Supply Plan" FGA Services, Inc., 1987. | o General maintenance and system improvements include: facility for storage of materials, meter testing, additional storage and pumping facilities eventually.<br>o Additional well to be constructed in 1988 or 1989. |
| Idleview Mobile Home Park | Connecticut DOHS Inspection Reports. | o Planned interconnection with Connecticut Water Company - Naugatuck Division. |
| Meriden Water Department | "Water Supply Plan", Maguire Group, Inc., 1987, "Water Improvements Program" (Master Plan), C.E. Maguire, 1983 "Reservoir Acquisition Study", 1987. | o Planning includes assessment of new water supplies, possible interconnection with South Central Connecticut Regional Water Authority (SCCRWA), metering improvements, leakage surveys, increase yield of existing supplies.<br>o Continued distribution system improvements and expansion. |

TABLE 5-2 (Cont.)
STATUS OF UTILITY PLANNING

| Utility | Recent Planning Documents | Summary of Planning Objectives |
|---|---|---|
| Metropolitan District Commission | "Water System Development Analysis" FGA, 1981 (Phase I), "Phase II" FGA, 1982 "Phase III", FGA, 1984 (Currently developing Strategic Plan). | o General rehabilitation and improvements.<br>[redacted]<br>o Pump stations and transmission mains. |
| Middletown Water Department | "Forest Management Plan", Timberline Forest Services, 1983 "Distribution System Analysis" Maguire Group, 1987 "Water Supply Plan", Middletown Water Dept. 1987. Camp Dresser & McKee, Inc. System Study 4/84. | o Plan to supplement supply through well construction.<br>o Additional storage and distribution system improvements.<br>o Proposed expansion of water treatment plant.<br>o General system expansion and maintenance. |
| New Lakeville Convalescent Home | Connecticut Department of Health Services Inspection Report. | o Possible interconnection planned with Waterbury Water Department. |
| Portland Water Works | "Portland Water Study", A.R. Lombardi, 1983. "Water Supply Plan", N.L. Jacobson Associates. | o Proposed additional groundwater supplies.<br>o Planned system extensions.<br>o Proposed system improvements to comply with regulatory requirements. |
| South Central Connecticut Regional Water Authority | "Land-Use Plan" South Central Connecticut Regional Water Authority, March, 1983. "Safe Yield Analyses of Surface Sources of Supply" Malcom Pirnie, 1987, "Water Main Restoration and Replacement Decisions", SCCRWA 1985. "Water Supply Plan" March 1988. | o Continued maintenance of SCCRWA land to protect drinking water supplies, protect outstanding national and historic features, provide recreational opportunities, etc.<br>o Continued limited disposition of some parcels to maintain water rates and to finance system improvements.<br>o Planning priority is water supply protection. |

TABLE 5-2 (Cont.)
STATUS OF UTILITY PLANNING

| UTILITY | RECENT PLANNING DOCUMENTS | SUMMARY OF PLANNING OBJECTIVES |
|---|---|---|
| South Central Connecticut Regional Water Authority (Cont.) | "Forecast of Water Consumption for SCCRWA 1986-2036" by Wilbur Smith Assoc., August 1986 | |
| Southington Water Dept. | "Water Supply Plan" Hayden/Wegman 1987. "Water Supply Master Plan" FGA, 1983. | o Proposed additional wells, additional treatment, continued rehabilitation and maintenance, additional storage.<br>o Proposed land acquisition for well field development.<br>o Proposed construction of filtration plant.<br>o Continued extension of system. |
| Thistle Rock Development Co. | Connecticut DOHS Inspection Reports. | o Planned sale of assets to Connecticut Water Company. |
| Wallingford Water Division | "Water Supply Plan" Whitman & Howard, Inc. 1988 "Report on Water Supply" Whitman & Howard, Inc. 1987 "Water Distribution System Analysis" Anderson Nichols, 1982. | o Continued general improvements and maintenance for system efficiency.<br>o Proposed water treatment plant and additional well treatment.<br>o Long-term proposed, additional surface supplies.<br>o Additional storage and system extensions. |
| Waterbury Water Bureau | "Comprehensive Water Report" Camp Dresser and McKee, 1981. "Water Supply Plan" (on-going) HRP Assoc. | o Planned interconnection with Town of Wolcott; construction of filtration plant.<br>o Continued general maintenance and improvements. |

Sources of Information

Individual Utility Questionnaires
Individual Utility Water Supply Plans
Connecticut Department of Health Services "Update of Utility Engineering Reports."

# SECTION VI.

# SUMMARY OF KEY WATER SUPPLY ISSUES

## VI. SUMMARY OF KEY WATER SUPPLY ISSUES

This section describes key water supply issues as identified by the South Central Water Utility Coordinating Committee (WUCC). It should be noted that many of these problems are not unique to the South Central Area, some have been experienced by other WUCC's. However, other issues such as the Quinnipiac River Basin allocation problem, are unique to this area. Members of the WUCC identified water supply issues in their Individual Water Supply Plans, and questionnaires. In addition, state agencies provided comments in correspondence and at WUCC meetings. These comments are described below along with other issues that became evident at a subcommittee meeting held to discuss and summarize key issues in the South Central Area.

### A. 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 the majority of the fourteen 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.

## B. 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.

## C. POPULATION PROJECTIONS

The WUCC has 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. Although there are potential problems associated with the use of any population projections, use of the opm projections do provide a consistent base for all of the water supply management areas in the state.

## D. WATER QUALITY ISSUES

Several utilities in the south central area 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 the need for source abandonment. Approximately 21 utilities in the south central area have experienced aesthetic-type problems. contamination problems requiring source abandonment or treatment have been experienced by 14 utilities.

The Towns of Meriden, Wallingford, Naugatuck, Durham, Guilford, Hamden, Middlefield, and Clinton have utilities which have experienced water supply aesthetic and contamination problems resulting in financial burdens and/or limited supply availability (see Appendix B). The numerous existing interconnections in the South Central Area and the potential for additional interconnections can help offset potential shortages due to water contamination problems. Also, there is a strong possibility that future water quality problems will develop in some parts of the area. The continued rapid pace of economic growth has often stressed water supplies resulting in current and an increased potential for water quality problems.

Surface and groundwater supplies are subject to a variety of contaminants that cause water quality degradation. Common water quality problems in the south central area include elevated sodium levels, bacterial contamination, volatile organic compound contamination, and elevated levels of manganese and iron. Public health issues and the aesthetic aspects of problems associated with water quality degradation is a significant concern of wucc participants. In addition, land use, source protection, treatment costs, and regulatory issues were discussed.

## E. GENERAL LAND-USE ISSUES

### 1. Land-use and Water Supply Protection

The South Central WUCC members expressed concern regarding areawide land-use practices and insufficient water supply protection measures. Inappropriate land uses in the vicinity of water supplies has 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 south central area. For example, municipal zoning in many of the south central communities allows industrial development in productive aquifer areas and/or surface water supply watershed. Although a number of the south central communities have enacted source protection measures in the form of restrictive zoning, the remaining towns must act to address land-use requirements in the vicinity of water supplies if the potential for contamination is to be minimized.

### 2. Utility-owned Lands

Large tracts of property surrounding surface supplies are owned by water utilities in the South Central Area.

WUCC members consider water utility land ownership a key issue for several reasons.

Utility-owned lands serve to 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. Other issues, such as the high cost of acquiring additional protective lands around new well sites, the high cost of purchasing existing utility owned lands and the need for additional capital to finance water system improvements were also highlighted by WUCC members.

In addition, the position of the DPUC on this issue is defined as follows: "P.A. 88-354 requires that the DPUC use an accounting method for the net proceeds of sales of class iii land, as defined in Section 25-37c of the connecticut general statutes, such that, if at any time, the land has been in the water company's rate base, the DPUC must equitably allocate the benefit of net proceeds of the land sales between the ratepayers and the shareholders of the company."

## F. COORDINATION BETWEEN UTILITIES/MUNICIPALITIES

Although considerable coordination already exists between some utilities and municipalities in the South Central Area, improvement is needed to ensure appropriate water supply

management on an areawide basis. For example, the Bridgeport Hydraulic Company, the Ansonia Derby Water Company, the Connecticut Water Company, and the South Central Regional Water Authority all have ongoing coordination programs with the communities they serve. However, action (or "consideration") by many municipalities is needed to respond to utility recommendations regarding water supply protection and management.

Better coordination between neighboring communities is also needed to ensure comprehensive water resource management. Improvement of municipal and utility coordination with respect to water supply management is a key issue in the South Central Area. Frequently, coordination between municipalities and/or water utilities regarding water supplies is not mutually beneficial. For instance, there is little incentive for an upstream (or non-user community) to protect water supplies that will benefit a downstream user. The downstream user community gets the water and the related ability to grow and increase its tax base while the upstream community often must restrict its growth by zoning measures etc. to protect a source from which it may or may not receive water. There is a need for incentives other than the "good neighbor" policy.

## G. REGULATORY ISSUES

The utilities identified a number of issues related to the state and federal regulatory process. Regulatory requirements concerns and problems associated with state agency assistance are summarized below.

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 as a major concern. These amendments have created a potential for considerable additional costs for area utilities in the areas of testing, monitoring and treatment requirements. In addition, the utilities have expressed a need for increased state support in the areas of financial assistance and technical expertise to help them cope with the new requirements.

The WUCC members 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. As an example, large utilities are required to generate "water conservation plans" for three different state agencies: (1) the Department of Public Utility Control, (2) the Department of Health Services (required in Individual Water Supply Plans), and (3) the Department of Environmental Protection. Also, two separate agencies, the DPUC and DOHS both require the preparation of emergency and contingency plans by individual utilities. Regarding agency directives that affect utilities, there are conflicting priorities between agencies regarding water supply and wasteload allocation.

Utilities expressed a 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 highlighted as a major concern.

Concern was also expressed regarding inconsistent public utility regulatory requirements. Operational standards that apply to private, investor-owned utilities are not always applied to the municipally-owned utilities. This inequity was identified as a concern by several WUCC members.

Several WUCC members also identified the need for technical and/or managerial guidance to assist them in the proper operation and maintenance of their systems. Many small utilities currently lack the staff and/or financial resources to adequately address the regulatory requirements they face. Also, more active participation by state agencies and advocacy on behalf of utility concerns were both described as current needs. The need for a resource pool providing technical/managerial assistance and information was expressed.

## H. SUPPLY MANAGEMENT AND ALLOCATION ISSUES

Water supply management and allocation issues were identified as primary concerns. A partial list of related topics includes the following:

- o availability of water supplies
- o competition between utilities for water supplies
- o competition between types of uses for water resources
- o interbasin transfer and basin management
- o demand management, conservation, and growth restriction
- o upstream and downstream use considerations

The availability of water resources is a key issue in the South Central Area. 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.

The DEP has identified the following list of river basins in the South Central Study Area that have present or potential water resource problems/issues.

Quinnipiac River (5200)

Patton Brook

Sodom Brook (5205)

Harbor Brook (5206)

Honey Pot Brook

Eight Mile River (5201)

Tenmile River (5202)

Broad Brook (5204)

Branford River/Brandord Harbor (5111)

Mill River (5302)

West River (5110)

New Haven Harbor

Hammonassett River (5106)

Menunketesuck River (5103)

Wepawaug River (5307)

**NOTE**

Numbers following basin names
are basin identification numbers.

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 vs. 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 South Central Area.

Resolution of the 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.

Finally, upstream and downstream water use needs have been identified as concerns in the South Central Area. 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. Regulatory incentives such as the Water

Diversion Policy Act which serve to more adequately address these issues were identified as an area the state agencies should improve upon.

## I. SYSTEM EFFICIENCY

The issue of system efficiency, especially with regard to pipeline leakage and storage capacity was raised during the preparation of the Assessment. The varying size, age and condition of the area's water distribution systems are viewed as a situation that needs to be dealt with on an individual basis. However, the need for additional supplies can sometimes be reduced by improvements in system efficiency.

## J. SMALL UTILITIES

Comments were also received with regard to the long-term viability of some of the area's small utilities. Concerns were raised with regard to 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 South Central Area. The actual member 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.

## K. 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 more than one 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 agencies 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.

Problems which are best solved at the regional level should be more thoroughly addressed through the existing regional planning infrastructure in combination with the Coordinated Water System Planning Process. We believe additional funding and prioritization is required to initiate functional regional water supply planning efforts on the part of regional planning agencies throughout the area.

## L. ADEQUACY OF SUPPLIES

The majority of the South Central Areas 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. Appendix C of this report also provides a comparison of current average daily demand and available water supplies for each of the 64 utilities in the South Central Area.

Because the status of the larger utility's supplies is of greater regional significance in terms of population affected, a comparison of available water vs. demand for utilities serving more than 1000 people in the management area is provided in Figures 6-1, 6-2, and 6-3. Information for these comparisons was derived from the individual utility's water supply plans.

"Available water" is defined in the context of the Water Supply Assessment as the quantity of water immediately available for use as a supply, i.e., no additional treatment or other capital improvements are required prior to utilization. As can be seen by reviewing Figures 6-1, 6-2 and 6-3, available water is compared to demand on a utility by utility basis. Both current and future demand projections are compared to existing and projected supplies and presented to determine both the existing and future status of the large utility's supply adequacy. It must be noted that all figures illustrate only the current volumes of available water. All utilities that are projecting increases in demand are evaluating methods of addressing possible deficits, and have described their future supply needs in their individual plans.

Figures 6-1 and 6-3 show that all of the large systems in the area are currently able to meet average daily demand. In evaluating the adequacy of supplies in meeting peak demand, it

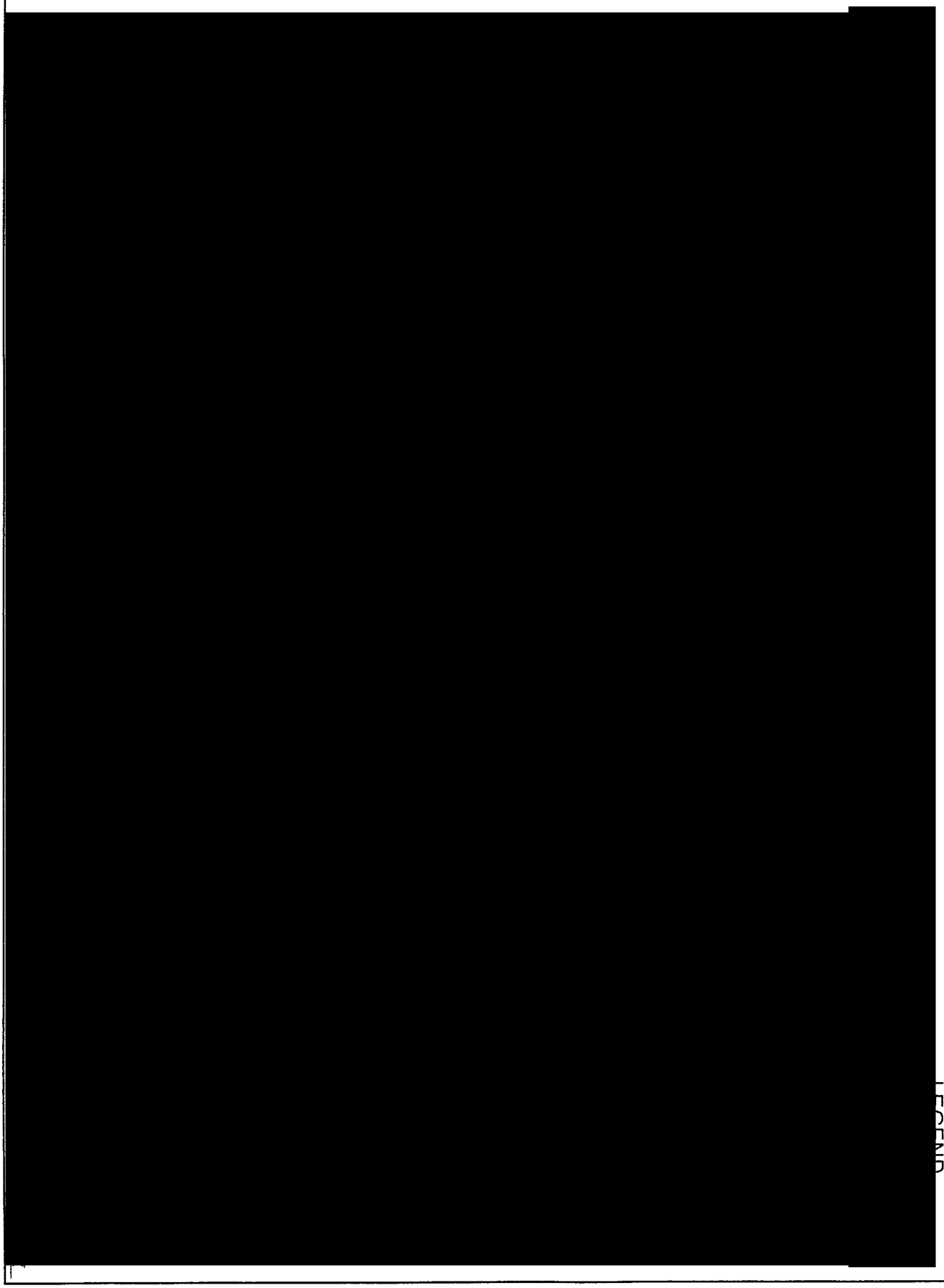
can be seen that several systems currently are experiencing apparent deficiencies. It should be noted, however, that systems that are primarily dependent on groundwater are more severely impacted by peak demand requirements. Systems that are primarily dependent on surface supplies are generally able to temporarily reduce surface impoundment storage volumes on a periodic basis to meet demand requirements. See Table 2-3 for a summary of groundwater and surface supplies per utility.

The overall feasibility of developing additional supplies in the South Central Area is dealt with in varying levels of detail in the individual supply plans. Further analysis of this subject is anticipated during the remainder of the planning process. In summary, an assessment of the adequacy of existing supplies on an areawide basis indicates that available supplies are currently adequate throughout the majority of the area; however, there are several utilities in the area that currently have difficulty meeting the estimated peak demand with 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, the majority 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 average daily demand in the short term but expansion of these systems would frequently require the development of additional sources.

Figures 6-1, 6-2, and 6-3 do not provide information regarding the Derby Water Company, Heritage Village Water Company, Metropolitan District Commission, the Southington Water Department, and the Waterbury Water Bureau. Because these systems serve either none or very few people in the WUCC area, they are not representative of the large utilities in the area.

Volume of Water in Million Gallons Per Day



[redacted]

[redacted]

## FIGURES 6-1, 6-2, 6-3

## REFERENCE NOTES

(1) Available water is defined as sources of supply immediately useable, i.e. requiring no additional treatment etc. prior to utilization.

(2) Maximum daily demand derived from individual water supply plans where available. When data not available, a factor of 1.5 was applied to the average daily demand figure to derive the maximum.

(3) Supply improvements information was derived from Individual Supply Plans.

(4) Connecticut Valley Hospital information regarding projected demand not available.

# APPENDIX A

# SUMMARY OF UTILITIES

WATER SUPPLY ASSESSMENT

APPENDIX A

SUMMARY OF UTILITIES

| NAME OF UTILITY | TOWNS SERVED | 1987 RES.POPULATION SERVED | SERVICE AREA DESCRIPTION | COMMENTS |
|---|---|---|---|---|
| AARON MANOR HOME | CHESTER | 78 | 78 BED NURSING HOME FACILITY, 15 STAFF,2 SERVICES | |
| ANSONIA DERBY WATER CO. | ANSONIA,DERBY SEYMOUR | 30,747 | SUPPLY SERVICING RESIDENTIAL, INDUSTRIAL COMMERCIAL, AND FIRE NEEDS. | |
| BEECHWOOD MHP | KILLINGWORTH | 750 | TWO WATER SYSTEMS SERVICING A MOBILE HOME PARK. WITH 300 TRAILERS. | |
| BERNICES COURT | GUILFORD | 29 | SYSTEM SERVES 10 MOBILE HOMES AND ONE HOUSE. | |
| BESECK LAKE WATER CO. | MIDDLEFIELD | 276 | SUPPLIES 69 RESIDENTIAL SERVICES BORDERING ON BESECK LAKE. | POSSIBLE SALE OF BESECK WATER CO. TO THE AMSTON LAKE WATER CO. |
| BITTERSWEET RIDGE | MIDDLEFIELD | 40 | SYSTEM SERVES 16 RESIDENCES. | NO EXPANSION IS ANTICIPATED. |
| BLUE TRAILS ASSOC. | NORTH BRANFORD | 216 | SYSTEM SUPPLIES 54 HOMES IN NORTH BRANFORD AND DURHAM. | |
| BRADLEY HOME | MERIDEN | 151 | 86 BED, 65 STAFF PRIVATE INSTITUTIONAL FACILITY. | APPROVED TO INTERCONNECT WITH THE MERIDEN WATER DEPT., SERVED BY PRIVATE WELL AND MERIDEN, 50/50 |
| BRIDGEPORT HYDRAULIC CO. | BEACON FALLS<br>OXFORD<br>SEYMOUR<br>TOTAL | 2206<br>356<br>11,276<br>13,838 | THE ENTIRE SYSTEM CONSISTS OF 3 GEOGRAPHICAL DIVISIONS. THE MAIN SYSTEM,VALLEY AND LITCHFIELD SYSTEMS. VALLEY DIVISION SERVES SOUTH CENTRAL AREA. SERVICES RESIDENTIAL,COMMERCIAL, INDUSTRIAL AND OTHER UTILITIES. | |
| CEDAR GROVE MHP | CLINTON | 25 | MOBILE HOME PARK - 10 TRAILERS | |
| CONN.VALLEY HOSPITAL | MIDDLETOWN | 2200 | STATE OPERATED HOSPITAL. SERVING 4 STATE INSTITUTIONS. | CVH IS UNDER JURISDICTION OF DEPT. OF MENTAL HEALTH. |
| CONN. WATER CO. CHESTER SYSTEM | CHESTER<br>DEEP RIVER<br>ESSEX<br>TOTAL | 845<br>1529<br>2336<br>4710 | SYSTEM SERVICES SEASONAL AND YEAR-ROUND RESIDENTS. RES.,COMMERCIAL, INDUSTRIAL USERS. | |

APPENDIX A (CONTINUED)

| NAME OF UTILITY | TOWNS SERVED | 1987 RES.POPULATION SERVED | [redacted]ENCY ER IED | SERVICE AREA DESCRIPTION | COMMENTS |
|---|---|---|---|---|---|
| CONN.WATER CO. GUILFORD SYSTEM | GUILFORD | 4708 | S | SYSTEM SERVES SEASONAL AND YEAR-ROUND RESIDENTS. RES.,COMMERCIAL, AND INDUSTRIAL USERS. | |
| | MADISON | 7046 | | | |
| | CLINTON | 6058 | | | |
| | OLD SAYBROOK | 8212 | | | |
| | WESTBROOK | 3837 | | | |
| | TOTAL | 29,861 | | | |
| CONN.WATER CO. NAUGATUCK | NAUGATUCK | 16,513 | S | SYSTEM SUPPLIES RESID,COMMERCIAL, AND INDUSTRIAL USERS. | |
| | BEACON FALLS | 171 | | | |
| | BETHANY | 90 | | | |
| | PROSPECT | 210 | | | |
| | TOTAL | 16,984 | | | |
| COUNTRY MANOR | PROSPECT | 150 | S | 150 PATIENTS AND 60 STAFF, ONE SERVICE, HEALTH CARE FACILITY. | |
| CRESTVIEW CONDO ASSO. | CHESHIRE | 84 | | TWO CONDOMINIUM COMPLEXES, 21 SERVICE CONNECTIONS. | |
| CROMWELL FIRE DIST. WATER DEPT. | CROMWELL | 9500 | S | CURRENTLY SERVES APPROX. 85% OF TOWN'S POPULATION, RESIDENTIAL AND COMMERCIAL. | INTERCONNECTION WITH THE TOWN OF BERLIN. |
| DERBY WATER CO. | DERBY | 826 (ALSO INCLUDED IN ANS (DERBY POP.SERVED) | | PUBLIC WATER COMPANY SERVING RESIDENTIAL AND COMMERCIAL DEVELOPMENT AND 300 RESIDENTIAL CUSTOMERS. (15 COMMERCIAL CONNECTIONS). 320 COSTUMERS, PRIMARILY RESIDENTIAL | RECEIVES ENTIRE SUPPLY OF WATER FROM ANSONIA DERBY WATER CO, ALL FIGURES FOR DERBY ARE ALSO INCLUDED IN ANWCo TOTALS. |
| DESCROCHER APT. | MIDDLEFIELD | 25 | | EXISTING SUPPLY SERVICING 8 HOMES ON LAKE BESECK. | |
| DOGWOOD ACRES | DURHAM | 35 | | INTERMEDIATE CARE FACILITY. | |
| DURHAM CENTER WATER CO. | DURHAM | 154 | | RESIDENTIAL AND COMMERCIAL CUSTOMERS, WITH 2 MILES OF MAIN. | |
| ED'S TRAILER PARK | BETHANY | 138 | | SUPPLY SERVES 55 MOBILE HOMES AND OFFICE. | |
| EVERGREEN TRAILER PK. | CLINTON | 255 | | TRAILER PARK SERVICING 102 TRAILERS. | NO EXPANSION IS FEASIBLE. |
| GENDRON'S VALLEY MHP. | NAUGATUCK | 195 | | 78 MOBILE HOMES. | 25 NEARBY HOMES SERVED BY CONN. WATER COMPANY,NAUGATUCK DIV. |
| GREEN SPRINGS | MADISON | 105 | | 25 FOUR-BEDROOM HOMES. | POSSIBLE FUTURE DEEDING OF ASSETS TO CONN.WATER CO. |
| GROVE SCHOOL | MADISON | 94 | | 65 RESIDENTS, 29 STAFF AT INSTITUTION TYPE FACILITY. | |
| HADDAM ELDERLY HOUSING | HADDAM | 38 | | 22 SERVICES, 13 - 1 BEDROOM, 6 - EFFICIENCY 3 HANDICAPPED | |

APPENDIX A (CONTINUED)

| NAME OF UTILITY | TOWNS SERVED | 1987 RES. POPULATION SERVED | SERVICE AREA DESCRIPTION | COMMENTS |
|---|---|---|---|---|
| HAPPY ACRES | MIDDLEFIELD | 130 | RESIDENTIAL SUPPLY SERVING 30 PEOPLE YEAR ROUND, 100 PEOPLE IN SUMMER. MAX. POPULATION SERVED 130. | |
| HARMONY ACRES MHP | PROSPECT | 393 | MOBILE HOME PARK WITH 159 MOBILE HOMES, 159 SERVICES. | |
| HAWKSTONE TERRACE CORP. | OXFORD | 56 | RESIDENTIAL WATER SUPPLY. | PRIOR TO EXPANSION, YIELD TEST MUST BE PERFORMED, PER DOHS REQUIREMENT. |
| HEMLOCK APTS. | ESSEX | 96 | 24 UNIT APARTMENT COMPLEX HOUSED IN SIX BUILDINGS, 4 UNITS APIECE. | |
| HENRY'S TRAILER PK. | WALLINGFORD | 65 | TRAILER PARK FACILITY. | |
| HERITAGE COVE CONDOS | ESSEX | 300 | CONDOMINIUM COMPLEX CONSISTING OF 104 TWO-BEDROOM UNITS. | NO SYSTEM EXPANSION IS FEASIBLE. |
| HERITAGE VILLAGE | OXFORD, SOUTHBURY MIDDLEBURY | 7144 | COMMERCIAL AND RESIDENTIAL SERVICES IN THREE TOWNS. OXFORD ONLY TOWN IN SOUTH CENTRAL AREA. | FUTURE EXPANSION IS ANTICIPATED IN ALL TOWNS. ONLY 10 RESIDENTIAL CUSTOMERS SERVICED IN S.C. AREA, 5 INDUST.,2 COMMER. |
| HIGHLAND HEIGHTS | PROSPECT | 122 | SYSTEM SUPPLIES SERVICE TO 34 HOMES. | CONN. WATER CO. MAINS WITHIN 100 FEET OF SYSTEM. |
| HILLVIEW WATER | CHESHIRE | 36 | RESIDENTIAL SYSTEM SUPPLYING 12 SERVICES. | |
| IDLEVIEW MHP | NAUGATUCK | 174 | 58 MOBILE HOMES. | |
| KRAYESKE WATR SUPP. | GUILFORD | 50 | COMMUNITY SUPPLY FOR 7 SINGLE FAMILY HOMES. | |
| LAKESIDE WATER CO. | GUILFORD | 27 | RESIDENTIAL SUPPLY SERVING 9 UNITS. | |
| LAKE GROVE AT DURHAM | DURHAM | 150 | RESIDENTIAL SCHOOL SERVING 100 PERSONS PLUS STAFF IN 15 BUILDINGS. | |
| LEETES ISLAND | GUILFORD | 40 | DRINKING WATER SUPPLY FOR 25-40 SUMMER RESIDENTS. | |
| LEGEND HILL CONDOS. | MADISON | 270 | RESIDENTIAL WATER SUPPLY, 90 UNITS. | |
| LORRAINE TERRACE WATER CO. | MIDDLETOWN | 20 | RESIDENTIAL SUPPLY SERVING 10 HOMES. | FUTURE INTERCONNECTION WITH MIDDLETOWN WATER DEPT. IS ADVISED BY DOHS. PRESENT OWNERS DESIRE TO DISCONTINUE OPERATIONS, AND PLACE COMPANY IN RECEIVERSHIP. |

APPENDIX A (CONTINUED)

| NAME OF UTILITY | TOWNS SERVED | 1987 RES.POPULATION SERVED | SERVICE AREA DESCRIPTION | COMMENTS |
|---|---|---|---|---|
| MEADOWBROOK REST HOME | ESSEX | 30 | | |
| MERIDEN WATER DEPT. | BERLIN,CHESHIRE MERIDEN,SOUTHINGTON WALLINGFORD | 59,100 | SYSTEM SUPPLIES RES.,COMMERCIAL,INDUST., PUBLIC INSTITUTIONS AND MISC. SERVES WALLINGFORD IN ADDITION TO MERIDEN, WITH MINOR POPULATION. | |
| METROPOLITAN DISTRICT COMMISSION | CROMWELL | 20 | MINOR DISTRIBUTION AREA CONSISTING OF ONE RESIDENTIAL STREET IN CROMWELL. NON-MEMBER COMMUNITY. | |
| MIDDLETOWN WATER DEPT. | MIDDLETOWN MIDDLEFIELD | 34,300 | SYSTEM SERVICES CUSTOMERS WITHIN MIDDLETOWN CITY LIMITS. 8350 RETAIL CUSTOMERS, INTENDS TO INCREASE NUMBER OF SERVICE CONNECTIONS. | |
| MILL POND ELDERLY HSG. | DURHAM | 49 | ELDERLY HOUSING DEVELOPMENT, 23 1-BEDROOM UNITS, 1 2-BEDROOM UNIT. | |
| MOUNT ST.JOHN SCHOOL | DEEP RIVER | 144 | SUPPLY WATER TO 72 STUDENTS, 72 STAFF. | |
| NEW LAKEVIEW CONV.HOME | CHESHIRE | 270 | HOSPITAL FACILITY, 210 BEDS PLUS 60 SHIFT STAFF. 1 SERVICE CONNECTION | |
| NOB HILL APTS. | CLINTON | 30 | RESIDENTIAL APARTMENT COMPLEX. | |
| NORTHFORD GLEN CONDOS. | NORTH BRANFORD | 84 | CONDOMINIUM COMPLEX TWENTY-ONE, THREE BEDROOM UNITS. | |
| OUR LADY OF GRACE MON. | GUILFORD | 45 | SERVES ONE FACILITY HOUSING 45 PERSONS. | |
| PORTLAND WATER DEPT. | PORTLAND | 5860 | SUPPLY SERVICING WESTERN AND SOUTH-WESTERN PORTION OF PORTLAND. RESIDENTIAL, COMMERCIAL AND INDUSTRIAL USERS. | |
| QUONNIPAUG PARK WATER SUPPLY | GUILFORD | 456 | CONDOMINIUM COMPLEX IS SERVED BY TWO INDEPENDENT SYSTEMS. 188 UNITS, 108 - BEDROOM. 80 - 2 BEDROOM. | |
| RIDGEWOOD HILL CONDOS. | DEEP RIVER | 72 | 24 2 BEDROOM, FOUR DISTINCT WATER SYSTEMS SERVING THE COMPLEX, 1-2 PEOPLE PER UNIT. | |
| RIVERCREST WATER CO. | PORTLAND | 72 | RESIDENTIAL SYSTEM SERVING 18 HOMES. | |

APPENDIX A (CONTINUED)

| NAME OF UTILITY | TOWNS SERVED | 1987 RES.POPULATION SERVED | SERVICE AREA DESCRIPTION | COMMENTS |
|---|---|---|---|---|
| SOUTH CENTRAL CT REGIONAL WATER AUTH. | BETHANY<br>BRANFORD<br>CHESHIRE<br>EAST HAVEN<br>HAMDEN<br>MILFORD<br>NEW HAVEN<br>N.BRANFORD<br>N.HAVEN<br>ORANGE<br>WEST HAVEN<br>WOODBRIDGE<br>TOTAL | 16<br>24,793<br>19,593<br>25,643<br>49,962<br>52,000<br>127,080<br>3730<br>20,867<br>8,839<br>53,000<br>997<br>386,520 | THE WATER SYSTEM SERVED 386,520 INDIVIDUALS IN TWELVE MUNICIPALIES IN THE SOUTH CENTRAL AREA OF THE STATE. SERVICE AREA INCLUDES ALL OF PORTIONS OF WWNEW HAVEN BRANFORD, HAMDEN, MILFORD, N.BRANFORD, CHESHIRE, EAST HAVEN, WEST HAVEN, BETHANY, N.HAVEN, AND WOODBRIDGE WHICH HAVE AN AGGREGATE POPULATION OF 421, 421,800 PEOPLE SCCRWA ALSO OWNS LAND IN GUILFORD, KILLINGWORTH, MADISON, AND PROSPECT, ALTHOUGH NO COSTUMERS, ARE SERVERED IN THOSE MUNICIPALITIES | |
| SOUTHINGTON WATER DEPT. | CHESHIRE | 200 | SERVICE AREA IS LIMITED TO JUST ONE 1250 FOOT LENGTH OF 12" WATER MAIN CROSSING THE SOUTHINGTON TOWN LINE. | |
| SUGARLOAF ELDERLY | MIDDLEFIELD | 40 | TEN ONE-BEDROOM, TWENTY EFFICIENCY APARTMENTS. | |
| SYLVAN RIDGE CONDOS | MIDDLEFIELD | 84 | CONDOMINIUM COMPLEX,12 2-BEDROOM UNITS, 12 3-BEDROOM UNITS. | |
| TWIN MAPLES NUR.HM. | DURHAM | 50 | NURSING HOME SUPPLY, 40 BEDS, 10 STAFF | |
| WALDEN III CONDOS | GUILFORD | 143 | CONDOMINIUM ASSOCIATION CONSISTING OF 54 UNITS, THIRTY-FIVE TWO BEDROOM UNITS, NINETEEN ONE-BEDROOM UNITS. | CONN.WATER CO. MAINS NEARBY. |
| WALLINGFORD WATER DIVISION | WALLINGFORD | 27,107 | MUNICIPAL WATER DEPT. SERVICING RESIDENTIAL, COMMERCIAL AND INDUSTRIAL USERS. | |
| WATERBURY WATER BUR. | PROSPECT | (0 CUSTOMERS IN S.C. AREA) | PORTION OF WATER BUREAU OWNED WATERSHED AND SURFACE SUPPLIES LOCATED IN PROSPECT. NO CUSTOMERS IN S.C. AREA. | |
| WEST LAKE LODGE NURS. | GUILFORD | 75 | SUPPLY SERVICES INSTUTIONAL HEALTH CARE FACILITY. 60 BEDS, 15 - 20 STAFF | |

# APPENDIX B

# SUMMARY OF EXISTING WATER SOURCES

WATER SUPPLY ASSESSMENT

APPENDIX B

SUMMARY OF EXISTING WATER SOURCES

| NAME OF UTILITY | TOWNS SERVED | LOCATION OF SUPPLY | WATER SUPPLY DESCRIPTION COMMENTS |
|---|---|---|---|
| AARON MANOR HOME | CHESTER | CHESTER | [redacted] |
| ANSONIA DERBY WATER CO. | ANSONIA,DERBY SEYMOUR | SEYMOUR DERBY SCCRWA | [redacted] |
| | | SCCRWA ANSONIA & SEYMOUR | |
| BEECHWOOD MHP | KILLINGWORTH | KILLINGWORTH | [redacted] |
| BERNICES COURT | GUILFORD | GUILFORD | SEVENTY-FIVE FEET TO SEPTIC SYSTEMS, PH HISTORICALLY LOW, SODIUM IS ELEVATED. |
| BESECK LAKE WATER COMPANY | MIDDLEFIELD | MIDDLEFIELD | [redacted] |
| BITTERSWEET RIDGE | MIDDLEFIELD | MIDDLEFIELD | [redacted] |
| BLUE TRAILS ASSOC. | NORTH BRANFORD DURHAM | NORTH BRANFORD | EXTREME HARDNESS. |
| BRADLEY HOME | MERIDEN | MERIDEN | HOME'S WELL IS APPROVED TO CONNECT WITH MERIDEN WATER DEPT. BOTH THE WELL & MERIDEN WATER ARE APPROVED FOR DRINKING. BOTTLED WATER IS AVAILIBLE BUT NOT REQUIRED BY DOHS |
| BRIDGEPORT HYDRAULIC CO. | BEACON FALLS,OXFORD SEYMOUR | OXFORD SEYMOUR | [redacted] |
| CEDAR GROVE MHP | CLINTON | CLINTON | WELL 2 ABANDONED DUE TO HIGH MANGANESE LEVELS. |

WATER SUPPLY ASSESSMENT

APPENDIX B

SUMMARY OF EXISTING WATER SOURCES

| NAME OF UTILITY | TOWNS SERVED | LOCATION OF SUPPLY | WATER SUPPLY DESCRIPTION COMMENTS |
|---|---|---|---|
| CONN.VALLEY HOSPITAL | MIDDLETOWN | MIDDLETOWN | [redacted] |
| CONN. WATER CO. CHESTER SYSTEM | CHESTER,ESSEX DEEP RIVER | CHESTER | [redacted] |
| CONN.WATER CO. GUILFORD SYSTEM | CLINTON,GUILFORD MADISON,OLD SAYBRO WESTBROOK | GUILFORD WESTBROOK CLINTON SAYBROOK | [redacted] |
| CONN.WATER CO. NAUGATUCK | NAUGATUCK | NAUGATUCK | [redacted] |

WATER SUPPLY ASSESSMENT

APPENDIX B

SUMMARY OF EXISTING WATER SOURCES

| NAME OF UTILITY | TOWNS SERVED | LOCATION OF SUPPLY | WATER SUPPLY DESCRIPTION COMMENTS |
|---|---|---|---|
| COUNTRY MANOR | PROSPECT | PROSPECT | SUBSURFACE DISPOSAL SYSTEM FAILURES, SURFACE DISCHARGES. WELL 3 NOT IN SERVICE. |
| CRESTVIEW CONDO ASSO. | CHESHIRE | CHESHIRE | SODIUM LEVEL IS EXCESSIVE, OCCASIONAL OVERFLOW OF ONSITE SEPTIC SYSTEM, WELL IS 500' AWAY UPGRADE. |
| CROMWELL FIRE DIST. WATER DEPT. | CROMWELL | CROMWELL | |
| DERBY WATER CO. | DERBY | DERBY | PURCHASES ALL WATER FROM ANSONIA DERBY WATER CO. ANSONIA DERBY CONSUMPTION FIGURES INCLUDE DERBY WATER CO. CONSUMPTION, NO LIMITS ON AVAILIBLE WATER FROM ADWCo. |
| DESCROCHER APT. | MIDDLEFIELD | MIDDLEFIELD | SUPPLY SERVES 8 HOMES. |
| DOGWOOD ACRES | DURHAM | DURHAM | |
| DURHAM CENTER WATER CO. | DURHAM | DURHAM | |
| ED'S TRAILER PARK | BETHANY | BETHANY | WELL 2 IS INACTIVE, ALL MOBILE HOMES HAVE IND. SEPTIC SYSTEMS, PH LEVELS LOW. |
| EVERGREEN TRAILER PK. | CLINTON | CLINTON | |
| GENDRON'S VALLEY MHP. | NAUGATUCK | NAUGATUCK | |

WATER SUPPLY ASSESSMENT

APPENDIX B

SUMMARY OF EXISTING WATER SOURCES

| NAME OF UTILITY | TOWNS SERVED | NAME | LOCATION OF SUPPLY | WATER SUPPLY DESCRIPTION COMMENTS |
|---|---|---|---|---|
| GREEN SPRINGS WATER CO. | MADISON | [redacted] | MADISON | [redacted] |
| GROVE SCHOOL | MADISON | | MADISON | 100 FEET TO SEPTIC, SODIUM LEVELS ARE ELEVATED. |
| HADDAM ELDERLY HOUSING | EAST LYME | | HADDAM | [redacted] |
| HAPPY ACRES | MIDDLEFIELD | | MIDDLEFIELD | [redacted] |
| HARMONY ACRES MHP | PROSPECT | | PROSPECT | [redacted] |
| HAWKSTONE TERRACE CORP. | OXFORD | | OXFORD | [redacted] |
| HEMLOCK APTS. | ESSEX | | ESSEX | NO SUPPLY PROBLEMS DURING DROUGHT. |
| HENRY'S TRAILER PK. | WALLINGFORD | | WALLINGFORD | [redacted] |
| HERITAGE COVE CONDOS | ESSEX | | ESSEX | [redacted] |
| HERITAGE VILLAGE WATER CO. | OXFORD | | SOUTHBURY | [redacted] |

WATER SUPPLY ASSESSMENT

APPENDIX B

SUMMARY OF EXISTING WATER SOURCES

| NAME OF UTILITY | TOWNS SERVED | NAME | LOCATION OF SUPPLY | WATER SUPPLY DESCRIPTION COMMENTS |
|---|---|---|---|---|
| HIGHLAND HEIGHTS WATER CO. | PROSPECT | [redacted] | PROSPECT | [redacted] |
| HILLVIEW WATER ASSOC. | CHESHIRE | | CHESHIRE | [redacted] |
| IDLEVIEW MHP | NAUGATUCK | | NAUGATUCK | [redacted] |
| KRAYESKE WATR SUPP. | GUILFORD | | GUILFORD | SEPTIC SYSTEM LOCATED WITHIN 50', TREATMENT NOT FEASIBLE PER DOHS RECORDS, SUPPLY DETERMINED UNSAFE FOR CONSUMPTION 8/27/86, DOHS COLIFORM NITRATE, SODIUM VIOLATION. DOHS RECORDS SHOW USERS DO NOT INTEND TO PURSUE A NEW SUPPLY. TOWN IS NOT EXTENDING SERVICE. NO QUALITY PROBLEMS INDICATED. |
| LAKESIDE WATER CO. | GUILFORD | | GUILFORD | |
| LAKE GROVE AT DURHAM | DURHAM | | DURHAM | [redacted] |
| LEEIES ISLAND | GUILFORD | | GUILFORD | DUG WELL OPERATED BY HAND PUMP. SEPTIC SYSTEMS IN VICINITY, COLOR STANDARD VIOLATIONS.CHLORINE BLEACH IS ADDED TO WELL PERIODICALLY. |
| LEGEND HILL CONDOS. | MADISON | | MADISON | [redacted] ED |
| LORRAINE TERRACE | MIDDLETOWN | | MIDDLETOWN | WATER QUALITY GOOD, ADEQUATE VOLUME AVAILABLE TO MEET DEMAND. |
| MEADOWBROOK REST HOME | ESSEX | | ESSEX | [redacted] |

WATER SUPPLY ASSESSMENT

APPENDIX B

SUMMARY OF EXISTING WATER SOURCES

| NAME OF UTILITY | TOWNS SERVED | NAME OF SUPPLY | LOCATION OF SUPPLY | SINGLE SOURCE SUPPLY | AVAILIBLE WATER (IN MGD) DOHS.CALCS. | UTILITY CAL. | WATER SUPPLY DESCRIPTION COMMENTS |
|---|---|---|---|---|---|---|---|
| MERIDEN WATER DEPT. | BERLIN,CHESHIRE MERIDEN,SOUTHINGTON WALLINGFORD | EVANSVILLE WEST WELL & EVANSVILLE EAST WELL | MERIDEN | NO | | 2 | EVANSVILLE WEST WELL TREATED FOR IRON AND MANGANESE THEN COMBINED WITH EAST WELL SUPPLY. MULE WELL CAN ONLY SUSTAIN STEADY FLOW FOR 60 DAYS. ELEVATED CHLORIDE LEVELS AT THE COLUMBUS PARK WELL. BROAD BROOK CONTAINS HIGH LEVELS OF TURBIDITY AND COLOR DUE TO ALGAE GROWTH. COMBINED SAFE YIELD OF 9.6 MGD OF ACTIVE SUPPLIES. THERE ARE FOUR SURFACE WATER TREATMENT PLANTS TREATING SUPPLIES WITH STANDARD CHLORINATION SEDIMENTATION AND FLOCUTION CONTROLS. THE FOUR TREATMENT PLANTS ARE BROAD BROOK, MERIMERE, ELMERE AND BRADLEY HUBBARD. |
| | | COLUMBUS PARK WELL | | | EMERGENCY | 0.4 | |
| | | MULE WELL | | | | 0.2 | |
| | | PLATT & LINCOLN WELLS | | | | 1.5 | |
| | | BROAD BROOK RESERVOIR | CHESIRE | | | 3.3 | |
| | | MERIMERE RESERVOIR | MERIDEN | | | 0.9 | |
| | | HALLMERE RESERVOIR | | | SEE KENMERE | | |
| | | KENMERE RESERVOIR | | | | 1.2 | |
| | | ELMERE RESERVOIR | | | SEE KENMERE | | |
| | | BRADLEY-HUBBARD | | | | 0.4 | |
| METROPOLITAN DISTRICT COMMISSION | CROMWELL | (8 RESERVOIRS) | WEST HARTFORD BLOOMFIELD BARKHAMSTED BURLINGTON NEW HARTFORD GLASTONBURY | NO | | 1500 | SUPPLY IS ADEQUATE TO MEET AVERAGE DAILY REQUIREMENTS, SHORTAGE EXPERIENCED DURING 1984 DROUGHT PERIOD. NO EXPANSION PLANNED FOR EXISTING SERVICE AREA IN SOUTH CENTRAL AREA, ADIQUATE YEILD AVAILIBLE FOR EXISTING SERVICE . |
| MIDDLETOWN WATER DEPT. | MIDDLETOWN MIDDLEFIELD | MT.HIGBY RES. | MIDDLETOWN | NO | 2.23 | 2.35 | WATER QUALITY PROBLEMS IN LAUREL BROOK RES., IRON BACTERIA IN GROUNDWATER SUPPLIES. EMERGENCY POWER, NO PROBLEMS DURING DROUGHT OR FIRE DEMAND. EXPANSION OF WTP PROPOSED.ONLY 3 ACCOUNTS IN MIDDLEFIELD. THE HIGBY/ROARING BROOK IMPOUNDMENT RESERVOIR IS TREATERD WITH CHEMICAL COAGULATION, FLOCCULATION, AND GAC FILTRATION AT THE CHARLES B. BACON IRMI PLANT. THE LAUREL BROOK IS TREATED WITH CHLORINE ONLY AT THE LAUREL BROOK IRMI FACILITY. |
| | | LAUREL BROOK RES. | " | | | | |
| | | RIVER ROAD WELL FIELD | " | | 6.95 | 7 | |
| | | (6 ACTIVE, 2 INACTIVE) | " | | | | |
| MILL POND ELDERLY HSG. | DURHAM | WELL 1 | DURHAM | NO | 0.003456 | | TURBIDITY AND COLOR PROBLEMS RESULTING FROM CLAY IN WELL VICINITY. TREATMENT AND FILTRATION USED. SEPTIC SYSTEMS 75 FEET AWAY FROM SUPPLIES. |
| | | WELL 3 | | | 0.007344 | | |
| MOUNT ST.JOHN SCHOOL | DEEP RIVER | WELL 1 | DEEP RIVER | NO | 0.026244 | | CONN. WATER CO. PROVIDES ADDITIONAL SUPPLY IN DROUGHT/EMERGENCY SITUATIONS. WELL 1 IS PRIMARY SOURCE, NO WATER QUALITY PROBLEMS. |
| NEW LAKEVIEW CONV.HOME | CHESHIRE | WELL 1 | CHESHIRE | NO | | | WELL 1 INACTIVE, IRON AND PH ADJUSTMENT, LOW YIELD PROBLEMS . ADDITIONAL SOURCE IS RECOMMENDED, SHORTAGES HAVE OCCURRED WHERE WATER HAD TO BE TRUCKED IN, SYSTEM IMPROVEMENTS ALSO NEEDED. |
| | | WELL 2 | | | UNKNOWN | | |
| | | WELL 3 | | | | | |
| | | WELL 4 | | | | | |
| | | WELL 5 | | | | | |
| | | WELL 6 | | | | | |

WATER SUPPLY ASSESSMENT

APPENDIX B

SUMMARY OF EXISTING WATER SOURCES

| NAME OF UTILITY | TOWNS SERVED | LOCATION OF SUPPLY | WATER SUPPLY DESCRIPTION COMMENTS |
|---|---|---|---|
| MOD HILL APTS. | CLINTON | CLINTON | L 2 ABANDONED, PH VIOLATIONS. 150 FEET TO REST POLLUTION SOURCE. |
| NORTHFORD GLEN CONDOS. | NORTH BRANFORD | N.BRANFORD | |
| OUR LADY OF GRACE MON. | GUILFORD | GUILFORD | |
| PORTLAND WATER DEPT. | PORTLAND | PORTLAND<br>PORTLAND | |
| QUONNIPAUG PARK WATER SUPPLY | GUILFORD | GUILFORD | |
| RIDGEWOOD HILL CONDOS. | DEEP RIVER | DEEP RIVER | |
| RIVERCREST WATER CO. | PORTLAND | PORTLAND | |

WATER SUPPLY ASSESSMENT

APPENDIX B

SUMMARY OF EXISTING WATER SOURCES

| NAME OF UTILITY | TOWNS SERVED | LOCATION OF SUPPLY | WATER SUPPLY DESCRIPTION COMMENTS |
|---|---|---|---|
| SOUTH CENTRAL CT REGIONAL WATER AUTH. | HAMDEN<br>MILFORD<br>NEW HAVEN<br>NORTH BRANFORD<br>NORTH HAVEN<br>ORANGE<br>WEST HAVEN<br>WOODBRIDGE | HAMDEN<br>HAMDEN<br>HAMDEN<br>HAMDEN<br>HAMDEN<br>CHESHIRE<br>CHESHIRE<br>CHESHIRE<br>CHESHIRE<br>HAMDEN<br>CHESHIRE<br>CHESHIRE<br>WOODBRIDG<br>N.BRANFOR<br>BRANFORD<br>WEST HAVE<br>HAMDEN<br>PROSPECT | [redacted] |
| SOUTHINGTON WATER DEPT. | CHESHIRE | SOUTHINGT<br>SOUTHINGT<br>SOUTHINGT<br>SOUTHINGT<br>SOUTHINGT<br>NEW BRITA<br>SOUTHINGT | [redacted] |
| SUGARLOAF ELDERLY HOUSING | MIDDLEFIELD | MIDDLEFIEL | [redacted] |
| SYLVAN RIDGE CONDOS | MIDDLEFIELD | MIDDLEFIEL | NO QUALITY PROBLEMS INDICATED, NO TREATMENT PROVIDED. |
| TWIN MAPLES NUR.HM. | DURHAM | DURHAM | [redacted] |

WATER SUPPLY ASSESSMENT

APPENDIX B

SUMMARY OF EXISTING WATER SOURCES

| NAME OF UTILITY | TOWNS SERVED | [redacted] | LOCATION OF SUPPLY | [redacted] | WATER SUPPLY DESCRIPTION COMMENTS |
|---|---|---|---|---|---|
| WALDEN III CONDOS | GUILFORD | | GUILFORD | | [redacted] |
| WALLINGFORD WATER DIVISION | WALLINGFORD | | WALLINGFORD | | |
| | | | GUILFORD | | |
| WATERBURY WATER BUR. | MIDDLEBURY | | | | NO COSTUMERS SERVED IN SOUTH CENTRAL AREA. |
| WEST LAKE LODGE NURS. | GUILFORD | | GUILFORD | | [redacted] |

# APPENDIX C

# CONSUMPTION, SOURCE, AND STORAGE ANALYSIS

WATER SUPPLY ASSESSMENT

APPENDIX C

CONSUMPTION, SOURCE, AND STORAGE DATA

| NAME OF UTILITY | 1987 AVE. DAILY DEMAND (MGD) RESIDENTIAL | NONRESIDENTIAL | TOTAL | 1987 MAXIMUM HOURLY/DAILY DEMAND |
|---|---|---|---|---|
| AARON MANOR HOME | | 0.0058 | 0.0058 | 2025 GAL. |
| ANSONIA DERBY WATER CO. | 1.78 | 2.28 | 4.06 | 7.85 MG |
| BEECHWOOD MHP | 0.045 | | 0.045 | 13,500 GPH |
| BERNICES COURT | 0.002175 | | 0.002175 | 725 GPH |
| BESECK LAKE WATER CO. | 0.007 | | 0.007 | 2333 GAL. |
| BITTERSWEET RIDGE | 0.003 | | 0.003 | 1000 GPH |
| BLUE TRAILS ASSOC. | 0.0162 | | 0.0162 | 3775 GPH |
| BRADLEY HOME | 0.006375 | 0.00975 | 0.00735 | 2450 GPH |
| BRIDGEPORT HYDRAULIC CO. | 0.8 | 0.85 | 1.65 | 2.83 MGD |
| CEDAR GROVE MHP | 0.001875 | | 0.001875 | 625 G. |
| CONN.VALLEY HOSPITAL | | 0.165 | 0.165 | |
| CONN. WATER CO. CHESTER SYSTEM | 0.286 | 0.209 | 0.589 | .854 MG |
| CONN.WATER CO. GUILFORD SYSTEM | 1.85 | 1.05 | 3.58 | 5.467 MGD |

[redacted]

APPENDIX C (CONTINUED)

| NAME OF UTILITY | 1987 AVE.DAILY DEMAND (MGD) RESDENTIAL | NONRESIDENTIAL | TOTAL | MAXIMUM HOURLY/DAILY DEMAND |
|---|---|---|---|---|
| CONN.WATER CO. NAUGATUCK | 1.54 | 1.11 | 3.19 | 1.85 |
| COUNTRY MANOR | | 0.01575 | 0.01575 | 5250 GPH |
| CRESTVIEW CONDO ASSO. | 0.0063 | | 0.0063 | 2100 GPH |
| CROMWELL FIRE DIST. | 0.64 | 0.83 | 1.5 | 2.63 MGD |
| DERBY WATER CO. | 0.130914 | 0.025086 | 0.156 | (51,000 GPH) |
| DESCROCHER APT. | 0.00875 | | 0.00875 | 625 GPH |
| DOGWOOD ACRES | 0.002265 | | 0.002265 | 755 GPH |
| DURHAM CENTER WATER CO. | 0.01155 | 0.0044 | 0.016 | 5350 GPH |
| ED'S TRAILER PARK | 0.01035 | | 0.0135 | 3450 GPH |
| EVERGREEN TRAILER PK. | 0.019125 | | 0.019125 | 6375 GPH |
| GENDRON'S VALLEY MHP. | 0.014625 | | 0.0144625 | 4875 GPH |
| GREEN SPRINGS SUBD. | 0.006 | | 0.006 | 2000 GPH |
| GROVE SCHOOL | 0.00531 | | 0.00531 | 1770 GPH |
| HADDAM ELDERLY HOUSING | 0.00285 | | 0.00285 | 950 GPH |
| HAPPY ACRES | 0.00975 | | 0.00975 | 3250 GPH |
| HARMONY ACRES MHP | 0.029475 | | 0.029475 | 9825 GPH |
| HAWKSTONE TERRACE CORP. | 0.0042 | | 0.0042 | 1400 GPH |

APPENDIX C (CONTINUED)

| NAME OF UTILITY | 1987 AVE.DAILY DEMAND (MGD) RESIDENTIAL | NONRESIDENTIAL | TOTAL | MAXIMUM HOURLY/DAILY DEMAND |
|---|---|---|---|---|
| HEMLOCK APTS. | 0.0072 | | 0.0072 | 2400 GPH |
| HENRY'S TRAILER PK. | 0.004875 | | 0.004875 | 1625 GPH |
| HERITAGE COVE CONDOS | 0.012395 | | 0.012395 | 25,000 MAX.D |
| HERITAGE VILLAGE | 0.4 | 0.42 | 0.82 | .273 GPH HR |
| HIGHLAND HEIGHTS WATER CO. | 0.0075 | | 0.0075 | 9000 MAX.DAY |
| HILLVIEW WATER SUPP. | 0.0027 | | 0.0027 | 1200 MAX.DAY |
| IDLEVIEW MHP | 0.003 | | .0063 | 8100 MAX.DAY |
| KRAYESKE WATR SUPP. | 0.00375 | | 0.00375 | 1125 GPH |
| LAKE GROVE AT DURHAM | 0.02397 | | 0.027937 | 8219 GPH |
| LAKESIDE WATER CO. | 0.002025 | | 0.002025 | 675 GPH |
| LEETES ISLAND | 0.003 | | 0.003 | |
| LEGEND HILL CONDOS. | 0.0162 | | 0.0162 | |
| LORRAINE TERRACE | 0.0015 | | 0.0015 | 500 GPH |
| MEADOWBROOK REST HOME | | 0.00225 | 0.00225 | 750 GPH |

| NAME OF UTILITY | 1987 AVE.DAILY DEMAND (MGD) RESIDENTIAL | NONRESIDENTIAL | TOTAL | MAXIMUM HOURLY/DAILY DEMAND |
|---|---|---|---|---|
| METROPOLITAN DISTRICT COMMISSION | 0.0015 | | 0.0015 | 500 GPH |
| MIDDLETOWN WATER DEPT. | 2.4 | 2.15 | 4.55 | 4.878 MGD |
| MILL POND ELDERLY HSG. | 0.003675 | | 0.003675 | 1225 GPH |
| MERIDEN WATER DEPT. | 6.2 | 0.6 | 6.8 | 10.2 MGD (MAX.DAY) |
| MOUNT ST.JOHN SCHOOL | | 0.00468 | 0.00468 | 1560 GPH |
| NEW LAKEVIEW CONV.HOME | | 0.02025 | 0.02025 | 6750 GPH |
| NOD HILL APTS. | 0.00225 | | 0.00225 | 750 GPH |
| NORTHFORD GLEN CONDOS. | 0.0063 | | 0.0063 | 2100 GPH |
| OUR LADY OF GRACE MON. | | 0.003375 | 0.003375 | 1125 GPH |
| PORTLAND WATER DEPT. | | | 0.708 | 1.52 MGD |
| QUONNIPAUG PARK WATER SUPPLY | 0.0342 | | 0.0342 | 9,400 GPH |
| RIDGEWOOD HILL CONDOS. | 0.0054 | | 0.0054 | 1800 GPH |
| RIVERCREST WATER CO. | 0.0054 | | 0.0054 | 1800 GPH |
| SOUTH CENTRAL CT REGIONAL WATER AUTH. | 2725 | 29.52 | 56.77 | 75.84 MGD 106.73 MGH |
| SOUTHINGTON WATER DEPT. | 0.0156 | | 0.0156 | 6.76 MGD (MAX.DAY) |

APPENDIX C (CONTINUED)

| NAME OF UTILITY | 1987 AVE.DAILY DEMAND (MGD) RESIDENTIAL | NONRESIDENTIAL | TOTAL | MAXIMUM HOURLY/DAILY DEMAND |
|---|---|---|---|---|
| SYLVAN RIDGE CONDOS | 0.0063 | | 0.0063 | 2100 GPH |
| SUGARLOAF ELDERLY HOUSING | 0.003 | | 0.003 | 1000 GPH |
| TWIN MAPLES NUR.HM. | | 0.00405 | 0.00405 | 1350 GPH |
| WATERBURY WATER BUR. | | | | |
| WALDEN III CONDOS | 0.01725 | | 0.01725 | 3575 GPH |
| WALLINGFORD WATER DIV. | 2.29 | 3.73 | 6.02 | 8.37 MGD (MAX DAY) |
| WEST LAKE LODGE NURS. | | 0.0018 | 0.0018 | 2000 GPD (MAX.DAY) |

# APPENDIX D

# GENERAL SUMMARY OF POTENTIAL GROUNDWATER SOURCES

WATER SUPPLY ASSESMENT

APPENDIX D

GENERAL SUMMARY OF POTENTIAL GROUNDWATER SOURCES

| SOURCE-AQUIFER LOCATION NUMBER | NAME OF DRAINAGE BASIN | TOWN IN WHICH SOURCE IS LOCATED | EST. YIELD (MGD) | WATER QUALITY CLASSA1 | ISSUES RELATED TO USE OF POTENTIAL SOURCE |
|---|---|---|---|---|---|
| 40-3 | CONN. | PORTLAND | 7.4 | 25% GB<br>75% GA | FORMER TUMBLING, CHROME WASTEWATER DISCHARGE TO DRYWELL. |
| 40-4 | CONN. | PORTLAND,CROMWELL | 11.1 | 10% GB<br>90% GA | FORMER SOLVENTS & METALS DISCHARGE TO GROUND CLEANING WATERS GROUND DISCHARGE, COOLING WATER DISCHARGE. |
| 40-5 | CONN. | MIDDLETOWN | 0.8 | 25% GB/GB/GCA2<br>75% GA | INDUSTRIAL DISCHARGE, COOLING WATER DISCHARGE, INDUSTRIAL DISCHARGE FROM LAGOONS, CLOSED FLY ASH LANDFILL SITE.POTENTIAL PROBLEMS OF CONTAMINANT LEACHING INTO GA AREA. |
| 40-6 | CONN. | MIDDLETOWN | 4.4 | 20% GB<br>80% GA | PRATT & WHITNEY STP, LINED LAGOONS, UNLINED METAL HYDROXIDE SLUDGE DEWATERING LAGOONS, METALS DISCHARGE SLUDGE LANDFILL. |
| 40-7 | CONN. | HADDAM | 3.7 | 10% GB/GA<br>90%GA | ACTIVE MIXED WASTE LANDFILL, SOLID WASTE TRANSFER STATION, FORMER ICE MANUFACTURING PROCESS. |
| 40-8 | CONN. | HADDAM | 4.3 | 25% GB/GA<br>75% GA | METAL HYDROXIDE SLUDGE BEDS, SPENT ACID DISPOSAL, WELLS CONTAMINATED W/SALT AND SOLVENTS, SALT STORAGE PHOTO CHEMICALS TO SEPTIC SYSTEM. |
| 40-9 | CONN. | ESSEX | 0.4 | 25% GB/GA<br>75%GA | SPILL OF 1000 GALS. #2 FUEL OIL. |
| 51-1 | SOUTH CENTRAL EASTERN (SCE) | KILLINGWORTH | 0.6-1.4 | GA | NO SOURCES OF CONTAMINATION REPORTED. |
| 51-2 | SCE | CLINTON | 1.0-2.1 | GA | CT DOT GASOLINE SPILLS, NEARBY SEPTAGE DISPOSAL SITE. |
| 51-3 | SCE | NORTH BRANFORD | 0.8-1.1 | 10% GB/GAA<br>90% GAA | CHEMICAL WASTE STORAGE SITE, SYNTHETIC ORGANIC CHEMICAL SPILL, OIL STORAGE. |
| 52-6 | QUINNIPIAC | CHESHIRE | 1.7-4.9 | 10% GB<br>45% GA<br>45%GAA | PUBLIC WATER SUPPLY CONTAMINATED WITH TCE, 1979, CHESHIRE STP LOCATED NEAR AQUIFER. |
| 52-7 | QUINNIPIAC | MERIDEN | 1.3-1.4 | 50% GA<br>25% GB/GA<br>25% GB | CONTAMINATED WELL. |
| 52-8 | QUINNIPIAC | MERIDEN,WALLINGFORD | 4.7-7.5 | 5% GB/GAA<br>45% GA<br>35% GB<br>15% GB/GA | FORMER SOLVENTS DISCHARGE TO WELL, TCE FOUND IN 1981 IN MERIDEN PUBLIC WELL, SOUTHINGTON WATER DEPT. WELL #2 CONTAMINATED WITH TCE IN 1982, FORMER INDUSTRIAL DISCHARGE TO GROUNDWATER, ACTIVE MIXED WASTE LANDFILL, FORMER DISPOSAL OF METAL HYDROXIDE SLUDGE, TREATED INDUST.DISCHARGE. |

APPENDIX D (CONTINUED)

| SOURCE-AQUIFER LOCATION NUMBER | NAME OF DRAINAGE BASIN | TOWN IN WHICH SOURCE IS LOCATED | EST. YIELD (MGD) | WATER QUALITY CLASS. #1 | ISSUES RELATED TO USE OF POTENTIAL SOURCE |
|---|---|---|---|---|---|
| 52-9 | QUINNIPIAC | WALLINGFORD | 11.4-16.1 | 54% GA<br>1% GB/GAA<br>10% GB<br>35% GB/GB/GC | TREATED INDUST. DISCHARGE, FORMER COAL ASH LAGOONS, WALLINGFORD STP W/FORMER METAL HYDROXIDE SLUDGES, SEALED LAGOON FOR TRUCK WASHING, SOLVENT CONTAMINATED GROUNDWATER, ACTIVE MIXED WASTE LANDFILL, SOLVENT CONTAMINATED WELL, ASH LAGOON AND LANDFILL, TREATED INDUSTRIAL DISCHARGE AND COOLING WATER. |
| 52-10 | QUINNIPIAC | NORTH HAVEN | 10.2-13.1 | 45% GB/GA<br>40% GA<br>10% GB | CONTAMINATED WATER SUPPLY, MIXED USE LANDFILL, TREATED INDUST. DISCHARGE, STP W/2 PONDS SLUDGE PITS, METAL HYDROXIDE SLUDGE LAGOONS, FORMER SALT STORAGE, CLOSED BULKY WASTE SITE. |
| 53-1 | SOUTH CENTRAL WESTERN(SCW) | CHESHIRE | 1.1 | GAA | METAL FINISHING WASTEWATER TO LEACHING SYSTEM, SLUDGE DRYING BEDS, GAS TANK LEAK, FLOOR DRAIN DISCHARGE TO GROUND, NOW TO SEWER, FORMER SOLVENTS TO GROUND, TCE FOUND IN SO. CHESHIRE WELL, 1982. |
| 53-2 | SCW | HAMDEN | 6.2 | GAA | NO SOURCES OF CONTAMINATION INDICATED. |
| 53-3 | SCW | HAMDEN | 2.6-3.7 | 45% GAA<br>55% GB/GAA | FORMER SALT STORAGE. |
| 69-4 | NAUGATUCK | NAUGATUCK | 3.0-3.2 | 55%GA<br>45%GB | GLASS GRINDING WASTEWATER LAGOONS, DRYING BEDS, WASTEWATER DISCHARGE. |
| 69-5 | NAUGATUCK | NAUGATUCK | 7.2-8.6 | 50%GA<br>35% GB<br>15% GB/GB/GC | COOLING WATER DISCHARGE(2), HISTORIC ASH, CINDERS, AND TIRES DISPOSAL, CHEMICAL SPILLS, SEWAGE SLUDGE PITS AT STP, NAUGATUCK STP. |
| 69-6 | NAUGATUCK | BEACON FALLS | 1.4-2.0 | 85% GA<br>15% GB | SALT STORAGE, FORMER SITE OF INDUST. WASTE DISPOSAL, HISTORIC DRUM LEAKS, UNDER DRAINED METAL HYDROXIDE SLUDGE BEDS, METAL FINISHING DISCHARGE. |
| 69-7 | NAUGATUCK | BEACON FALLS<br>SEYMOUR | 1.4-2.8 | 10% GB/GA<br>10%GB<br>80% GA | CLOSED BULKY WASTE LANDFILL, CLOSED MIXED WASTE LANDFILL, SAND WASHING DISCHARGE, SALT STORAGE WIDESPREAD SURFACE SEWAGE SYSTEM FAILURES, METAL HYDROXIDE SLUDGE DRYING BEDS, CONTAMINATED WELLS WITH CHLOROFORM & GASOLINE. |
| 69-9 | NAUGATUCK | SEYMOUR | 4.6-5.8 | 15%GB<br>85% GA | CLOSED INDUSTRIAL WASTE LANDFILL, METAL HYDROXIDE SLUDGE LAGOONS, METAL FINISHING DISCHARGE, SALT STORAGE, COMBINED COOLING WATER AND INDUSTRIAL DISCHARGE. |

APPENDIX D (CONTINUED)

| SOURCE-AQUIFER LOCATION NUMBER | NAME OF DRAINAGE BASIN | TOWN IN WHICH SOURCE IS LOCATED | EST. YIELD (MGD) | WATER QUALITY CLASS.A1 | ISSUES RELATED TO USE OF POTENTIAL SOURCE |
|---|---|---|---|---|---|
| 69-10 | NAUGATUCK | DERBY,SHELTON | 3.6-4.1 | 25% GB<br>75% GA | METAL FINISHING DISCHARGE, FORMER INDUST. SITE TREATED DISCHARGE OF OIL AND DYE SPILLS, COOLING WATER DISCHARGE, COMBINED INDUST. AND COOLING WATER DISCHARGE. |
| 60-7 | HOUSATONIC | OXFORD,MONROE | 1.9-2.7 | GA | NO SOURCES OF CONTAMINATION INDICATED. |
| 60-8 | HOUSATONIC | SEYMOUR,SHELTON | 1.5-1.7 | GA | NO SOURCES OF CONTAMINAION INDICATED. |
| 60-9 | HOUSATONIC | SEYMOUR,DERBY SHELTON | 4.0-4.5 | GA | NO SOURCES OF CONTAMINATION INDICATED. |

SOURCES OF INFORMATION

1 DEPARTMENT OF ENVIRONMENTAL PROTECTION, WATER QUALITY STANDARDS, FEB.1987.

GAA= GROUNDWATERS TRIBUTARY TO PUBLIC WATER SUPPLY WATERSHEDS OR WITHIN THE AREA OF INFLUENCE OF COMMUNITY AND NON-COMMUNTIY WATER SUPPLY WELLS. PRESUMED SUITABLE FOR DIRECT HUMAN CONSUMPTION WITHOUT NEED FOR TREATMENT. THE STATE'S GOAL IS TO MAINTAIN DRINKING WATER QUALITY.

GA=GROUNDWATERS WITHIN THE AREA OF INFLUENCE OF PRIVATE AND POTENTIAL PUBLIC WELLS. PRESUMED SUITABLE FOR DIRECT HUMAN CONSUMPTION WITHOUT NEED FOR TREATMENT. THE STATE'S GOAL IS TO MAINTAIN THE DRINKING WATER QUALITY.

GB=GROUNDWATERS WITHIN HIGHLY URBANIZED AREAS OR AREAS OF INTENSE INDUSTRIAL ACTIVITY AND WHERE PUBLIC WATER SUPPLY SERVICE IS AVAILABLE. MAY NOT BE SUITABLE FOR DIRECT HUMAN CONSUMPTION DUE TO WASTE DISCHARGES, SPILLS OR LEAKS OF CHEMICALS OR LAND USE IMPACTS. THE STATE'S GOAL IS TO PREVENT FURTHER DEGRADATION BY PREVENTING ANY ADDITIONAL DISCHARGES WHICH WOULD CAUSE IRREVERSIBLE CONTAMINATION.

GC=AREAS WHERE THE COMMISSIONER HAS ISSUED A PERMIT FOR A GROUND WATER DISCHARGE CONSISTENT WITH THESE CRITERIA AND SECTION 22A-430 OF THE CONN. GENERAL STATUTES. USE OF THE SOIL AND GROUNDWATERS FOR TREATMENT AND ASSIMILATION OF CERTAIN WASTEWATERS HAS BEEN SANCTIONED BY THE DEPARTMENT THROUGH PERMIT. THE OWNER AND OPERATOR OF THE WASTE TREATMENT AND DISPOSAL FACILITY HAS PERFORMED ALL NECESSARY HYDROGEOLOGIC STUDIES, SECURED RIGHTS TO ALL AFFECTED GROUND WATERS, AND HAS COMPLIED WITH ALL OTHER REQUIREMENTS OF CONN.'S WATER QUALITY STANDARDS. GROUNDWATERS NOT SUITABLE FOR DEVELOPMENT OF DRINKING WATER SUPPLIES.

2 CLASSIFICATION SYMBOLS USED IN THIS TABLE SEPARATED BY A INDICATE THE PRESENT CONDITION (GB) AND THE FUTURE GOAL (G SYMBOLS WITH THREE PART DESIGNATION (GB/GB/GC) INDICATE P INTERMEDIATE GOAL (GB), AND A LONG TERM GOAL (GC).

DEPARTMENT OF ENVIRONMENTAL PROTECTION."GROUNDWATER YIELDS FOR SELECTED STRATIFIED-DRIFT AREAS IN CONNECTICUT", IN COOPERATION WITH USGS,DAVID L. MAZZAFERO, 1986. SEE TEXT P.3-13

DEPARTMENT OF ENVIRONMENTAL PROTECTION, LEACHATE AND WASTEWATER SITE INFORMATION.

WATER QUALITY CLASSIFICATION DATA OBTAINED FROM:

ADOPTED WATER QUALITY CLASSIFICATIONS FOR THE HUDSON,HOUSATONIC BASIN,MAP 4/24/85.

ADOPTED WATER QUALITY CLASSIFICATIONS FOR CONNECTICUT RIVER BASIN,MAP 8/12/83.

ADOPTED WATER QUALITY CLASSIFICATIONS FOR THE SOUTH CENTRAL COAST BASIN,MAP 4/17/85.

# APPENDIX E

# SUMMARY OF POTENTIAL SURFACE WATER SOURCES

WATER SUPPLY ASSESSMENT

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APPENDIX E

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SUMMARY OF POTENTIAL SURFACE WATER SOURCES

[redacted]

ASEE FOOTNOTE AT END OF TABLE



SOURCES OF INFORMATION

DEPARTMENT OF HEALTH SERVICES RECORDS,DEPARTMENT OF ENVIRONMENTAL PROTECTION
SHARED DATA BASE, INDIVIDUAL UTILITY SUPPLY PLANS AND QUESTIONNAIRE RESPONSES.

DEP SHARED DATA BASE USED FOR ESTIMATED PRESENT WITHDRAWAL FROM SOURCES.
AND WATER QUALITY CLASSIFICATION DATA.

* WATER QUALITY CLASSIFICATION DATA OBTAINED FROM:
ADOPTED WATER QUALITY CLASSIFICATIONS FOR THE HUDSON,HOUSTONIC BASIN, DEP MAP 4/24/85
ADOPTED WATER QUALITY CLASSIFICATIONS FOR THE CONNECTICUT RIVER BASIN, DEP MAP 8/12/83
ADOPTED WATER QUALITY CLASSIFICATIONS FOR THE SOUTH CENTRAL COAST BASIN,DEP MAP 4/17/85

SOURCES OF INFORMATION (CONTINUED)

A=DESIGNATED USES- POTENTIAL DRINKING WATER SUPPLY;FISH AND WILDLIFE HABITAT; RECREATIONAL USE; AGRICULTURAL, INDUSTRIAL SUPPLY AND OTHER LEGITIMATE USES, INCLUDING NAVIGATION.KNOWN OR PRESUMED TO MEET WATER QUALITY CRITERIA WHICH SUPPORT DESIGNATED USES.

AA=DESIGNATED USES- EXISTING OR PROPOSED DRINKING WATER SUPPLY; FISH AND WILDLIFE HABITAT; RECREATIONAL USE; AGRICULTURAL, INDUSTRIAL SUPPLY, AND OTHER PURPOSED, RECREATIONAL USES MAY BE RESTRICTED. KNOWN OR PRESUMED TO MEET WATER QUALITY CRITERIA WHICH SUPPORT THE DESIGNATED USES.

B/AA= MAY NOT BE MEETING CLASS AA WATER QUALITY CRITERIA OR DESIGNATED USES. THE GOAL IS CLASS AA.

SB=MARINE FISH, SHELLFISH AND WILDLIFE HABITAT, RECREATION, INDUSTRIAL AND OTHER LEGITIMATE USES INCLUDING NAVIGATION.KNOWN OR PRESUMED TO MEET WATER QUALITY CRITERIA WHICH SUPPORT DESIGNATED USES.

# APPENDIX F

## PROJECTED WATER SUPPLY NEEDS FOR EACH UTILITY

WATER SUPPLY ASSESSMENT

APPENDIX F

PROJECTED WATER SUPPLY NEEDS FOR EACH UTILITY

| NAME OF UTILITY | RESIDENTIAL POPULATION SERVED 1987 | RESIDENTIAL DEMAND (IN MGD) 1987 | 1992 | 2000 | 2030 | NONRESIDENTIAL DEMAND (IN MGD) 1987 | 1992 | 2000 | 2030 | AVERAGE TOTAL PROJECTED DEMAND (IN MGD) FOR EACH UTILITY 1992 | 2000 | 2030 | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AARON MANOR HOME | 78 | | | | | 0.00585 | 0.00585 | 0.00585 | 5850GPD | 5850 | 5850 | 5850GPD | NO EXPANSION ANTICIPATED,DATA FROM QUESTIONNAIRE,1987. |
| ANSONIA DERBY WATER CO. | 30,747 (INCLUDES DERBY WATER CO. SERVICE POP.) | 1.78 | 1.92 | 1.85 | 2.15 | 2.28 | 1.85 | 1.9 | 1.91 | 3.77 | 3.75 | 4.06 | 58.7 GPCD,WATER CONSERVATION MEASURES TO BE USED,NO SIGNIFICANT COMM./IND. EXPANSION ANTICIPATED.SYSTEM IMPROVEMENTS TO REDUCE PRODUCTION. |
| BEECHWOOD MHP | 750 | 0.045 | 0.045 | 0.045 | 0.045 | | | | | 0.045 | 0.0045 | 0.045 | NO EXPANSION ANTICIPATED,DATA FROM QUESTIONNAIRE,1987. |
| BERNICES COURT | 29 | 0.002175 | 0.002175 | 0.002175 | 0.002175 | | | | | 0.002175 | 0.002175 | 0.002175 | DATA FROM DOHS,1986. |
| BESECK LAKE WATER COMPANY | 276 | 0.007 | 0.007 | 0.007 | 0.007 | | | | | 0.007 | 0.007 | 0.007 | 25.4 GPCD USEAGE PER DOHS RECORDS. |
| BITTERSWEET RIDGE | 40 | *.003 | 0.003 | 0.003 | 0.003 | | | | | 0.003 | 0.003 | 0.003 | DATA FROM DOHS & QUESTIONNAIRE,1987 |
| BLUE TRAILS ASSOC. | 216 | 0.0162 | 0.0162 | 0.0126 | 0.0162 | | | | | 0.0162 | 0.0162 | 0.0162 | DATA FROM DOHS,1987. |
| BRADLEY HOME | 151 | 0.006375 | 0.006375 | 0.006375 | 0.006375 | 0.00975 | 0.00975 | 0.00975 | 0.00975 | 0.00735 | 0.00735 | 0.00735 | DATA FROM DOHS,1987. |
| BRIDGEPORT HYDRAULIC CO. VALLEY DIV. | 13838 | .8 ARESIDENTIAL & COMMERCIAL | .89 | 0.99 | 1.96 | .85 | .80 | 0.77 | 0.9 | 1.69 | 1.76 | 2.86 | POPULATION FROM UTILITY SUPPLIED INFO. BHC INTENDS TO EXPAND ITS SERVICE AREA IN SEYMOUR,OXFORD,BEACON FALLS, &BETHANY. |
| CEDAR GROVE MHP | 25 | 0.001875 | 0.001875 | 0.001875 | | | | | | 0.001875 | 0.001875 | 0.001875 | DATA FROM DOHS,1985. |
| CONN.VALLEY HOSPITAL | 2200 | | | | | 0.165 | 0.165 | 0.165 | 0.165 | 0.165 | 0.165 | 0.165 | NO EXPANSION PLANNED, PER QUESTIONNAIRE,1987. |
| CONN. WATER CO. CHESTER SYSTEM | 4710 | 0.286 | 0.341 | 0.438 | 0.715 | 0.029 | 0.228 | 0.243 | 0.275 | 0.677 | 0.812 | 1.18 | AVERAGE PER CAPITA RATES EXPECTED TO DECLINE,. FOR RESIDENTIAL USE.COMMERCIAL DEMAND TO INCREASE,INDUSI. DEMAND TO DECREASE. INFO.FROM IND.SUPPLY PLAN,WITH 1986 FIGURES FOR PRESENT POPULATION SERVED. |
| CONN.WATER CO. GUILFORD SYSTEM | 29,861 | 1.85 | 2.41 | 3.17 | 5.08 | 1.05 | 1.13 | 1.21 | 1.4 | 4.37 | 5.41 | 8 | (SEE ABOVE COMMENTS.) |
| CONN.WATER CO. NAUGATUCK | 16,984 | 1.54 | 1.75 | 2.29 | 2.91 | 1.11 | 1.34 | 1.65 | 1.82 | 3.73 | 4.75 | 5.7 | AVERAGE PER CAPITA CONSUMPTION=85GPCD. COMMERCIAL GROWTH TO INCREASE,INDUSI. TO DECREASE. 85GPCD USED IN PROJECTIONS. |

A RESIDENTIAL AND COMMERCIAL CONSUMPTION

APPENDIX F (CONTINUED)

| NAME OF UTILITY | RESIDENTIAL POPULATION SERVED 1987 | RESIDENTIAL DEMAND (IN MGD) 1987 | 1992 | 2000 | 2030 | NONRESIDENTIAL DEMAND (IN MGD) 1987 | 1992 | 2000 | 2030 | TOTAL PROJECTED DEMAND (IN MGD) FOR EACH UTILITY 1992 | 2000 | 2030 | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| COUNTRY MANOR | 150 | | | | | 0.01575 | 0.01575 | 0.01575 | 0.01575 | 0.01575 | 0.01575 | 0.01575 | DATA FROM DOHS RECORDS,1986. |
| CRESTVIEW CONDOS | 84 | 0.0063 | 0.0063 | 0.0063 | 0.0063 | | | | | 0.0063 | 0.0063 | 0.0063 | DATA FROM DOHS RECORDS,1986. |
| CROMWELL FIRE DIST. WATER DEPT. | 9500 | 0.86 | 0.77 | 0.91 | 1.22 | 0.59 | 1.46 | 1.84 | 3.15 | 2.23 | 2.75 | 4.37 | DATA FROM IND.SUPPLY PLAN. PER CAPITA AVERAGE EXPECTED TO REMAIN AT 75 GPCD.INDUST., COMMERCIAL USE TO PEAK AROUND YEAR 2030. |
| DERBY WATER CO. | (826) (INCL. IN ANSONIA DERBY WATER CO. CONSUMPTION FIGURES) | (.130914) | | | | 0.025086 | | | | | | | TOTAL & PROJECTED CONSUMPTION DATA INCLUDED IN ANSONIA DERBY TOTAL CONSUMPTION FIGURES, AS PER APPROVED WATER SUPPLY PLAN. |
| DESCROCHER APT. | 25 | 0.001875 | 0.001875 | 0.001875 | 0.001875 | | | | | 0.001875 | 0.001875 | 0.001875 | DATA FROM DOHS RECORDS,1986. |
| DOGWOOD ACRES | 35 | 0.002265 | 0.002265 | 0.002265 | 0.002265 | | | | | 0.002265 | 0.002265 | 0.002265 | DATA FROM DOHS RECORDS,1986. |
| DURHAM CENTER 987. WATER CO. | 154 | 0.01155 | 0.01155 | 0.01155 | 0.01155 | 0.0044 | 0.0044 | 0.0044 | 0.0044 | 0.016 | 0.016 | 0.016 | DATA FROM 'STUDY OF DURHAM WATER CO.,AUGUST 3,1 |
| ED'S TRAILER PARK | 138 | 0.01035 | 0.01035 | 0.01035 | 0.01035 | | | | | 0.01035 | 0.01035 | 0.01035 | NO INFO REGARDING FUTURE CONSUMPTION AVAIL. ADDITIONAL WELL SUPPLIES REQUIRED,LAND OWNERSHIP PROBLEMS. DATA FROM DOHS RECORDS,1986. |
| EVERGREEN TRAILER PK. | 255 | 0.019125 | 0.019125 | 0.019125 | 0.019125 | | | | | 0.019125 | 0.019125 | 0.019125 | POPULATION DATA FROM UTILITY PHONE CONTACT,1987. |
| GENDRON'S VALLEY MHP. | 195 | 0.014625 | 0.014625 | 0.014625 | 0.014625 | | | | | 0.014625 | 0.014625 | 0.014625 | NO EXPANSION INDICATED IN QUESTIONNAIRE. DOHS RECORDS SHOW AN AVERAGE CONSUMPTION FIGURE OF 51GPCD,USED FOR PROJECTIONS. |
| GREEN SPRINGS SUBD. | 105 | 0.006 | 0.00627 | 0.00627 | 0.00627 | | | | | 0.00627 | 0.00627 | 0.00627 | EXPANSION CONSISTS OF ONE ADDITIONAL SERVICE BEFORE 1992. 57 GPCD AVERAGE INDICATED BY UTILITY QUESTIONNAIRE. |
| GROVE SCHOOL | 94 | | | | | 0.00531 | 0.00531 | 0.00531 | 0.00531 | 0.00531 | 0.00531 | 0.00531 | DATA FROM DOHS RECORDS,1987. |
| HADDAM ELDERLY HOUSING | 38 | 0.00285 | 0.00285 | 0.00285 | 0.00285 | | | | | 0.00285 | 0.00285 | 0.00285 | DATA FROM DOHS RECORDS,1987. |
| HAPPY ACRES | 130 | 0.00975 | 0.00975 | 0.00975 | 0.00975 | | | | | 0.00975 | 0.00975 | 0.00975 | DATA FROM DOHS RECORDS,1987. |
| HARMONY ACRES MHP | 393 | 0.029475 | 0.029475 | 0.029475 | 0.029475 | | | | | 0.029475 | 0.029475 | 0.029475 | DATA FROM UTILITY QUESTIONNAIRE.NO EXPANSION PLANNED. |
| HAWKSTONE TERRACE CORP. | 56 | 0.0042 | 0.0042 | 0.0042 | 0.0042 | | | | | 0.0042 | 0.0042 | 0.0042 | DATA FROM DOHS, 1987. |

APPENDIX F (CONTINUED)

| NAME OF UTILITY | RESIDENTIAL POPULATION SERVED 1987 | RESIDENTIAL DEMAND (IN MGD) 1987 | 1992 | 2000 | 2030 | NONRESIDENTIAL DEMAND (IN MGD) 1987 | 1992 | 2000 | 2030 | TOTAL PROJECTED DEMAND (IN MGD) FOR EACH UTILITY 1992 | 2000 | 2030 | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HEMLOCK APTS. | 96 | 0.0072 | 0.0072 | 0.0072 | 0.0072 | | | | | 0.0072 | 0.0072 | 0.0072 | DATA FROM UTILITY QUESTIONNAIRE,NO EXPANSION PLANNED. |
| HENRY'S TRAILER PK. | 65 | 0.004875 | 0.004875 | 0.004875 | 0.004875 | | | | | 0.004875 | 0.004875 | 0.004875 | DATA FROM DOHS,1986. |
| HERITAGE COVE CONDOS | 300 | 0.012395 | 0.012395 | 0.012395 | 0.012395 | | | | | 0.0123 | 0.0124 | 0.0129 | DATA FROM UTILITY QUESTIONNAIRE,NO EXPANSION PLANNED.WATER CONSUMPTION LESS IN 1986 THAN IN1977,ALTHOUGH TREND IS INCREASING TOWARDS YEAR 2030. |
| HERITAGE VILLAGE | 31 | 0.4 | 0.456 | 0.511 | 0.748 | 0.42 | 0.469 | 0.537 | 0.783 | 0.925 | 1.048 | 1.531 | INFO FROM IND.SUPPLY PLAN,ALL AVERAGES USED SHOW PER CAPITA INCREASE OF .5GPCD PER YEAR. EXPANSION PLANNED BEYOND PRESENT SERVICE AREA. 97 GPCD USED FOR 1986.FIGURES SHOWN . INCLUDE ONLY RESIDENTIAL CONSUMPTION EQUIVALENT TO NONRESIDENTIAL DEMAND. |
| HIGHLAND HEIGHTS WATER CO. | 122 | 0.0075 | 0.0075 | 0.0075 | 0.0075 | | | | | 0.0075 | 0.0075 | 0.0075 | NO EXPANSION PLANNED, AS INDICATED IN UTILITY QUESTIONNAIRE. |
| HILLVIEW WATER SUPP. | 36 | 0.0036 | 0.0036 | 0.0036 | 0.0036 | | | | | 0.0036 | 0.0036 | 0.0036 | DATA FROM DOHS RECORDS,1986. |
| IDLEVIEW MHP | 174 | 0.0063 | 0.0063 | 0.0063 | 0.0063 | | | | | 0.0063 | 0.0063 | 0.0063 | DATA FROM UTILITY QUESTIONNAIRE. EXPANSION ANTICAPATED WITHIN SERVICE AREA, ALTHOUGH UTILITY SUPPLIED FIGURES SHOW NO INCREASE IN AVERAGE CONSUMPTION. |
| KRAYESKE WATR SUPP. | 50 | 0.00375 | 0.00375 | 0.00375 | 0.00375 | | | | | 0.00375 | 0.00375 | 0.00375 | DATA FROM UTILITY QUESTIONNAIRE, NO EXPANSION INDICATED. |
| LAKE GROVE AT DURHAM | 150 | 0.027397 | 0.027397 | 0.027397 | 0.027397 | | | | | 0.027397 | 0.027397 | 0.027397 | DATA FROM UTILITY QUESTIONNAIRE, NO EXPANSION INDICATED. AVG. CONSUMPTION=182GPCD. |
| LAKESIDE WATER CO. | 27 | 0.002025 | 0.002025 | 0.002025 | 0.002025 | | | | | 0.002025 | 0.002025 | 0.002025 | NO EXPANSION INDICATED FROM DOHS RECORDS. |
| LEETES ISLAND | 40 | 0.003 | 0.003 | 0.003 | 0.003 | | | | | 0.003 | 0.003 | 0.003 | SEASONAL USE BY RESIDENTS, FILL JUGS AND CARRY HOME. NO INFO ON QUANTITY USED. |
| LEGEND HILL CONDOS. | 270 | 0.0162 | 0.0162 | 0.0162 | 0.0162 | | | | | 0.0162 | 0.0162 | 0.0162 | DATA FROM DOHS RECORDS,1985. AVERAGE CONSUMPTION FIGURE OF 60GPCD. |
| LORRAINE TERRACE | 20 | 0.0015 | 0.0015 | 0.0015 | 0.0015 | | | | | 0.0015 | 0.0015 | 0.0015 | DATA FROM UTILITY QUESTIONNAIRE,NO EXPANSION INTENDED. |
| MEADOWBROOK REST HOME | 30 | | | | | 0.00225 | 0.00225 | 0.00225 | 0.00225 | 0.00225 | 0.00225 | 0.00225 | NO EXPANSION INDICATED BY DOHS. |
| MERIDEN WATER DEPT. | 59,100 | 6.2 | 7.0 | 7.91 | 8.90 | .6 | .7 | .79 | .90 | 7.7 | 8.7 | 9.8 | INFO FROM IND.SUPPLY PLAN & QUESTIONNAIRE. DROUGHT PROBLEMS CAN OCCUR UNTIL DIVERSION PERMIT FOR PUMP STATION IS APPROVED. SUPPLY PROBLEMS HAVE ALSO OCCURED DURING FIRE FLOW DEMAND.80GPCD USED FOR 1986 FIGURES. |

APPENDIX F (CONTINUED)

| NAME OF UTILITY | RESIDENTIAL POPULATION SERVED 1987 | RESIDENTIAL DEMAND (IN MGD) 1987 | 1992 | 2000 | 2030 | NONRESIDENTIAL DEMAND (IN MGD) 1987 | 1992 | 2000 | 2030 | TOTAL PROJECTED DEMAND (IN MGD) FOR EACH UTILITY 1992 | 2000 | 2030 | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| METROPOLITAN DISTRICT COMMISSION | 20 | 0.0015 | 0.0015 | 0.0015 | 0.0015 | | | | | 0.0015 | 0.0015 | 0.0015 | ONLY ONE STREET SERVED IN SOUTH CENTRAL AREA.NO EXPANSION INFO WAS SUPPLIED REGARDING SOUTH CENTRAL AREA. DATA FROM UPPER CT WUCC QUESTIONNAIRE. |
| MIDDLETOWN WATER DEPT. | 34,300 | 2.4 | 3.08 | 3.71 | 6.1 | 2.1 | 2.96 | 3.29 | 5 | 6.04 | 7 | 11.1 (2020) | PER CAPITA AVERAGE INCREASES OVER TIME FROM 67.3 GPCD IN 1990 TO 94.1 GPCD IN 2020. INFO FROM IND.PLAN,COMMERCIAL USE TO PEAK IN 1990, INDUSTRIAL USE TO STAY SAME. |
| MILL POND ELDERLY HSG. | 49 | 0.003675 | 0.003675 | 0.003675 | 0.003675 | | | | | 0.003675 | 0.003675 | 0.003675 | NO EXPANSION INDICATED BY DOHS RECORDS. |
| MOUNT ST.JOHN SCHOOL | 144 | | | | | 0.00468 | 0.00468 | 0.00468 | 0.00468 | 0.00468 | 0.00468 | 0.004658 | DATA FROM DOHS RECORDS,1986. PER CAPITA AVG OF 50GPCD FOR RESIDENTS,15GPCD FOR STAFF. |
| NEW LAKEVIEW CONV.HOME | 270 | | | | | 0.02025 | 0.02025 | 0.02025 | 0.02025 | 0.02025 | 0.02025 | 0.02025 | DATA FROM UTILITY QUESTIONNAIRE,NO EXPANSION INTENDED. |
| NOD HILL APTS. | 30 | 0.00203 | .00203 | 0.00203 | 0.00203 | | | | | 0.00203 | 0.00203 | 0.00203 | DATA FROM DOHS RECORDS,1987. |
| NORTHFORD GLEN CONDOS. | 34 | 0.0063 | 0.0063 | 0.0063 | 0.0063 | | | | | 0.0063 | 0.0063 | 0.0063 | DATA FROM DOHS RECORDS,1987. |
| OUR LADY OF GRACE MON. | 45 | | | | | 0.003375 | 0.003375 | 0.003375 | 0.003375 | 0.003375 | 0.003375 | 0.003375 | DATA FROM DOHS RECORDS,1987. |
| PORTLAND WATER DEPT. | 5860 | NA | 0.871 | 0.902 | 1.141A | | | | | 0.871 | 0.902 | 1.142 | DATA FROM UTILITY QUESTIONNAIRE. PLAN TO EXPAND NUMBER OF SERVICE CONNECTIONS, NO INFO AVAILABLE REGARDING USER TYPES, OR PROPOSED EXPANSION. |
| QUONNIPAUG PARK WATER SUPPLY | 456 | 0.0342 | 0.0342 | 0.0342 | 0.0342 | | | | | 0.0342 | 0.0342 | 0.0342 | DATA FROM DOHS RECORDS,1985. |
| RIDGEWOOD HILL CONDOS. | 72 | 0.0054 | 0.0054 | 0.0054 | 0.0054 | | | | | 0.0054 | 0.0054 | 0.0054 | DATA FROM DOHS RECORDS,1986. |
| RIVERCREST WATER CO. | 72 | 0.0054 | 0.0054 | 0.0054 | 0.0054 | | | | | 0.0054 | 0.0054 | 0.0054 | DATA FROM DOHS RECORDS,1985. |
| SOUTH CENTRAL CT REGIONAL WATER AUTH. | 386,520 | 27.25 | 27.6 | 28.9 | 31.5 | 29.52 | 34.8 | 37.4 | 42.2 | 62.4 | 66.3 | 73.7 | ADD 10-15 MILES OF MAIN PER YEAR. |

| NAME OF UTILITY | RESIDENTIAL POPULATION SERVED 1987 | RESIDENTIAL DEMAND (IN MGD) 1987 | 1992 | 2000 | 2030 | NONRESIDENTIAL DEMAND (IN MGD) 1987 | 1992 | 2000 | 2030 | TOTAL PROJECTED DEMAND (IN MGD) FOR EACH UTILITY 1992 | 2000 | 2030 | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SOUTHINGTON WATER DEPT. | 200 | 0.0156 | 0.0156 | 0.017 | 0.018 | | | | | 0.0156 | 0.017 | 0.018 | NOTE: ONLY 200 PEOPLE SERVED IN SC AREA. INCREASING PER CAPITA AVERAGE FROM 78 GPCD IN 1986 TO 90 IN 2030. |
| SUGARLOAF ELDERLY HOUSING | 40 | 0.003 | 0.003 | 0.003 | 0.003 | | | | | 0.003 | 0.003 | 0.003 | DATA FROM DOHS RECORDS,1986. |
| SYLVAN RIDGE CONDOS | 84 | 0.0063 | 0.0063 | 0.0063 | 0.0063 | | | | | 0.0063 | 0.0063 | 0.0063 | NO EXPANSION INDICATED BY DOHS. |
| TWIN MAPLES NUR.HM. | 50 | | | | | 0.00405 | 0.00405 | 0.000405 | 0.00405 | 0.00405 | 0.00405 | 0.00405 | DATA FROM DOHS RECORDS,1985. |
| WALDEN III CONDOS | 143 | 0.010725 | 0.010725 | 0.010725 | 0.010725 | | | | | 0.010725 | 0.010725 | 0.010725 | DATA FROM DOHS RECORDS,1985. |
| WALLINGFORD WATER DIV. | 27,107 | 2.29 | 2.55 | 2.82 | 3.5 | 3.73 | 4.36 | 4.68 | 5.61 | 6.91 | 7.5 | 9.11 | CONSUMPTION BASED ON OPM POPULATION PROJECTIONS |
| WATERBURY WATER BUR. | (NO CUSTOMERS SERVED IN S.C. AREA) | | | | | | | | | | | | WATERBURY OWNS SURFACE RESERVOIR AND SURROUNDING WATERSHED AREA IN SC AREA. |
| WEST LAKE LODGE NURS. | 75 | | | | | 0.0048 | 0.0048 | 0.0048 | 0.0048 | 0.0048 | 0.0048 | 0.0048 | DATA FROM UTILITY QUESTIONNAIRE,NO EXPANSION PLANNED,UNKNOWN REASON FOR CONSUMPTION DECLINE. |

NOTES:
(1) DEMAND USED IN THIS CONTEXT IS SYNONYMOUS WITH PRODUCTION; NONRESIDENTIAL DEMAND INCLUDES ALL PRODUCTION THAT WAS NOT USED FOR RESIDENTIAL USE. NON-RESIDENTIAL DEMAND INCLUDES UNACCOUNTED-FOR WATER USE.

# APPENDIX G

# WATER UTILITY COORDINATING COMMITTEE QUESTIONNAIRE

APPENDIX G

DATE: 11/12/87

SOUTH CENTRAL CONNECTICUT WATER UTILITY COORDINATING COMMITTEE

GUIDELINES FOR COMPLETING
QUESTIONNAIRE

Public Water Suppliers Serving More Than 1,000 People

The purpose of the questionnaire is to establish a data base of information on the South Central Public Water Supply Management Area water utilities. The data base is essential to the proper development of the South Central Connecticut Coordinated Water System Plan. The purpose of most questions is self-explanatory; however, if any questions require clarification, please feel free to call either of the following:

Kathleen C. Klein or Jon M. Beekman
Whitman & Howard, Inc.
1-800-344-4432

The attached questionnaire is supplemented by a copy of the Connecticut Department of Environmental Protection's Water Supply Data Base. As some information in the questionnaire is already available in the Data Base, please disregard questions: 2, 5, 10a., 11, 12a., and 12b. We is also requested that you review the Data Base and revise or update where needed. The information in the Data Base relating to 1984, 1985 and 1986 is most critical, and should be thoroughly reviewed for eventual use in the Water Supply Assessment. Please indicate any necessary revisions directly on your copy of the Data Base, and return with the completed questionnaire. If additional clarification of the Data Base is requested, please contact Howard W. Sternberg of the Department of Environmental Protection at (203)-566-3450.

We know that every question cannot be answered by every water utility.
DNA for "Does Not Apply" or
NA for data "Not Available"

In preparing the questionnaire, we have used the following definitions of terms below:

MG - million gallons
MGD - million gallons per day
Retail water - water which is sold for direct consumption
Wholesale water - water which is resold upon purchase
Interconnection - any link between two utilities capable of one-way or two-way transmission of water, and capable of use either permanently or in an emergency situation.
New Construction - construction of <u>new</u> facilities required to improve service or increase a utility's water production capability.
Rehabilitation - renovation or replacement of <u>existing</u> facilities, e.g., replacement of distribution pipe.

Thank you very much for your cooperation. We request that all questionnaires be completed and returned by December 16, 1987.

DATE: 11/12/87

SOUTH CENTRAL CONNECTICUT WATER UTILITY COORDINATING COMMITTEE

GUIDELINES FOR COMPLETING
QUESTIONNAIRE

The purpose of the questionnaire is to establish a data base of information on the South Central Public Water Supply Management Area water utilities. The data base is essential to the proper development of the South Central Connecticut Coordinated Water System Plan. The purpose of most questions is self-explanatory; however, if any questions require clarification, please feel free to call either of the following:

Kathleen C. Klein or Jon M. Beekman
Whitman & Howard, Inc.
1-800-344-4432

We know that every question cannot be answered by every water utility. Several questions may not be pertinent to your utility or you simply may not have the requested information. We ask that you mark such questions as:

DNA for "Does Not Apply" or
NA for data "Not Available"

In preparing the questionnaire, we have used the following definitions of terms below:

MG - million gallons
MGD - million gallons per day
Retail water - water which is sold for direct consumption
Wholesale water - water which is resold upon purchase
Interconnection - any link between two utilities capable of one-way or two-way transmission of water, and capable of use either permanently or in an emergency situation.
New Construction - construction of <u>new</u> facilities required to improve service or increase a utility's water production capability.
Rehabilitation - renovation or replacement of <u>existing</u> facilities, e.g., replacement of distribution pipe.

Thank you very much for your cooperation. We request that all questionnaires be completed and returned by December 16, 1987.

SOUTH CENTRAL CONNECTICUT WUCC
WATER UTILITY QUESTIONNAIRE

RETURN TO

Whitman & Howard, Inc.
45 William Street
Wellesley, MA 02181

Attn: Kathleen C. Klein

WATER UTILITY

(Place Mailing Label Here)

(Please correct above label if necessary)

Name and address of Chief Official to whom all correspondence should be addressed: _____

_____

_____

Telephone No. of Water Utility (203) _____

Town(s) where located: _____

If part of a larger utility, please give name: _____

Person to contact for additional information _____

SECTION A - GENERAL INFORMATION

1. Total number of: Retail customers (1986) _____; Wholesale Customers _____

2. Estimated total population served _____

3. Provide written description of existing service area (e.g., 250-unit condominium complex consisting of 200 one-bedroom units and 50 two-bedroom units (Attach additional pages if needed) _____

_____

_____

_____

_____

Water Utility Name _____

4. Describe anticipated future service area and/or franchise area (please provide copy of legislation or DPUC Dock establishing franchise area).

_____

_____

_____

_____

_____

5. Type of supplier (Check one) Municipal _____ Association _____
Investor _____ Taxing District _____
Other _____

6. Residential water bill for quarterly consumption of 18,000 gallons would be $_____.

Please furnish a copy of your water rate schedule. Indicate effective date of rate _____ and if/when you anticipate a change in your rate.

_____

7. Please list recent engineering/water supply planning studies performed (within last ten years) for your utility or parts of your utility by consultants or in-house. (Give title, author, and date of report and copy if possible).

_____

_____

8. Have any other questionnaires been completed recently? If so, for whom? Please give name and address and subject covered.

_____

_____

9. Please attach a copy of your most recent DPUC annual report and/or audit. If not available, give most recent year available.

Comments: _____

_____

_____

10. Please indicate your estimated system production in thousands of gallons in 1986, 1990, 2005 and 2035. (If you use other units, please state the units used). Are your production sources metered? Yes _____ No _____

Water Utility Name _____

| | a. 1986 | b. 1990 | c. 2005 | d. 2035 |
|---|---|---|---|---|
| Residential Consumption | | | | |
| Non-Residential Consumption | | | | |
| Unaccounted Consumption | | | | |
| Other | | | | |
| Average Day (Yearly average) | | | | |
| Average Day (Maximum month) | | | | |
| Which month? | | | | |
| Maximum Day (Annual maximum) | | | | |

Estimate the percent of your total production which is retail (individual, commercial or industrial accounts) and wholesale (provided to another utility or entity for resale).

Retail _____% Wholesale _____%

Comments: _____

_____

_____

11. What do you normally consider to be the existing safe yield of your active sources? (1,000 GPD)

Surface Source _____ Groundwater Source _____ Total _____

On what basis is/was your safe yield determined? Please give examples if you can, such as extended pumping tests, pump capacity, etc.

_____

_____

_____

12. List your sources of supply. (Attach additional pages if needed.)

a. Surface Supplies

| Name of Source | Status* (Active) (Inactive) (Emergency) | Storage Volume @ Spillway Level (MG) | Avg. Amt. Water Withdrawn (MGD) | Maximum Allowable Withdrawal (MGD) | Problems |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Water Utility Name _____

b. Groundwater Supplies

| Name of Aquifer or Well Field | No. of Wells | Status* (Active) (Inactive) (MG) | Avg. Amt. Water Withdrawn (MGD) | Maximum Allowable Withdrawal (MGD) | Problems |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

c. Potential Future Supplies

| Name of Source | Estimated Date Needed | Potential Yield | Problems |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

d. Comments:

_____

_____

_____

(1) Active - supplies that are permanently connected to the system (including seasonal supplies) and available for distribution.

(2) Inactive - no longer used or maintained as a source of supply; restricted from use unless approved by DOHS and reclassified to emergency or actual status.

(3) Emergency - not regular sources of supply which may be approved by DOHS for use on intermittent basis.

13. Treatment Provided:

| Source | Degree of Treatment |
|---|---|
| | |
| | |
| | |

Water Utility Name _____

14. Do you anticipate serving additional municipalities or water utilities? _____ If so, who? _____

15. During the next five (5) years, do you anticipate an extension or addition in your:

Service Area? _____ If so, additional area (sq. miles) _____
Franchise Area? _____ If so, additional area (sq. miles) _____
Number of service connections _____

If you projections are based on population data or land use patterns or trends, please state source and, if possible, enclose statistics concerned. Do you have liaison and coordination with your Town on this subject?

Comments: _____

16. What is the total length of pipe in your distribution system? _____ List pipe sizes and approximate percentage each size represents of total length.

| Size (Inches) | Percent of Total Length | Pipe Materials (if known) | Condition of Pipe (if known) |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

Comments: _____

Water Utility Name _____

17. a. Has a Leakage Detection survey been conducted of your system?
Yes _____ No _____

If yes, please give approximate date: _____

b. Estimated loss of water due to system leakage _____%.

Comments: _____

_____

_____

_____

18. Distribution System Storage (standpipes, storage tanks, etc.)

Total Cover Storage (MG) _____ Number of Units _____
Please list storage units:

| Location or Name | Volume (MG) |
|---|---|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

19. Facility Needs: estimate the total dollar value of your utility's new construction needs over the next 5 years. Total $_____.

a. Portion of needs resulting from the following:
Rehabilitation: $_____
Increase in System Demand: $_____
Compliance: $_____

b. How are facility needs determined?

_____

_____

_____

c. Comments: _____

_____

_____

Water Utility Name _____

20. Supply Problems

a. In the last 5 years, have you had difficulty providing an adequate supply to your customers? Yes _____ No _____ Sometimes _____

b. Do you have an emergency power supply?
Yes _____ No _____

c. Have you experienced supply problems during droughts?
Yes _____ No _____

Explain: _____

_____

_____

d. Have you experienced problems during fire protection demand?
Yes _____ No _____

Explain: _____

_____

_____

21. Does your utility provide public or private fire protection service?
Yes _____ No _____

Comments: _____

_____

22. Has an individual water supply plan been requested for your utility by DOHS?
Yes _____ No _____

If yes, what is the status of your individual water supply plan? _____

_____

Name of consultant completing your individual plan: _____

Water Utility Name _____

Please indicate the name of the person responsible for completing this questionnaire.

Name: _____

Title: _____

Signature: _____

We appreciate your time and trouble. We realize this has been an imposition on your valuable time. Maybe you'd now like to tell us a thing or two, so we have provided the following page (Page 8) for this purpose. Your frank and open views on any water-related topic will be very much appreciated. You'll notice that we have even omitted the "Water Utility Name" on this so you can be anonymous if you wish!

Thank you.

## ADDITIONAL COMMENTS

Please give your views on any aspects of the water supply industry about which you feel strongly, especially in terms which you think might improve the industry. For example, are there any large-scale projects which would affect your utility. Are there any supply projects you would like to see? Is there legislation pending which you feel would help (or hinder) the industry?

# APPENDIX H

# SUMMARY OF QUESTIONNAIRE RESPONSES

**APPENDIX H**
**SOUTH CENTRAL MANAGEMENT AREA**
**SUMMARY OF QUESTIONNAIRE RESPONSES**

(Public Water Suppliers Serving More Than 1,000 People)

| Utility Name | Response To Questionnaire | Submitted Individual Supply Plan |
|---|---|---|
| Ansonia Derby Water Company | Yes | Yes |
| Bridgeport Hydraulic Company | Yes | Yes - Sections |
| Connecticut Valley Hospital, Middletown | Yes | No |
| Connecticut Water Company | Yes | Yes |
| Cromwell Fire District Water Department | Yes | Yes - Sections |
| Heritage Village, Oxford | Yes | Yes |
| Meriden Water Department | Yes | No |
| Metropolitan District Commission | Yes | No |
| Middletown Water Department | Yes | Yes |
| Portland Water Department | Yes | No |
| South Central Connecticut Regional Water Authority | Yes | Yes |
| Southington Water Department | Yes | Yes |
| Wallingford Water Bureau | Yes | Yes |
| Waterbury Water Bureau | Yes | No |

(Public Water Suppliers Serving Less Than 1,000 People)

| Utility Name | |
|---|---|
| Aaron Manor Convalescent Home, Chester | Yes |
| Beechwood MHP, Killingworth | Yes |
| Bernice's Court, Guilford | No |
| Beseck Lake Water Company, Middlefield | Yes |
| Bittersweet Ridge | Yes |
| Blue Trails Assoc., North Branford | No |
| Bradley Home, Meriden | Yes |
| Cedar Grove MHP, Clinton | No |
| Country Manor Health Care Center, Prospect | No |
| Crestview Condo Assoc., Cheshire | No |
| Denler Apartments, Chester | No |
| Derby Water Company | No |
| Descrocher Apartments, Middlefield | No |
| Dogwood Acres, Durham | No |
| Durham Center Water Company | No |
| Ed's Trailer Park, Bethany | No |
| Evergreen Trailer Park, Clinton | No |
| Gendron's Valley MHP, Naugatuck | Yes |
| Green Springs Water Company, Madison | Yes |
| Grove School, Madison | No |
| Haddam Elderly Housing | No |
| Happy Acres, Middlefield | No |
| Harmony Acres MHP, Prospect | Yes |
| Hawkstone Terrace Corp., Oxford | No |

**APPENDIX H (Cont.)**
**SOUTH CENTRAL MANAGEMENT AREA**
**SUMMARY OF QUESTIONNAIRE RESPONSES**

**(Public Water Suppliers Serving More Than 1,000 People)**

| Utility Name | Response To Questionnaire |
|---|---|
| Hemlock Apartments, Essex | Yes |
| Henry's Trailer Park, Wallingford | No |
| Heritage Cove, Essex | Yes |
| Highland Heights Water Co., Prospect | Yes |
| Hillview Water Supply, Cheshire | Yes |
| Idleview MHP, Naugatuck | Yes |
| Kdraywske Water Supply, Guilford | Yes |
| Lake Grove at Durham | Yes |
| Lakeside Water Company, Guilford | No |
| Leetes Island, Guilford | No |
| Legend Hill Condos, Madison | No |
| Lorraine Terrace, Middletown | Yes |
| Meadowbrook Rest Home, Essex | No |
| Mill Pond Elderly Housing, Durham | No |
| Mount St. John School, Deep River | No |
| New Lakeview Convalescent Home, Cheshire | Yes |
| Nod Hill Apartments, Clinton | No |
| Northford Glen Condo, North Branford | No |
| Our Lady of Grace Monastery, Guilford | No |
| Quonnipaug Hills Water Supply, Guilford | No |
| Ridgewood Hill Condos, Deep River | No |
| Rivercrest Water Company, Portland | Yes |
| Sugarloaf Elderly Housing, Middlefield | No |
| Sylvan Ridge Condos, Middlefield | No |
| Thistle Rock, Guilford | No |
| Twin Maples Nursing Home, Guilford | No |
| Walden III Condos, Guilford | No |
| West Lake Lodge Nursing Home, Guilford | Yes |