WATER SUPPLY PLAN

NEW HARTFORD WATER COMPANY
NEW HARTFORD, CONNECTICUT

October 28, 2005

PREPARED FOR
TOWN OF NEW HARTFORD
WATER POLLUTION CONTROL AUTHORITY

Town Hall
Main Street
New Hartford, CT 06057

CONFIDENTIAL

PREPARED BY:

ConnecticutWater
New England Water Utility Services
93 West Main Street
Clinton, CT 06413

Connecticut Water

LETTER OF TRANSMITTAL

THE CONNECTICUT WATER CO.
93 WEST MAIN STREET
CLINTON, CONNECTICUT 06413-1600
ATTENTION Keith Nadeau

TO: Christine Hayward
Town of New Hartford
530 Main Street
New Hartford, CT 06057

DATE 11-14-05
PROJECT [BU#]
LOCATION
ATTENTION
RE: New Hartford Water Company
Water Supply Plan

GENTLEMEN:

WE ARE SENDING YOU ☐ HEREWITH ☐ DELIVERED BY HAND ☐ UNDER SEPARATE COVER
VIA _____ THE FOLLOWING ITEMS:
☐ PLANS ☐ PRINTS ☐ SHOP DRAWINGS ☐ SAMPLES ☐ SPECIFICATIONS
☐ ESTIMATES ☐ COPY OF LETTER ☐ _____

COPIES	DATE OR NO.	DESCRIPTION

THESE ARE TRANSMITTED AS INDICATED BELOW

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☐ _____

REMARKS: Here is a copy of the Supply Plan as submitted to the State

IF ENCLOSURES ARE NOT AS INDICATED,
PLEASE NOTIFY US AT ONCE.

SIGNED: K. Nadeau

NEW HARTFORD WATER COMPANY
WATER SUPPLY PLAN

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NEW HARTFORD WATER COMPANY
WATER SUPPLY PLAN

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SECTION I - INTRODUCTION

A. Purpose

Planning for the future is a critical component of the management of a water company. Planning for future needs is required to ensure the availability of an adequate quantity of drinking water, to ensure orderly growth of the water supply system, and to efficiently allocate and utilize available resources. These goals can be achieved by making decisions regarding water system capital improvements and operations, which are in accordance with established water company policy documents in an approved Water Supply Plan.

The purpose of this Water Supply Plan is to satisfy the statutory and regulatory requirements, and to provide the New Hartford Water Company (NHWC) with a framework for decision making related to present and future water supply requirements. The planning requirements necessary to satisfy the goals listed above have been provided in the appropriate sections of this Plan.

B. Scope

This Plan is a revision to the Water Supply Plan approved on October 1, 2001. It contains information on the system improvements implemented during the past five years. The Plan has been structured to include 5-year, 20-year, and 50-year planning projections. The 5-year projection begins in calendar year 2005 and ends with the year 2009. The 20- and 50-year planning projections end with the years 2020 and 2050, respectively.

The 5-year planning period reflects actions that the New Hartford Water Company should be implementing or should be planning to implement. The data utilized to prepare the Water Supply Plan for this period is the most detailed and as a result, a definitive improvement schedule, implementation schedule, and financial planning program have been developed. The 20 and 50-year planning periods are not as well documented, and the resulting schedules and financial planning programs are more generalized. The Plan contains a detailed discussion on the company structure, existing sources, system performance, population served, water consumption trends and projections, land use and ownership, future service areas, assessment of system deficiencies, financial planning, emergency procedures to be implemented by the NHWC when necessary, and a selection of alternatives to address system deficiencies.

C. Plan Revision

This Plan has been designed as a working document and it will be revised to accommodate system changes, variations in water consumption, and the additions of new or amended long-term goals. A revised plan must be submitted to the DPH at least once every five (5) years or sooner should the NHWC or the DPH deem it necessary. If the DPH requires a revision, the NHWC will be informed in writing of any section(s) of the Plan requiring revision and the reasons such revisions are necessary. The NHWC must submit a revised Plan or amendment to the Plan whenever it is found to be inconsistent with the approved goals of the NHWC or a significant component of the Plan is no longer valid.

SECTION II – COMPANY STRUCTURE AND ASSETS

A. Ownership and Officers

The New Hartford Water Company is owned by the Town of New Hartford as an entity of the Town. The operating revenue of the company is maintained in an account separate from the operating income of the Town of New Hartford as an enterprise fund accounting system. As a result, the New Hartford Water Company's only sources of operating income are the user charges it collects from its customers.

The New Hartford Water Company operates under the direction of the Water Pollution Control Authority (WPCA). In 1986, the Town of New Hartford adopted an ordinance creating the New Hartford Water and Sewer Commissions. In 1987, this ordinance was revised through the passage of a new ordinance combining the authority of the New Hartford Water Commission and the New Hartford Sewer Commission into the newly created New Hartford Water Pollution Control Authority. Refer to Appendix A for copies of the 1986 and 1987 ordinances resulting in the creation of the Water Pollution Control Authority. The WPCA has oversight and policy setting control over the activities of the New Hartford Water Company and the Water Pollution Control operations.

The complete overall water system operation is performed by New England Water Utility Services, Inc. (NEWUS) under a services agreement contract with the Town of New Hartford. NEWUS reports to both the First Selectman and the WPCA. This contract has an effective date of June 6, 1999 and a term of 10 years with automatic renewal unless written notice to discontinue or revise by either party is given at least 365 days prior to the termination date.

The Water Pollution Control Authority is made up of a seven person volunteer board. This board meets periodically to discuss matters related to the operation of both the New Hartford Water Company and the Water Pollution Control system. A listing of the current members of the WPCA and their term expiration dates is as follows:

Name	Term Expiration
William Michaud, Chairman	December 31, 2006
Daria Hart, Vice Chair	December 31, 2005
Richard Sheridan	December 31, 2007
E. Kenneth Krohner	December 31, 2006
Louis Martocchio	December 31, 2007

Earl MacInnes	December 31, 2007
Elaine Santoro	December 31, 2005

It is important to note that the New Hartford Water Company differs significantly from a privately held entity typical of many water companies operating in the State of Connecticut. The current company structure dictates that its board of directors be made up of volunteers. The ability to secure needed revenue for capital improvements and compliance with statutory and regulatory requirements is affected by the fact that user fees account for 100 percent of the annual operating income for the company. Additional revenue can only be generated by increasing the user charges or through borrowing. The financial status of the New Hartford Water Company and the limited ability to generate revenue is discussed in the appropriate part of this section and in other sections of this document.

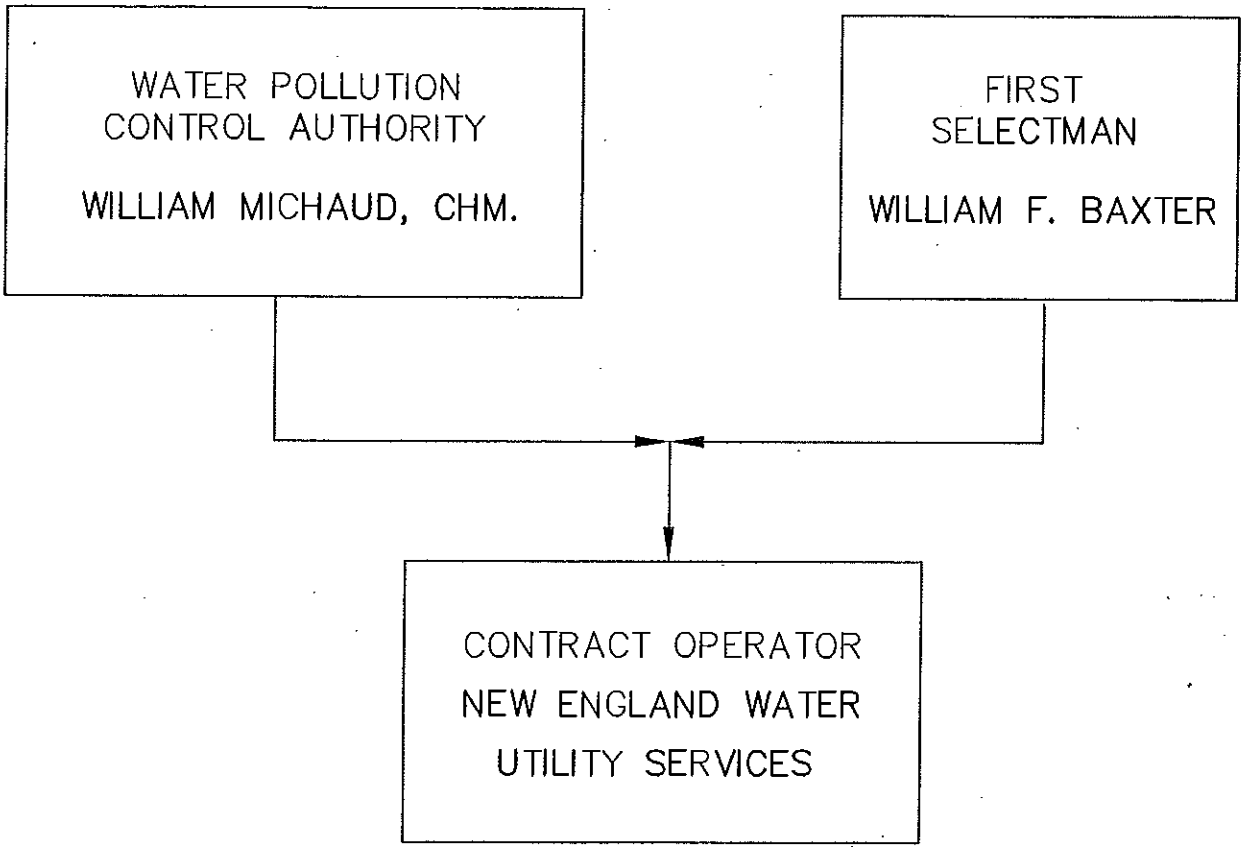
B. Organization Chart

As stated, the New Hartford Water Company is operated by NEWUS under a services agreement contract with the Town of New Hartford. There are no employees of the New Hartford Water Company. An organizational chart, presented as Figure 2.1, illustrates the simple hierarchy of the New Hartford Water Company with the responsibility for the overall operation residing jointly with the First Selectman and the WPCA. Operation, maintenance, billing, sampling, testing, collections, reporting and emergency activities are handled by NEWUS.

C. Responsibilities of Positions

Prior to 1995, town employees consisting of a Supervisor of Plant, a Bookkeeper, and two Plant Maintainer Operators operated the New Hartford Water Company. The Supervisor of Plant was the Chief Operator of the system. When this position became vacant, the town hired Connecticut Water Company (CWC), a wholly owned subsidiary of Connecticut Water Services, Inc. to assume these responsibilities. These responsibilities were handled out of CWC's Naugatuck Region office. In 1999 the entire operation of the water system was contracted out to Connecticut Water Utility Services, Inc.(CWUS), which has since been renamed New England Water Utility Services (NEWUS), another wholly owned subsidiary of Connecticut Water Services, Inc. At that time the two existing town water operators became full time regular employees of The Connecticut Water Company.

FIGURE 2.1



Revision	Description	Date	By	Approved By
1	REVISED FOR WATER SUPPLY PLAN	9/6/05	CAL	K. Nadeau

Drawn By: CAL
Date: 1/23/01
Approved by: K. Nadeau
Title:
Title:

ConnecticutWater
93 WEST MAIN STREET
CLINTON, CT 06413

ORGANIZATION CHART
NEW HARTFORD WATER CO.
NEW HARTFORD, CONNECTICUT

Scale: N.T.S.
Drawing Number
ANA-170
BU Number –
Sheet 1 of 1

Currently, as explained above, NEWUS provides all activities for the daily operation of the system. NEWUS also advises the Town of future or proposed regulatory requirements and the effect of these requirements on the water system. NEWUS also works to ensure that the water system is in compliance with all pertinent regulatory requirements.

D. Operator Certification Status

Section 25-32 of the Public Health Code requires all community water systems to have at least one appropriately certified treatment plant operator and distribution system operator. The Chief Operator for the New Hartford Water system, as registered with the DPH is Patrick Corbett who maintains a Class II Water Treatment Plant Operators and a Class II Distribution System Operators Certification issued by DPH. Mr. Corbett is employed by CWC out of its Naugatuck Region, and provides Chief Operator services for NEWUS for the New Hartford System. Other CWC certified operators available to the New Hartford System are:

Ray Adamaitis	Class II Distribution
Keith Winslow	Class II Plant
Steve Sirica	Class II Distribution, Class II Plant
Reed Reynolds	Class II Plant, Class II Distribution
Josh Ruccio	Class II Distribution
Craig Patla	Class II Distribution

E. Contractual Agreements and Legal Mandates

The New Hartford Water Company does not operate under any contractual agreement or legal mandate that would be considered a constraint on its operation with the exception of the Department of Public Health regulations requiring the production of potable water in accordance with Section 19-13-B102 of the Connecticut Public Health Code. Section 19-13-B102 identifies applicable water quality standards for potable water, protection of distribution systems, laboratory testing procedures, record keeping and reporting requirements, treatment techniques, source supply capacity, emergencies, and unaccounted for water-reduction programs which the NHWC must comply with when providing potable water to its customers.

On April 18, 1949, the Allied Connecticut Towns entered into an agreement with the Metropolitan District (MDC) to allow the construction of the Hogback Dam. This agreement was modified on two separate occasions on February 18, 1963 and January 14, 1965. The final revision stipulated that the Metropolitan District was to construct a 10-inch feeder water pipe line, in the Town of New Hartford, from the MDC 48-inch Barkhamsted-Nepaug transmission line. This 10-inch feeder water pipe line connection to the MDC 48-inch transmission line is referred to herein as the MDC Interconnection. The 1965 revised agreement stipulated that the feeder water pipe line was to be deeded to the Town of New Hartford beyond the point of installation of an MDC water meter. This water meter is currently located at the Route 219 Pumping Station. Following the construction of the 10-inch feeder line, the Town of New Hartford was to be responsible for the operation and maintenance of such line and was to pay the MDC for water used. No maximum quantity of water that could be withdrawn by the Town of New Hartford from the interconnection was specified. Since the date of the 1965 agreement, the Town of New Hartford (New Hartford Water Company) has been operating in accordance with the stipulated conditions. Copies of the original 1949 agreement, and the two subsequent modifications have been included as Appendix B. This source is now an emergency source only.

As stated in previous sections, the Town of New Hartford has a services agreement with New England Water Utility Services for operation of the water system. This contract has an effective date of 6/6/99 with a ten-year term.

F. Existing Assets and Financial Status

The New Hartford Water Company operates on an enterprise fund accounting system. This system establishes a separate account from the general fund of the Town of New Hartford for the NHWC costs and revenues. For this system to operate correctly, the NHWC has established their current rate structure based on full-cost pricing. Full-cost pricing requires the NHWC to establish user costs that will allow recovery of the full cost to operate and maintain the system. The resulting rate structure for each year is developed based on the cost to operate and maintain the system during the previous fiscal year with estimates for inflation and capital improvements. Table 2.1 provides a breakdown of the current fiscal year (2005 - 2006) operating budget of $308,312 for the New Hartford Water Company.

Tables 2.2 through 2.4 present data related to the current financial status of the New

Hartford Water Pollution Control Authority (WPCA) which oversees both water and sewer operations for the Town. Table 2.2 presents the revenue, expenses and changes in net assets as of June 30, 2004. Table 2.3 is the statement of cash flows of the WPCA for the period ending June 30, 2004. Table 2.4 is the statement of fiduciary net assets.

TABLE 2.1

New Hartford Water Company

Operating Budget

Fiscal Year 2005 – 2006

(Water Only)

Description		Amount
NEWUS Routine Charges - water	$	165,697.00
System Repairs - water	$	30,000.00
Administrative Salaries	$	2,000.00
Legal Fees	$	1,000.00
Capital Improvements - water	$	25,000.00
Bonds - water	$	72,341.00
Debt Service - water	$	12,274.00
TOTAL	**$**	**308,312.00**

TABLE 2.2

Town of New Hartford

Statement of Revenues, Expenses and Changes in Net Assets

Proprietary Funds

For the Year Ended June 30, 2004

(Water & Sewer)

	Enterprise Funds Water Pollution Control Authority
Operating Revenues:	
Charges for services:	
Usage assessments	$ 495,198
Sewer line assessments	6,532
Application fees	1,100
Sewer hookup	1,000
Total Operating Revenues	$ 503,830
Operating Expenses:	
Salaries and fringe benefits	$ 1,150
Plant management fees	283,309
Supplies	1,042
Capital improvements	22,195
Repairs and maintenance	53,855
Depreciation	149,357
Total Operating Expenses	$ 510,908
Operating income/(lose)	(7,078)
Nonoperating Revenues/(Expenses)	
Interest income	$ 283
Grant income	38,400
Interest expense	(56,013)
Total nonoperating revenue/(expenses)	(17,330)
Income / (Loss) before transfers	(24,408)
Transfers In	-
Change in net assets	(24,408)
Total net assets – beginning	4,088,497
Total net assets – ending	$4,064,089

TABLE 2.3

Town of New Hartford

Statement of Cash Flows

Proprietary Funds

For the Year Ended June 30, 2004

(Water & Sewer)

	Enterprise Funds Water Pollution Control Authority
Cash Flows from Operating Activities:	
Receipts from customers	$ 594,713
Payments to suppliers	(359,791)
Payments to employees	(1,150)
Net cash provided by operating activities	233,772
Cash Flows from Noncapital Financing Activities:	
Net cash provided by noncapital financing activities	-
Cash Flows from Capital and Related Financing Activities:	
Grant income	38,400
Principal paid on capital debt	(37,214)
Interest paid on capital debt	(56,013)
Transfers in	-
Net cash provided by capital and related financing activities	(54,827)
Cash Flows from Investing Activities:	
Purchase and construction of capital assets	(49,799)
Interest income	283
Net cash provided by investing activities	(49,516)
Net increase in cash and cash equivalents	129,429
Balances – beginning of the year	167,506
Balances – end of the year	$ 296,935
Displayed as: cash	$ 296,935
Reconciliation of Operating Income/(Loss) to Net Cash Provided (used) by Operating Activities:	
Operating income/(loss)	$ (7,078)
Adjustments to reconcile income to net cash provided (used) by operating activities:	
Depreciation expense	149,357
Change in assets and liabilities:	
Receivables, net	94,480
Accrued utilities revenue	(3,597)
Accounts payable	610
Net Cash Provided / (Used) by Operating Activities	$ 233,772

TABLE 2.4

Town of New Hartford

Statement of Fiduciary Net Assets

June 30, 2004

(Water & Sewer)

	Pension Trust Fund	Agency Funds
Assets:		
Cash and cash equivalents	$ 18,151	$ 48,397
Investments	1,113,497	-
Total Assets	1,131,648	48,397
Liabilities and Net Assets		
Liabilities:		
Fiduciary deposits	-	48,397
Total Liabilities	-	48,397
Net Assets		
Held in trust for pension benefits	1,131,648	-
Total Net Assets	$1,131,648	-

SECTION III – EXISTING SOURCES

A. Description of Sources

Currently, the New Hartford Water Company obtains the water supplied to its customers from two groundwater wells and has an emergency raw water interconnection with the Metropolitan District's (MDC) Barkhamsted Aqueduct. One well is known as the Pine Meadow Well, installed in 1944, is located at the end of Church Street, approximately 350 feet southwest of Route 44 and 450 feet southwest of the Farmington River. The well, renovated in place in late 2000 is 82' 9" deep with a lower level screen and an upper level screen that totals 45 feet. This is due to the fact that a hard pan layer exists between two sand and gravel layers. Water is pumped from the well via a twelve stage turbine pump equipped with a 30 horsepower variable frequency drive motor capable of pumping 200 gallons per minute at a total dynamic head of 348 feet. The well station is capable of providing flow paced chemical treatment for pH adjustment along with an UV light system for disinfection. Standby power for the Pine Meadow Well is provided by a 45 KW propane generator with an automatic transfer switch.

The second groundwater well within the system is the Black Bridge Well. The well was installed in 1988 and is located approximately 120 feet northwest of Black Bridge Road and 115 feet southwest of the Farmington River. The well is approximately 70 feet deep with 20.67 feet of 10 inch diameter screen. This well went into service October 1996 and replace the MDC interconnection at Route 219. Water is pumped from the well via a fifteen stage turbine pump equipped with a 30 horsepower motor capable of pumping 200 gallons per minute at a total dynamic head of 370 feet. Historically the Black Bridge Well was treated with sodium silicate to sequester manganese. A filtration treatment facility went on-line in 2001 to provide manganese removal, pH adjustment and disinfection.

The New Hartford Water Company also has an emergency interconnection, the Route 219 Pumping Station, to deliver water from MDC's Barkhamsted Aqueduct. This station is capable of delivering up to 500 gpm. Two fire hydrants have been installed at the property that allow for connection to a portable trailer mounted pump. The distribution facilities located within the station are no longer utilized and the suction and discharge mains to it have been cut and plugged. The use of the Barkhamsted Aqueduct will only be implemented in the event of emergency conditions and will require prior approval from the DPH.

The following is a more detailed description of the current supply sources.

1. Pine Meadow Well - Existing Source. To be in place after reconstruction. (Active)

Description:	Groundwater supply developed in 1944, reconstructed in 2000.
Location:	End of Church Street, 350 feet southwest of Route 44 and 450 feet southwest of the Farmington River.
Type:	Gravel Packed (8-inch x 20-inch) well 82' 9" deep with 45 feet, 8-inch diameter telescoping screen.
Well Pump:	Twelve-stage turbine pump with 30 HP variable frequency drive motor. Condition of pump is new.
Pump Capacity:	200 GPM at 348 feet TDH.
Metered:	Yes
Safe Yield:	200 GPM (maximum withdrawal rate per DEP Diversion Permit DIV-95-07) Maximum daily withdrawal of 0.45 mgd combined with Black Bridge Well.
Site Protection:	Property in the immediate vicinity is owned by the NHWC.
Emergency Power:	Yes, on-site 45 KW propane fueled generator with automatic transfer switch.
Aquifer Protection Plan:	A Level A Mapping Plan was completed and submitted to the DEP in June of 1995 as part of Diversion application. Protective procedures will be implemented following adoption of local land use regulations
Treatment:	Chemical treatment with sodium hydroxide for pH adjustment, and an UV light system for disinfection

2. Black Bridge Well - Existing Source. (Active)

Description:	Groundwater supply developed in 1986, available to the system in October 1996.
Location:	Approximately 120 feet northwest of Black Bridge road and 115 feet southwest of the Farmington River on top of a flood control dike.
Type:	Gravel Packed (10-inch diameter) well 70 feet deep with 20.67 feet, 10-inch diameter screen.
Well Pump:	Fifteen-stage turbine pump with 30 HP motor. Condition of pump is good.
Pump Capacity:	200 GPM at 370 feet TDH.
Metered:	Yes
Safe Yield:	200 GPM (maximum withdrawal rate per DEP Diversion Permit DIV-95-07) Maximum daily withdrawal of 0.45 mgd combined with Pine Meadow Well.
Site Protection:	The Town of New Hartford owns the land surrounding the Black Bridge Well. The land to the west is used as a playground at the New Hartford Elementary School.
Emergency Power:	Yes, on-site 45 KW propane fueled generator with automatic transfer switch.
Aquifer Protection Plan:	A Level A Mapping Plan was completed and submitted to the DEP in June of 1995 as part of Diversion application. Protective procedures will be implemented following adoption of local land use regulations
Treatment:	Filtration for manganese removal and chemical treatment with sodium hydroxide for pH adjustment, and sodium hydroxide for disinfection.

3. Barkhamsted Aqueduct Supply – Emergency Source.

Description:	Interconnection to the 48-inch aqueduct from MDC's Barkhamsted Reservoir, installed in 1967.
Transmission:	Pumped into the system at the Route 219 Pumping Station through a 12-inch main.
Location:	Route 219 approximately 400 feet west of the East Branch of the Farmington River.
Pump:	Portable Trailer Mounted
Pump Capacity:	500 GPM at 465 feet TDH, 104 HP
Metered:	Yes
Emergency Power:	Diesel Engine
Treatment:	Chemical treatment with sodium hypochlorite.

In addition to the above sources, the New Hartford Water Company constructed a 0.49 million gallon water storage tank in 1990 and a 0.175 million gallon tank in 2002. The tanks were installed to maintain system operating pressure and replace the Steele Road Reservoir. Both tanks are equipped with a 12-inch overflow set at 715.0 feet above mean seal level (MSL). Both tanks are side by side located north of the Greenwoods Industrial Park.

B. Map of Sources

Figure 3.1 Supply and Land Use Map included in Appendix C, identifies all sources of supply, land owned by NHWC, along with industrial and commercial zoning.

C. Operating Status of Sources

Pine Meadow Well	Active
Black Bridge Well	Active

D. Safe Yield of Sources and System

The available water within the system is the maximum amount of water the New Hartford Water Company can dependably supply, taking into account limitations imposed by geologic, hydraulic, or other related physical limitations. As a result, to determine the available supply, it is necessary to calculate the safe yield of all active supply sources. Loureiro Engineering Associates, P.C (LEA), performed this for the October 17, 1995 revision of the Supply Plan and the Diversion Permit. The methods and assumptions utilized in determining the safe yield of the current sources have been described below. Additionally, the system safe yield is a summation of the safe yield of each of the currently active sources. With the Barkhamsted Aqueduct now off-line, the system safe yield has been calculated consisting of the Pine Meadow Well and the Black Bridge Well.

Pine Meadow Well Safe Yield (Active)

The safe yield of the Pine Meadow Well was first calculated using the Theis Non-equilibrium Equation and site specific parameters as derived from *"Water Supply Study, Town of New Hartford, 1979"*. The results of this analysis produce a safe yield of 236 GPM for the Pine Meadow Well.

This well was renovated in 1983. At that time the S.B. Church Company estimated a safe yield of approximately 500 GPM. The New Hartford Water Company applied for a diversion permit for both the Pine Meadow and Black Bridge Wells in June of 1995. As part of the 1995 Diversion Permit Application, a finite difference computer model was developed (by LEA) to calculate the safe yield of the current and proposed groundwater sources. This model was tested at a 200 GPM yield from the Pine Meadow Well. The model results confirmed this safe yield. The actual procedures used for these computations are included in Appendix D. Based on the results of the finite difference computer model the Diversion Permit Application included a request to increase the pumping capacity of the Pine Meadow Well to 200 GPM.

The well was reconstructed by the S.B. Church Co. in 2000 and upon completion, a 72 hour pump test was performed in November 2000. The well was pumped continuously at 265 gallons per minute with a stabilized level of 34.15 feet which was a drawdown of 12.5 feet.

Available supply for water supply planning purposes is constrained by the permitted withdrawal of 200 gpm (maximum withdrawal rate per DEP Diversion Permit DIV-95-07) and a maximum daily withdrawal of 0.45 mgd combined with the Black Bridge Well.

Black Bridge Well Safe Yield (Active)

The calculated safe yield of the Black Bridge Well is in excess of 200 GPM. As stated above, the New Hartford Water Company applied for, and received, a diversion permit for both the Pine Meadow and Black Bridge Wells. As part of the Diversion Permit Application, a finite difference computer model was prepared (by LEA), to calculate the safe yield of both the Pine Meadow and Black Bridge Wells. The model was run with both this well and the Pine Meadow Well pumping at 200 GPM, and demonstrated that the drawdown from the Black Bridge Well at a yield of 200 GPM was well above the screen elevation. As shown by the model results (by LEA), in Appendix D, aquifer transmission capacity can support this yield. These results were also submitted to the DEP Inland Water Resources Division in June of 1995 as part of the Level A Mapping Plan.

Available supply for water supply planning purposes is constrained by the permitted withdrawal of 200 gpm (maximum withdrawal rate per DEP Diversion Permit DIV-95-07) and a maximum daily withdrawal of 0.45 mgd combined with the Pine Meadow Well.

Barkhamsted Aqueduct Supply (Emergency)

Safe Yield equals 500 GPM based on the capacity of the trailer mounted pump.

Distribution System Safe Yield

Based on the safe yield information provided and the conditions of the DEP Diversion Permit DIV-95-07, the available supply for water planning purposes is a maximum withdrawal rate of 200 gpm each from Pine Meadow and Black Bridge Wells for a total maximum withdrawal rate of 400 gpm not to exceed 450,000 gallons per day.

E. Assumptions and Methodology for Safe Yield

Pine Meadow Well.

The safe yield of this source, 200 GPM, was originally calculated using the Theis Non-equilibrium Equation and site specific parameters as derived from *"Water Supply Study, Town of New Hartford, 1979."* This calculation was based, in part, on the following assumptions:

a. Due to a lack of specific soil descriptions, hydraulic conductivities for materials were assumed to fall in the low-medium categories.

b. Per State of Connecticut DPH guidelines the safe yield is considered for a 180 day, no recharge situation.

d. The static water level is considered the initial water surface of the non-pumped aquifer.

A finite difference computer model of the aquifer supplying this well and the Black Bridge Well was created and tested (by Loureiro Engineering Associates, P.C.) in 1994 as part of the June, 1995 Diversion Permit Application. A complete discussion of this model, and its results, is included in Appendix D. The model results support the analytical approach referred to above and resulted in the confirmation of a safe yield of in excess of 200 GPM for this source.

Black Bridge Well

The safe yield of the Black Bridge Well is based upon the results of the finite difference computer model discussed above and presented in Appendix D (as prepared by Loureiro Engineering Associates, P.C. for the 1995 Supply Plan). The results of the model confirm a safe yield for this source of in excess of 200 GPM.

Barkhamsted Aqueduct Supply

Considerations in determining safe yield from this source is the 500 gpm capacity of the trailer mounted pump that would be connected between two hydrants at the Route 219 Pump Station. There is no stated withdrawal limit on supply in the agreement

existing between New Hartford and the MDC. However, New Hartford must annually notify the MDC on its projected use of the Barkhamsted Aqueduct supply for the forthcoming year.

F. Interconnections Description

There are no interconnections supplying finished water to the New Hartford Water System. The current interconnection to the Barkhamsted Aqueduct of the MDC is considered as a raw water emergency source. An Interconnection Summary has been prepared and is included as Appendix E. This interconnection is physically removed from the distribution system.

G. Margin of Safety

It is the responsibility of the New Hartford Water Company to ensure that it has an adequate margin of safety of available water in excess of the average daily demand.

During the year 2000 the Pine Meadow Well was reconstructed and redeveloped to be able to deliver water at its permitted withdrawal rate of 200 gpm. The pumping and treatment station and for the well went back on-line in June 2001.

1.Historical Demand

Historical demand, in gallons per day, for the past five years is as follows:

YEAR	ADD	MMADD	MDD
2000	136,000	161,000	206,000
2001	145,000	170,000	252,000
2002	173,000	195,000	317,000
2003	161,000	229,000	399,000
2004	117,000	128,000	148,000
5 Year Mean	146,400	176,600	264,400

ADD = Average Day Demand
MMADD = Maximum Month Average Day Demand
MDD = Maximum Day Demand

2. Current System Conditions

The current safety factor describing the relationship between available supply and demand for the New Hartford Water Company system under average daily demand, maximum month average day demand and maximum day demand conditions is calculated as follows: (based on the 5 year mean shown above)

Available Supply *(18-hour pumping day)*	=	378,000 gallons per day
Average Day Demand	=	146,400 gallons per day
Safety Factor - ADD	=	(378/146.4) = 2.58
Maximum Month Average Day Demand	=	176,600 gallons per day
Safety Factor - MMADD	=	(378/176.6) = 2.14
Maximum Day Demand	=	264,400 gallons per day
Safety Factor - MDD	=	(450/264.4) = 1.70

For average day demand (ADD) and maximum month average day demand (MMADD), the available supply is limited by the treatment capacity of 150 gpm for Black Bridge Well and 200 gpm at Pine Meadow Well, both pumping for 18 hours. For maximum day demand (MDD), the available supply for both wells combined is limited to 450,000 gallons per day allowed under DEP Diversion Permit DIV-95-07. With the largest well off line, the available supply to the system would be 150 gpm pumping at 24 hours or 216,000 gallons per day. This still yields a safety factor of 1.48 for average day demands.

3. Reliability of Supply

The Black Bridge well is equipped with a 45 KW propane fueled generator with an automatic transfer switch. The Pine Meadow well is also equipped with a 45 KW propane fueled generator with an automatic transfer switch. Both well sites have 500 gallon above grade propane tanks.

4. Water Quality

Black Bridge Well water is filtered for manganese removal and receives chemical treatment with sodium hydroxide, sodium hypochlorite and sodium bisulfite. It also has capabilities to recycle backwash water. The Pine Meadow Well receives chemical treatment with sodium hydroxide for pH adjustment, and an ultra-violet light system

for disinfection. If the Barkhamsted Supply is utilized, there are provisions for chlorination. Water quality data is discussed in greater detail in Section IV, Existing System Performance

5. System Demands

The average day system demand as presented in Part G of this section is based on water production figures from the last five years. These figures include water sold plus non-revenue water. The issues related to system demand and water production are discussed in greater detail in Section VI, Water Consumption Trends and Projections.

H. Supply Protection Measures

Protecting groundwater used as a public water supply is necessary in order to maintain high quality water for a community. The most effective way to protect groundwater is to manage the potential sources of contamination to the contributing area of the public well through an aquifer protection program. The basis for the formulation of an aquifer protection program is the Level A Mapping Plan. The Level A Mapping Plan for the Pine Meadow and Black Bridge Wells was completed for the Town of New Hartford in June of 1995. As part of the mapping plan, a mathematical model was constructed simulating the behavior of groundwater flow in the area near the Pine Meadow and Black Bridge Wells. This model was then used to identify the area of influence, area of contribution, and recharge area for both wells.

NHWC supports the DEP for their work in developing state mandated aquifer protection regulations for towns to adopt. The DEP recently revised their groundwater protection handbook, *"Protecting CT's Groundwater: A Guide for Local Officials, April 1997"*. This is an excellent reference document for towns to use when developing aquifer protection regulations. Now that state land use regulations are in place, NHWC will actively work with the Town to develop aquifer protection regulations that are consistent with DEP's Model Aquifer Protection Land Use Regulations.

The New Hartford Water Company completed and submitted the Level A Mapping Plan to the Connecticut Department of Environmental Protection in June of 1995. Once approved, it is anticipated that the Town of New Hartford will begin the preparation and subsequent implementation of an aquifer protection program. Appropriate source protection measures for the aquifer supplying the Pine Meadow and Black Bridge Wells

should include:

- Education of the general public and commercial facility operators within the aquifer region as to best practices for such activities as yard maintenance and outdoor mechanical work.

- Connection of the entire Pine Meadow district to the sanitary sewer system to eliminate the hazard from septic systems.

- Create a zoning overlay to prohibit new uses, which commonly result in the potential for contaminant releases to ground or surface water.

- An addition to the building code to prohibit connection of yard or house drains to dry wells or similar facilities; this should include a program to eliminate existing connections over a reasonable period of time.

- A request to the State Department of Transportation for the establishment of a reduced salt use district on US 44 in the aquifer area, as well as implementation of a reduced salt use policy on town roads in the area.

- Investigation of and repairs to the road drainage systems, including US 44, in the aquifer area, to reduce the probability that spills resulting from highway incidents in the aquifer area will reach the groundwater.

Although no specific sites have been identified for future sources, the characteristics of the aquifer north of Slashers Ledges are known and it is clear that the aquifer can be considered as a viable source of additional water supply. By inference, additional well sites probably exist within the stratified drift deposits south of Slashers Ledges and north of Satans Kingdom. Other potential ground water supplies exist in the Nepaug and Bakersville sections of the Town, however, they are too distant from the NHWC service area to be considered at this time. All current and potential future groundwater supply sites should be considered when the Town implements an aquifer protection program.

I. Potential Sources of Contamination

There are essentially three potential sources of contamination for the Pine Meadow Well and the Black Bridge Well; contamination in the Farmington River, contamination of

ground water resulting from accidental or intentional releases to the surface in and upgradient of the areas of contribution, and contamination of the ground water resulting from accidental or intentional releases to the ground water itself.

1. Contamination of the Farmington River

The Farmington River is in good condition in the area of the Pine Meadow and Black Bridge Wells. However, the potential for the release of contaminants to the River exists from three significant sources: the City of Winsted Waste Water Treatment Facility, located on the Still River a considerable distance upstream, manufacturing facilities located within the City of Winsted, and highway incidents in locations which would discharge to the Farmington River.

U.S. Route 44 runs adjacent to the Farmington River for several miles upstream of the reach from which the Black Bridge Well draws a portion of its water. This road carries considerable truck traffic, some of which are transports containing toxic or hazardous materials *(e.g.* petroleum shipments, hazardous liquid tankers). An incident on this highway resulting in a release to the Farmington River must be regarded as possible. However, the distance to the reach from which recharge of the Black Bridge Well is induced is short and it is reasonable to suppose that any contamination would pass this reach rather quickly. An aquifer protection program should consider this scenario to be both high risk and high probability. Response to an incident resulting in the Contamination of the Farmington River is discussed in Section XII, Emergency Response.

The Winsted Waste Water Treatment Facility serves several industrial facilities, as well as Winsted. It is possible that a release could occur from this facility or other industrial facilities. However, even in relatively dry weather such a discharge or release would be considerably diluted by flow from the main stem of the West Branch of the Farmington. This event is not considered to be a particularly high risk or probability scenario with regards to the contamination of either the Pine Meadow or Black Bridge Wells. The aquifer protection program should address the possibility of establishing a mutual agreement with the City of Winsted creating prompt notification procedures in the event of a release.

With improvements to Pine Meadow Well, Black Bridge Well can be shut down in an emergency and the system supplied by Pine Meadow Well.

2. Releases to Ground Surface in the Zones of Contribution or Upgradient Areas

The zones of contribution of the two wells, and the areas upgradient of these zones, are within the settled area of the village of Pine Meadow. There are several potential sources of toxic or hazardous materials in this area which could significantly degrade the water quality of the aquifer. The most significant of these sources are a small machine shop located adjacent to the Pine Meadow Well and a gas station and an autobody repair operation upgradient of the zone of contribution of the Black Bridge Well. Although a significant release of toxic or hazardous material at any of these operations is not particularly likely, the risk of such a release is moderate. This is particularly true in the case of the machine shop, as the travel time from this location to the Pine Meadow Well is on the order of hours. In addition there are similar risks from small scale automotive mechanical work performed in the village areas surrounding the Pine Meadow Well.

The same comments regarding a release from a highway incident on US Route 44 apply and may be the most significant combination of risk and probability. Another factor may be lawn maintenance in the village area. While this practice is generally regarded as benign, it must be kept in mind that considerable amounts of both nitrogen fertilizers and various herbicides are routinely used in these activities. These could contribute to chronic degradation of water quality in underlying aquifers.

3. Releases to Ground Water in the Zones of Contribution or Upgradient Areas

In the vicinity of Pine Meadow Well there is one septic system located within 200' of the well, as a result, waste materials may enter the groundwater through this septic system. The Town of New Hartford is actively working to resolve this problem and to provide proper sanitary easements in this area.

SECTION IV – EXISTING SYSTEM PERFORMANCE

This section presents an inventory of the existing distribution system of the New Hartford Water Company. The inventory of the storage and distribution facilities, the operation of the system, and the water quality data compiled has been utilized to evaluate the current system performance.

A. Description of Treatment, Storage and Distribution Facilities

1. Water Treatment Facilities

a. Pine Meadow Well

The treatment facilities for the Pine Meadow Well were completed in June, 2001. This project consisted of complete demolition and removal of the existing building and substructure while retaining the existing well. A new concrete block building 19' x 25' was constructed.

The chemical feed system utilizes sodium hydroxide for pH control. It is comprised of a covered 30 gallon day tank; a flow paced chemical metering pump having a capacity of 30 gallons per day; complete with four function valve, calibration column, foot valve and strainer, check valve and injection corporation. Chemical containment is provided by means of a recessed floor area. A reduced pressure backflow device is located on the line for supplying makeup water to the chemical feed system and the continuous pH probe.

An UV light system is provided for disinfection. It consists of a reactor chamber containing 12 UV lamps; an automatic wiper system operated in conjunction with a timer and air compressor; a water temperature monitoring device with an alarm and a UV intensity monitoring probe in conjunction with an intensity meter and low intensity alarm.

The treatment system is designed to treat a production of 200 gpm. A 45 KW propane generator set provides standby power.

b. Black Bridge Well

The new treatment plant at the Black Bridge Well went on-line in March 2001. The filtration system, for removal of manganese, manufactured by Filtronics has a design flow rate of 150 gpm. It consists of two steel reaction vessels located in series followed by a filtration vessel. Water is pumped from the well into the new treatment building where it is pre-treated with sodium hydroxide and sodium hypochlorite prior to the first reaction vessel. Prior to the second reaction

vessel sodium bisulfite is added. The water then flows through the filter and to the high service system or through a pressure reducing valve to the low service system. Backwash water is stored in a 5,600 gallon steel reclaim tank and the supernatant can be recycled back into the raw water line.

A pH probe and transmitter with recorder and alarm for high pH is located after the second reaction vessel. A chlorine residual analyzer with recorder and alarm for low chlorine is located after the filter vessel. A reduced pressure backflow device is located on the line for supplying makeup water to the chemical feed systems, pH probe and chlorine analyzer.

Chemical containment is provided by means of a recessed floor area.

Standby power is provided by a 45 KW propane generator located in the well building.

c. Barkhamsted Aqueduct Supply

Prior DPH approval is required to use this emergency source. Disinfection of this supply would be with sodium hypochlorite.

2. Water Storage Facilities

Distribution system storage is provided by two side by side storage tanks. The first has a capacity of 490,000 gallons and the second 175,000 gallons. The tanks are located north of the Greenwoods Industrial Park. The level of the water in the tanks control the system operating pressure of the high service zone.

	Tank #1	Tank #2
•	Storage Capacity: 490,000 gallons	175,000 gallons
•	Covered: Yes	Yes
•	Overflow Elevation: 715.0 feet (MSL)	715.0 feet (MSL)

3. Booster Pump Facilities

The booster pump facilities include the Steele Road in line booster, the manually operated booster in the Black Bridge Treatment Plant and the portable trailer mounted pump for use at the interconnection. They are summarized as follows:

Route 219 Pumping Station:

This station is for emergency use only and is equipped with two fire hydrants so that a 500 gpm trailer mounted pump can be utilized.

Steele Road In-Line Booster:

The distribution system was split into two hydraulic zones in 2001, the high service zone is at a gradient of 715 feet and the low zone is at a gradient of 630 feet. With the split, two houses located on Steele Road would have had unacceptable low pressure. This pitless booster system provides those homes with adequate pressure. It is a 1 HP pump and rated for 20 gpm at 50 psi. A manual transfer switch and provisions to hookup a portable generator is provided.

Black Bridge Treatment Plant Booster:

This pump is a 50 gpm booster pump that allows water to be transferred from the Pine Meadow zone (low service) into the high service zone if Black Bridge Well is not running. It is manually operated.

4. Transmission and Distribution

The transmission and distribution system consists of approximately 60,950 feet of main ranging in size from 2 to 12 inches. The mains are constructed of materials which include cast iron, asbestos cement, galvanized iron, and ductile iron with the predominant material being cast iron. An inventory of transmission and distribution pipe has been compiled and is presented as Table 4.1. The inventory indicates the dates of installation for the mains range from before 1895 to 2004. Of the 60,950 feet of main, approximately 31,630 feet, or 52% were constructed before 1895.

B. Map of Distribution System

A map of the New Hartford Water Company distribution system has been included as Drawing No.1, Distribution Map New Hartford System. The map includes the location of the current sources, the water storage tanks, water mains, fire hydrants, pressure reducing stations, booster stations, and limits of service area.

TABLE 4.1

Inventory of Transmission and Distribution Pipe

Pipe Diameter inches	Pipe Construction Material	Year Installed							Total Length of Pipe in Feet
		1895	1940	1967	1973	1979-81	1989	1996-2004	
2	Galvanized				750				750
4	Cast Iron	8,050	570						8,620
6	Cast Iron	11,050							11,050
6	Asbestos Cement		1,350		1,110				2,460
6	Ductile Iron							1,300	1,300
8	Cast Iron	8,020							8,020
8	Ductile Iron						1,300	1,850	3,150
10	Cast Iron	4,510		4,350					8,860
10	Ductile Iron					6,100			6,100
12	Cast Iron			4,860					4,860
12	Ductile Iron					1,980		3,800	5,780
Total Length of Pipe:		31,630	1,920	9,210	1,860	8,080	1,300	6,960	60,950

Sept. 2005

C. Description of System Operations

Currently, the New Hartford Water Company obtains water supplied to its customers from two groundwater extraction wells, Black Bridge Well and Pine Meadow Well, and also has an interconnection with the Metropolitan District (MDC) Barkhamsted Aqueduct as an emergency source.

The Black Bridge Well was installed in 1988 and went on-line in 1996. It is located approximately 120 feet northwest of Black Bridge Road and 115 feet southwest of the Farmington River. The well is approximately 70 feet deep with 20.67 feet of 10 inch diameter casing. Water is pumped from the well via a fifteen stage turbine pump equipped with a 30 horsepower motor capable of pumping 200 gallons per minute at a total dynamic head of 370 feet into the high service zone (hydraulic gradient 715 feet), and stored in the Greenwoods Industrial Park Tanks. However, production is limited to the treatment capacity of 150 gpm. The well pump and treatment is automatically activated on and off by the level in the Greenwoods Industrial Park tanks. Current settings are on at a level of 708 feet and off at 714 feet. Additional water can be pumped into the high service zone by means of a booster pump located at the discharge of the Black Bridge Well after treatment. A pressure reducing valve is also located at the well site to reduce pressure down into the low service zone. A second PRV station is located

The Pine Meadow well was originally installed in 1944 and reconstruction in 2000. It is located at the end of Church Street, approximately 350 feet southwest of Route 44 and 450 feet southwest of the Farmington River. Water is pumped from the well via a 30 horsepower motor with a variable frequency drive capable of pumping 200 gallons per minute at a total dynamic head of 348 feet into the low service zone. The drive is set to maintain a pressure in the low service zone of 120 psi (hydraulic gradient of 630 feet). The station can also be set to run off of the level of the Greenwoods Industrial Park Tanks. Backup power is available for both the well pump and the treatment system. As stated, the safe yield for this well was confirmed to be in excess of 200 gpm in 1994. Also, after reconstruction in 2000, it was pump tested for 72 hours continuously at 265 gpm with a drawdown of 12.5 feet. Available supply for water supply planning purposes is constrained by the existing registration of 200 gpm (maximum withdrawal rate per DEP Diversion Permit DIV-95-07) and a maximum daily withdrawal of 0.45 mgd combined with the Black Bridge Well.

Additional water can be supplied in the low service zone from the high zone by means of two pressure reducing stations, one located at the discharge of the Black Bridge Well, after treatment, and a second at the intersection of State Route 219 and Meadow Street.

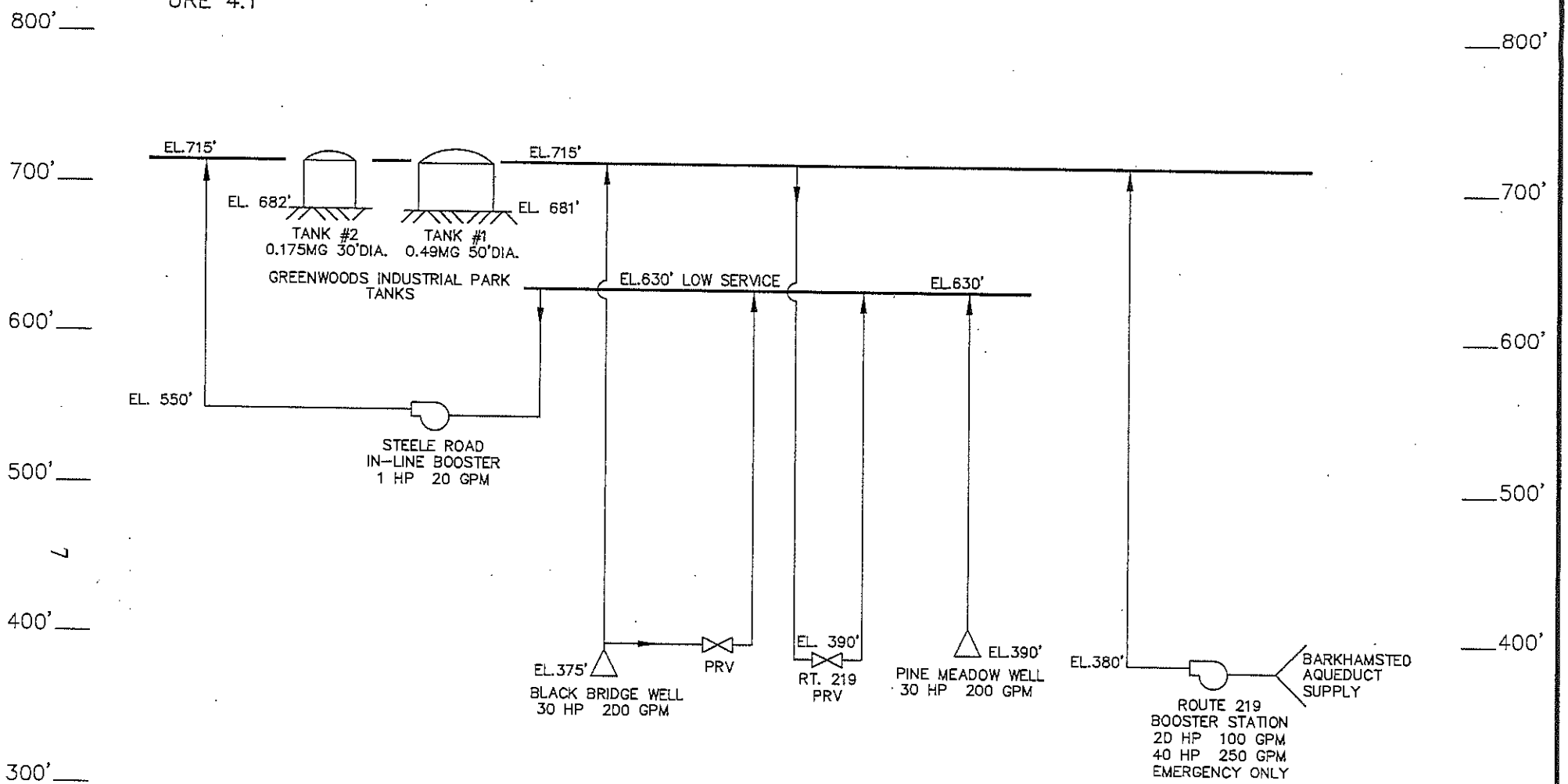
The Steele Road in-line booster pumps water from the low zone to supply two houses on Steele Road. It is operated based on local discharge pressure.

The New Hartford Water Company maintains two fire hydrants at the Route 219 Pumping Station site as a means to obtain water through an interconnection with the MDC system from the Barkharmsted Aqueduct. In an emergency, a portable trailer mounted pump can be set up between the hydrants and is capable of providing 500 gallons of water per minute for use within the system. To initiate the use of this supply, DPH approval is required.

In addition to the above sources, the New Hartford Water Company constructed a 490,000 gallon water storage tank in 1990 and another 175,000 gallon tank in 2002. The tanks were installed to provide storage, maintain system operating pressure, and to allow the abandonment of the Steele Road Reservoir. The tanks are equipped with 12 inch overflows set at 715.0 feet above mean seal level (MSL). The tanks are located north of the Greenwoods Industrial Park. They are schedule for inspection and cleaning every five years.

A hydraulic profile of the New Hartford system is presented in Figure 4.1 which illustrates the relationship of the various system components.

JRE 4.1



Drawn By: LRS Date: 9/22/05 Approved by: Title: K. Redlein Title: WATER RESOURCES ENG.	ConnecticutWater 93 WEST MAIN STREET CLINTON, CT 06413-1600	HYDRAULIC PROFILE NAUGATUCK REGION NEW HARTFORD WATER CO.	Scale: NTS Drawing Number ANA-169 BU Number – Sheet 1 of 1

In 2001 the system was divided into two pressure zones to reduce high pressure in the low elevation areas. The low service zone, with a gradient of 630 feet, serves approximately 90% of the system. In the creation of the low service zone, six houses require booster pumping for adequate service pressure. Four of these houses received individual in-house booster pumps and an in-line booster pump on Steele Road services the other two. The high service zone of 715 feet is established by the overflow of the Greenwoods Industrial Park Tanks.

With the recent creation of two service zones and the filtration treatment at Black Bridge, the two wells are now operated differently then they have been in the past. The Greenwood Industrial Park Tanks, located in the high service zone, must be allowed to contribute to the low service area to minimize stagnant water conditions. To optimize manganese removal and minimize backwash water wasted, the Black Bridge is operated continuously for approximately 8 hours through the treatment filtration system. In order to satisfy these conditions and have equal production from each well, they will operate as follows:

The overflow of the storage tanks are at elevation 715 feet. Both the Black Bridge Well and the Pine Meadow Well turn on when the tank level is at 708 feet. The Pine Meadow Well pumps to the low service gradient of 630 feet and the Black Bridge Well pumps to the tank level in the high service zone. The wells both shut down when the level in the storage tank reaches 714 feet. The Black Bridge Well manganese removal system is then backwashed and flushed with water from the Greenwoods Industrial Park Tanks. The distribution system is serviced by water from the tanks and through the PRV's until the tanks level drops to elevation 708 feet at which time both wells come on again. A 50 gpm booster pump located at the Black Bridge Treatment Station can be manually operated to boost water from the low service zone into the high service zone if needed.

D. Operation and Maintenance Program

The operation of the New Hartford Water system is performed under contract by New England Water Utility Services, Inc. (NEWUS). Maintenance is the responsibility of the Town of New Hartford with assistance provided by NEWUS.

The New Hartford Water Company follows the Operation and Maintenance Program established by Connecticut Water for the distribution system. The Water Pollution Control Authority, First Selectman, and contract operator all have roles related to the effective operation of the system. The responsibilities of each are described below, followed by a description of general system operations and routine maintenance activities.

1. First Selectman & Water Pollution Control Authority

Acts on policy and financial matters affecting the water and sanitary sewer facilities. Reviews applications for connections to water and sanitary sewer facilities. Provides direction to NEWUS for operation of the system, budget preparation, capital improvements, rate setting, legal issues, bonding needs and advises NEWUS on actions to take on customer complaints.

2. Contract Operator (NEWUS)

Performs complete overall water system operation including flushing, station attending, sampling, billing and collections.

4. System Operation

- Operation of pumped sources is automatic based on tank level.
- Contract Operator takes all water quality samples for analysis.
- Contract Operator reads all customer meters every 3 months for billing purposes.

5. Routine Maintenance

- Water mains flushed at least once a year.
- Most dead end mains flushed once a month.
- Hydrants are flushed at least once a year.
- Valves are exercised as needed.
- Normal maintenance tasks on pump station equipment done as required.

6. Emergency Response

- NEWUS and various contractors are available to respond at short notice to emergency situations requiring construction activities.

Operation and Maintenance Manuals for the Water System equipment are on file at the Wastewater Treatment Plant office.

E. Water Quality Data

Available water quality data for the past 5 years is summarized in Appendix F, along with the 2004 Annual Consumer Confidence Report. The tables listing these data include quality standards established by the USEPA and the DPH, minimum, maximum and, where appropriate, average values for individual quality parameters, the number of samples collected, and pertinent comments.

All regulated water quality testing is reported monthly to DPH in compliance with the Safe Drinking Water Act and the Connecticut Public Health Code.

The following review of water quality data discusses areas where either non-compliance with existing standards or problems with non-regulated constituents are identified. Source protection information and customer complaint files were reviewed to identify existing or potential quality problems.

Source Evaluation

The bacteriological quality from the Black Bridge and Pine Meadow Wells is good. None of the raw water samples collected from 2001-2005 were positive for total coliform.

Inorganic compounds, pesticides and synthetic organic compounds have been below all applicable standards in raw water and water entering the system.

Manganese is present in the raw water at Black Bridge Well at levels around 0.30 mg/L. A treatment system for manganese removal was placed on-line in 2001. Additional treatment at Black Bridge includes disinfection and pH adjustment.

Pine Meadow Well receives chemical treatment for pH adjustment and UV treatment for disinfection.

Distribution System Evaluation

Historically small amounts of trihalomethanes, particularly chloroform and very small amounts of chlorodibromomethane have been detected. Since use of the Barkhamsted Aqueduct (unfiltered MDC surface water) was discontinued, trihalomethanes have not been detected.

Lead and copper sampling results were both in compliance in 2004. A 90^{th} percentile level of 1.29 mg/L was observed for copper and 6 ug/l for lead.

Customer Complaints

From 1/1/00 through 12/31/04 there was a total of 81 customer complaints. The most common complaint was for a high bill (40). The next most common complaint was for dirty water or taste and odor complaints (23). The remainder were for no water, low pressure, leaking meter or other miscellaneous problem.

F. Utility Design Criteria

Specific design criteria are specified below which have been utilized in Part G of this section to evaluate system deficiencies. The average day, maximum month average day and maximum day system demand figures were calculated based on the last five years of system demand data (as shown in Section III).

Average Day Demand = 146,400 GPD

Maximum Month Average Day Demand = 176,600

Maximum Day Demand = 264,400 GPD

Optimal system pressure: 35 psi to 100 psi

Maximum Available Flow From Sources:

	24 Hours	18 Hours
Pine Meadow Well	200 gpm (288,000 gpd)	216,000 gpd
Black Bridge Well	150 gpm (216,000 gpd)[2]	162,000 gpd
	350 gpm (450,000 gpd)[1]	378,000 gpd

[1] Per DEP Diversion Permit DIV-95-07 maximum instantaneous withdrawal rate from each well is 200 gpm; the allowable combined total withdrawal from both wells is 450,000 gpd.

[2] Limited by 150 gpm treatment capacity.

For system capital improvements, the minimum design standards of the Upper Connecticut River WUCC are utilized as applicable. These design standards are included in Appendix G.

G. Identification of System Deficiencies and Needed Improvements

The following is a list of system deficiencies and needed improvements as presented in the previous supply plan, many of which have been or are being addressed. This list was compiled through a review of the current system operating conditions as presented in Section III and the current system configuration as presented in this section compared to the minimum design requirements listed above. The order of the following list of system deficiencies reflects the priority of the deficiencies with those requiring the earliest attention being presented first.

1. Unaccounted-for Water

The New Hartford Water Company has taken a number of actions in the past 10 years to reduce non-revenue water. These include sonic leak detection and leak repair, replacement and installation of water main, replacement of production meters, improvements in production, consumption and lost water record keeping, an accelerated program for the installation of new consumption meters, an improved hydrant replacement and repair program and splitting the system into two separate hydraulic zones.

Implementation of the plan to reduce lost and unaccounted water was contingent on $1.7 million in funding from the USDA Rural Development Agency. The Town of New Hartford initially contacted the agency for funding in 1997, however funds did not become available until spring 1999. Following design and engineering work, construction of the highest priority project in the Plan, providing manganese removal treatment at the Black Bridge Well, began in April 2000 and was completed in 2001.

The projects in the Plan completed were the treatment of the Black Bridge Well, the replacement of the steel river crossing near Route 219, the reconstruction of Pine Meadow Well, splitting the system into two pressure zones to reduce pressure in the lowest portion of the system. Additional funding was also secured for the construction of a second water storage tank. These projects were completed by 2002.

Unaccounted for water in 2003 was relatively high again, due to several breaks and large leaks that were discovered and repaired. However, in 2004, the results of the system improvements became apparent. Non-revenue water was 18.8% and unaccounted for water was only 7.16%.

2. Water Company Records

Historical user data along with production, consumption and water quality records are all now maintained by New England Water Utility Services for the Town.

3. Water Company Billing Agreements

Previously the River Run Condominium Complex was being billed as 66 individual service connections which reflected the first phase of development. The complex is now billed quarterly as a six-inch service.

4. pH Adjustment and Overfeed Control

This project was completed with the treatment building at Black Bridge and the reconstruction of Pine Meadow Well. Now both Pine Meadow and Black Bridge Wells have overfeed control on pH adjustment. It consist of a continuous analyzer with high and low alarm settings incorporated into an automatic dialer to an answering service.

5. System Operation Manual

Currently the NHWC follows Connecticut Water Company's written operating procedures for the distribution system.

6. Protection of Sources of Supply

To increase the protection of the supply sources, the Level A Mapping Plan, once approved, will provide a basis for implementing planning and zoning regulation revisions to create aquifer protection areas with restricted land uses. Efforts are ongoing to secure sanitary easements in the vicinity of the Pine Meadow Well.

7. Characteristics of Distribution System

A significant portion of the distribution mains exhibit poor hydraulic characteristics due to their age and the physical size. These mains initially were identified and documented in a Water System Master Plan prepared for the Town by Fay, Spofford and Thorndike, Inc. dated March 1999. To improve fire protection and water quality, these mains (many are old 4" and 6" cast iron) will be replaced, as funds become available. These are part of the long term improvement plan that is included as Appendix N of this Plan.

8. Excessive Operating Pressure

This has been eliminated with the splitting of the system into two zones. With the installation of two pressure reducing stations, a high service zone and a low service zone have been created to eliminate excessive pressures.

9. River Crossings

One of two river crossings maintained by the New Hartford Water Company was installed as a temporary repair following the flood of 1955. The river crossing was constructed of thin wall steel. This main was cut and plugged and replaced with a 12" ductile iron main in July 2000.

10. Fire Flows

Fire flows have been enhanced with the construction of the second water storage tank in the Greenwoods Industrial Park.

Fire flows, in any system, are dependent on the ability of the distribution system to adequately carry the required flows to areas where the flow is needed and the adequacy of storage to provide sustained flow for the period of time to fight a fire and also to protect properties. Both of these are dependent upon the population served and the value of the area served. Therefore, required flows could vary from around 500 gpm to several thousand gallons per minute depending on site specifics.

Current Insurance Service Office (ISO) ratings for both the water system and town are listed in Table 4.2.

At the back of this Section, the most up to date ISO Hydrant Flow Summary sheet has been included. This data sheet tabulate the hydrant flow results along with both static and residual pressure recordings. District types are also noted on the summary sheet.

The ISO provides insurance companies up-to-date and reliable information about a municipalities fire protection services. This helps the insurance companies to establish appropriate fire insurance premiums for residential and commercial properties. The ISO provides the insurance companies this information with their Public Protection Classification. This is done on a town by town or fire district basis, not on a water system by water system basis.

ISO is an independent advisory organization that serves the property and casualty insurance industry. It collects information on a community's public fire protection and then analyzes the data using their Fire Suppression Rating Schedule (FSRS). From this, ISO then assigns a public protection classification from 1 to 10. Class 1 represents the best, and Class 10 indicates no protection.

The FSRS has three separate components that make up the overall grading. The first is "Fire Alarms" this is 10% of the overall grade, and it is based on how well the fire department receives and dispatches fire alarms. The second component is "Fire Department" and represents 50% of the overall grade. The final component is "Water Supply" and it represents 40% of the overall grade.

The water supply survey focuses on whether or not there is sufficient water supply for fire suppression beyond what is used for maximum daily demand. When ISO does a survey of a town, all components of the water supply system are investigated including pumps, storage and treatment capacity. ISO also physically observes hydrant flow tests at representative locations throughout the community to verify the rate of flow provided. ISO also considers the size, type, installation, maintenance and condition of the fire hydrants when determining the water supply portion of the grading.

No fire flow standards are mandated by the ISO and NHWC does not have any set standards, but uses the ISO information as a guideline.

TABLE 4.2 PUBLIC PROTECTION CLASS

Town	Year Surveyed	Water Supply Class	Town Class	Total Public Protection Class
New Hartford	1992	3	6	6

Source: ISO Commercial Risk Services, Inc.

11. Surface Water Supply Treatment

This surface supply was been physically disconnected from the system following the completion of the Black Bridge Well in 1996. The surface water supply is maintained as an emergency source.

12. Supply Disruption

Standby power is now provided at both the Black Bridge Well and at the Pine Meadow Well with on-site generators.

ISO COMMERCIAL RISK SERVICES, INC.

HYDRANT FLOW DATA SUMMARY

CITY: New Hartford FD STATE: CT ZIP: 06057 WITNESSED BY: JAZ DATE: 3/95

Test No.	Type Dist.	*Test Location	Service	Flow-GPM Individual Hydrants	Flow-GPM Total	Pressure PSI Static	Pressure PSI Resid.	Flow At 20 PSI Needed	Flow At 20 PSI Avail	Remarks
1	comm	River Run Condos off Main St @ end-line	main	950	950	150	130	2500	2600	Hydrants leak @ nut and nozzles †
2	comm	Black Bridge Rd @ Wickett St	main	1760	1760	145	126	2250	4900	
3	comm	Bridge St nr Main St	main	1980	1980	132	72	3500	2800	Loose pumper connection ††
4	comm	Church ST No. @ Congregation Church	main	460	460	123	118	1500	1600	
5	comm	Main St No./of Church St	main	480	480	132	95	2000	850	
6	res	High St @ Fairview Ave	main	240	240	115	110	1000	800	
7	comm	Prospect St @ Holcomb Hill Rd	main	280	280	127	122	1750	1000	
8	res	Cottage St @ Rte 219	main	1340	1340	140	116	1500	3200	

† Limited by available hydrants.

†† Available facilities limit flow to 1966 gpm plus consumption for the needed duration of 3 hours.

THE ABOVE LISTED NEEDED FIRE FLOWS ARE FOR PROPERTY INSURANCE PREMIUM CALCULATIONS ONLY AND ARE NOT INTENDED TO PREDICT THE MAXIMUM AMOUNT OF WATER REQUIRED FOR A LARGE SCALE FIRE CONDITION. THE AVAILABLE FLOWS ONLY INDICATE THE CONDITIONS THAT EXISTED AT THE TIME AND AT THE LOCATION WHERE TESTS WERE WITNESSED.

* Comm Commercial; Res Residential

** Needed is the rate of flow for a specific duration for a full credit condition. Needed Fire Flows greater than 7,500 gpm are not considered in determining the classification of the city when using the Fire Suppression Rating Schedule

SECTION V - POPULATION SERVED

A. Historic Population Data

Historical data of population served by the New Hartford Water Company is limited. The Town has only kept consumption records since 1977. These records indicate there were 429 service connections in 1977-1978 and that by 1985-1986 this number had increased to 451 connections. Of the 429 connections in 1977-1978, 37 were industrial/commercial water users with the remaining 392 as residential. By 1985-1986 industrial/commercial users increased to 41 with residential increasing to 410.

Based on the most current data from 2004, the New Hartford Water Company services 426 customers of which 375 are residential, 39 are commercial, 8 are industrial and, 4 are public authority. It is important to note that the New Hartford Water Company counts the River Run Condominium complex as one service connection. Therefore, the number of service connections must be updated to reflect the actual number of units present in the condominium complex, 124 units. The resulting number of current service connections then becomes 426 - 1 + 124 = 549. These current data are directly comparable to the 1977 - 1978 and 1985 - 1986 data which have been corrected for the River Run Condominium complex.

In order to develop projections of residential population served by the New Hartford Water Company, which will provide a basis for projecting residential water consumption and assessing needs and alternatives, the Department of Public Health requires a calculation of the service ratio (SR). The service ratio is calculated by dividing the historic number of service connections by the number of housing units. These service ratios are presented as part of Table 5.1.

It should be noted that the information available from the 1994 *"New Hartford Plan of Development"*, and the *"2005 Plan of Conservation & Development"* proposed final plan dated 6/29/05, do not specifically indicate the number of housing units within the Town, rather it indicates the Town population and the number of individuals per household. From this data, an estimate of the number of housing units can be obtained by dividing the Town population by the number of individuals per household, estimated to be 2.7. This number also correlates to the average household size for New Hartford reported in the 2000 census. This method was utilized to estimate the number of households within

TABLE 5.1

Estimated System Service Ratios and Population Served

	Year							
	1985	1990	1996	2000	2004	2009	2020	2050
Town Population	5,070	5,769	6,170	6,088	6,424	6,844	7,768	10,758
Estimated Number of Households	1,748	2,083	2,227	2,225	2,379	2,535	2,877	3,984
Number Res. Service Connections	410	420	429	437	498	530	601	833
Service Ratio	0.235	0.201	0.193	0.196	0.209	0.209	0.209	0.209
Estimated Population Served	1,189	1,162	1,188	1,193	1,343	1,430	1,624	2,248

Population values for the years 2004 through 2040 are from OPM population forecasts *(Series 95.2)*.

Service ratio is calculated by dividing the number of housing units by the number of service connections.

The estimated number of housing units was estimated by using Town population data and the average household size data presented in the 2000 Census and theTown of New Hartford 2005 Plan of Conservation & Development, proposed final plan dated June 29, 2005.

the Town of New Hartford for use in the service ratio calculations. Based on the fact neither the Town of New Hartford nor the New Hartford Water Company have any plans to increase the service area in the foreseeable future, the service ratio calculated for 2004 was utilized in the population projections discussed below.

The data for the years 1985, 1990, 1996, 2000 and 2004 indicate that the New Hartford Water Company serviced approximately 1,189 residents in 1985, decreasing to 1,162 in 1990, and increasing slightly to 1,188 in 1996 and to 1,193 in 2000 and 1,343 in 2004. The service ratios for the years 1980's decrease from 0.235 to around 0.2 and has remained fairly constant for the past 15 years. The decrease in service ratio was based on the fact that the Town's population was growing at a relatively greater rate in comparison to new service connections. The service ratio of 0.209, calculated for 2004, was utilized in calculating an estimate of the population projections presented in Part B of this section.

B. Population Projections

Historical information related to the population served by the NHWC has been calculated utilizing the service ratios described above in combination with historical Town population data presented in the *"New Hartford Plan of Development"* effective November 1, 1994 and the "*2005 Plan of Conservation & Development"* proposed final plan dated 6/29/05. These data have been included in Table 5.1 as a means to establish a basis for the 5, 20, and 50-year projections of the population served by the NHWC. To determine the Town's projected population, OPM's (Series 95.2) population projections were adjusted to reflect the US Census Bureau's 2000 census data. A straight line methodology, using the adjusted population number, was used to determine the projected town population for the planning periods. The town population for the 50 year planning period was calculated by using OPM's (Series 95.2) ten year average percent multiplied by the adjusted year 2040 town population and then adding this number to year 2040. The US Census Bureau's average household size for the town, 2.7 persons, which is also used in the Town's Plan of Conservation & Development, was used to determine the number of housing units for each planning period. This was done by dividing the projected population by the average household size of 2.7. The data in Table 5.1 provides a basis for the future water demands of the residential population served as discussed in the following section, Water Consumption Trends and Projections.

The data from Table 5.1 indicates that an estimated population of 1,343 was served in 2004 increasing to 2,248 by the end of the planning period in 2050.

SECTION VI – WATER CONSUMPTION TRENDS AND PROJECTIONS

This section presents an evaluation of historical water consumption trends and projections for future water needs. The projections of future water needs for the 5, 20, and 50-year planning periods should be utilized by the NHWC to define the need to develop additional supply sources and to evaluate proposed system expansion or modification.

A. System Production Data

Monthly water production data taken at each active approved source of supply for the last 5 years has been presented and summarized in Appendix H, Table H.1. These monthly data are added to provide a Water Year Total production in thousands of gallons. Based on these data, total water production within the system was greatest in 2002 at 63,177,000 gallons with average daily production at 173,000 GPD, which is a decrease in demands that were seen in the 1980's and 1990's. Water production has generally decreased to an average daily production of 117,000 GPD in 2004. Much of this decrease is due to the efforts of the New Hartford Water Company to decrease unaccounted for water and upgrade to accurate meters.

B. Current and Historic Water Consumption Data

Annual water consumption by user category for the period 2000 through 2004 is presented in Table 6.1. The table contains a listing of the user categories that are residential, commercial industrial, and public authority.

1. Residential

During the past five years residential consumption has varied from a low of 58,345 gallons per day (gpd) in 2000 to a high of 79,900 gpd in 2003, with an average of approximately 68,000 gpd. Discussions of projected residential water use are presented in part D of this section.

2. Commercial

During the past five years commercial water use has been fairly constant at five and a half to six million gallons per year.

TABLE 6.1

Annual Water Consumption By User Category

Year	Annual Water Consumption (thousand gallons)				Non-Revenue	Total Production
	Residential	Commercial	Industrial	Public Authority		
2000	21,354	5,332	3,420	365	19,276	49,747
2001	25,099	5,906	3,611	390	17,847	52,853
2002	29,154	5,942	3,044	487	24,550	63,177
2003	22,398	5,698	2,569	413	27,802	58,880
2004	26,067	5,595	2,697	354	8,018	42,731

3. Industrial

In 1992 -1993, industrial facilities consumed approximately 10,700,000 GPY in comparison to 3,500,000 GPY during 1994 - 1995. This number has remained fairly constant since then. The primary reason for this significant decrease resulted from the conversion of the Hitchcock Chair plant to a warehouse and the closing of the Union Pin facility in 1992 and 1993. The effect of these two events resulted in a significant decrease in the industrial water consumption. From 2000 to 2004 industrial consumption has averaged approximately 3,100,000 gallons per year 8,500 gallons per day.

4. Public Authority

There are four public authority accounts in the NHWC. These include the elementary school and town facilities. Their usage is small at 354,000 gallons per year, representing 1% of the total system demand. This usage has been consistent over the past five years.

5. Unmetered

This category includes estimated lost water for fire fighting, flushing, bleeders, known leaks, tank refilling, street sweeping etc. In 1997, due to high manganese levels from Black Bridge Well causing discolored water in portions of the distribution system, system flushing was increased dramatically. Treatment changes to the Black Bridge Well in the fall 1997 reduced the need for flushing substantially, as did the construction of a filtration treatment plant that went online in 2001. In 2003 several large and difficult to repair main leaks and breaks increased the estimate of lost water for that year. These leaks were repaired at the time of discovery. This category also includes metered water usage at the Town's wastewater treatment plant, along with metered water usage at the two NHWC well facilities for backwashing, continuous analyzers, sampling, etc.

Table 6.2 expands on data presented in Table 6.1 with the addition of annual water system production data. Through a comparison of these data, an estimate of non-revenue and unaccounted water has been calculated. Non-revenue water is the difference between the total amount of water consumed and the amount of water delivered to the system. Unaccounted water is the difference between the total amount of water consumed plus an estimate of other authorized uses such as fire fighting, main flushing etc. and the amount of water delivered to the system. As table 6.2 shows, a significant proportion of production is non-revenue water.

Historically, extensive system flushing and the use of bleeders on dead end lines has been used to maintain water quality. This practice was identified in the 1990 and 1995 *"Water Supply Plans"* as a major contributor to non-revenue water. This problem was exacerbated by the use of the Black Bridge Well in 1996 that resulted in extensive areas of discolored water in the distribution system caused by high manganese in the well water. The NHWC has been able to make treatment changes at the Black Bridge Well to minimize the use of bleeders and flushing for water quality purposes. With the completion of the filtration plant at Black Bridge Well, the use of the last bleeder in the system was halted in 2001.

TABLE 6.2

Annual Water Consumption With Unaccounted-for

Year	Production	Non-Revenue	Non-Revenue Percent	Unmetered	Unaccounted for Water
2000	49,747	19,276	38.7%	NA	NA
2001	52,853	17,847	33.8%	NA	NA
2002	63,177	24,550	38.9%	2,784	34.45%
2003	58,880	27,802	47.2%	10,367	29.61%
2004	42,731	8,018	18.8%	4,959	7.16%

5. Non-Revenue

Non-revenue water for the year ending 2004 was 18.8%, very close to the level that the NHWC has been trying to get to with its recent capital improvements, production and consumption metering, hydrant maintenance, leak detection and record keeping, as well as splitting the system into two pressure zones. It is now expected that this number will be in the 15% range for the foreseeable future.

C. Reservoir and Groundwater Status Records

The Pine Meadow Well was pump tested in 2000 at 265 gpm for 72 hours with a drawdown of less than 10 feet. Static water level was approximately 21.5 feet below grade yielding a pumping level no lower than 31.5 feet below grade. The bottom of the turbine pump is approximately 59 feet below the ground surface and the new screen extends from 47 - 77 feet below the ground surface.

Records of groundwater elevations at the Pine Meadow Well collected during the 1994 Yield Test indicate a drawdown of 4 feet at 58 GPM flow. Static water level was 22 feet below ground surface. Records of groundwater elevations at the Black Bridge Well collected during the 1994 Yield Test indicate a drawdown of 8 feet at 200 GPM flow. Static water level is 11 feet below ground surface on the southwest side of the dike. Pumped water level is 30 feet below ground surface on the southwest side of the dike.

Reservoir elevations at the Barkhamsted Aqueduct are not maintained because they are not relevant to the present operating mode of the system (as described in Section IV). Maintenance personnel have indicated that water elevation measuring equipment at the reservoir is usually submerged since the reservoir is normally full.

D. Assumptions for Future Water Consumption

Future estimates of water consumption are presented below.

1. Residential

Population, land use restrictions, and water consumption habits collectively influence the domestic water consumption. Since it is primarily dependent on the population served,

domestic water consumption is often expressed in terms of gallons per capita per day (gpcd). A rate of 54 gpcd has been calculated based on the average of available metered consumption and population served as presented in Table 6.3. The rate of 54 GPCD was applied to the population projection figures of Table 5.1 to estimate the demands of the residential population presented in Table 6.4.

2. Commercial

As shown in Table 6.4, water consumption by commercial users currently represents approximately 13 percent of total consumption. During the past five years, water use by commercial facilities has been relatively consistent, averaging from 14,680 gpd to 16,279 gpd. This yields a usage of 5.3 to 5.9 million gallons per year.

Based on the recommendations and conclusions in the 1994 *"Town of New Hartford Plan of Development"*, and the "*2005 Plan of Conservation & Development*" proposed final plan dated 6/29/05, it is anticipated that the area of potential commercial development which would affect water demand will most likely be located along Route 44 south of Pine Meadow. This "mixed use" area would accommodate a mixture of residential and commercial uses. Therefore, a nominal 0.5% per year increase in water consumption for commercial facilities has been assumed throughout the 50-year planning period.

3. Industrial

Approximately 107 acres of developed industrial land currently existed in the Town of New Hartford. During the period from 1983 to the present, the amount of developed industrial land has changed little. In order to calculate estimated consumption of the industrial users, it is necessary to calculate an average use based on known data. Therefore, the 2004 industrial

TABLE 6.3

Average Daily
Residential Consumption

Year	Residential Consumption	Population Served	GPCD
2000	58,345	1,193	49
2001	68,800	1,230	56
2002	79,900	1,268	63
2003	61,400	1,306	47
2004	71,200	1,343	53
2009	77,220	1,430	54
2020	87,696	1,624	54
2050	121,392	2,248	54

consumption figure of 2,697,000 gallons was divided by the estimated industrial land (107 acres). The resulting number was then divided by 365 to calculate the average daily use per acre of industrial land. The resulting industrial consumption rate was approximately 70 gallons per day per acre (GPD/acre).

Future industrial development in the remaining area of the Greenwoods Industrial Park is approximately 45 acres. The Business and Industry Plan section of the *"Town of New Hartford Plan of Development"* effective November 1, 1994 indicates no planned increase in industrial zoned lands. In the "*2005 Plan of Conservation & Development*" proposed final plan dated 6/29/05 it is suggested that since industrial development has diminished, that some business development be allowed within the industrial park. Based on the recommendations and conclusions in the 1994 *"Town of New Hartford Plan of Development"*, and the "*2005 Plan of Conservation & Development*" proposed final plan dated 6/29/05, it is assumed that the 151 acres of industrial land will be 85% developed with operational facilities by the end of the 50 year planning period (2050). On this basis, industrial consumption for year 2050 is estimated at approximately 6,855,000 gallons (10,562 gpd), or an increase of approximately 0.5% per year. The estimated consumption for 2050 was calculated by applying the 70 GPD/acre consumption rate to 85% of the 151 acres of land zoned for industrial use.

E. Water Consumption Projections

Water consumption projections for the 5, 20 and 50 year planning periods, corresponding to the years 2009, 2020 and 2050 are summarized in Table 6.4. The sum total effects of the projections indicate that water consumption will increase from its current average daily demand of 94,823 gpd to approximately 152,942 gpd. This represents an approximate 61% increase by the year 2050, or an approximate 1.33% increase per year. With the anticipated, continued reduction in non-revenue water, overall production is expected to be maintained at current levels in the short term then gradually rise to a total production of approximately 180,000 gallons per day by 2050.

TABLE 6.4

Average Daily Water Consumption Projections
(gallons per day)

Type of User	Year							
	2000	2001	2002	2003	2004	2009	2020	2050
Residential	58,345	68,800	79,900	61,400	71,200	77,220	87,696	121,392
Commercial*	14,568	16,181	16,279	15,611	15,287	15,979	16,879	19,604
Industrial*	9,344	9,893	8,340	7,038	7,369	8,609	9,095	10,562
Public Authority*	997	1,068	1,334	1,132	967	1,128	1,191	1,384
Subtotal	83,254	95,942	105,853	85,181	94,823	102,936	114,861	152,942
Non-Revenue	52,940	48,896	67,260	76,170	21,907	18,165	20,270	26,990
Non-Revenue %	38.7%	33.8%	38.9%	47.2%	18.8%	15.0%	15.0%	15.0%
Total (gpd)	136,194	144,838	173,113	161,351	116,730	121,101	135,131	179,932
Residential (gpcd)	49	56	63	47	53	54	54	54

* 0.5% per year increase in water consumption projections for commercial, industrial and public authority facilities.

SECTION VII – WATER CONSERVATION PLAN

One of the components of the Water Supply Plan is an analysis of water conservation practices and a strategy for implementing supply and demand management measures. Also, under Section 22a-369(a) of the Connecticut General Statutes, applicants for a Diversion Permit from the DEP are required to submit a Water Conservation Plan. A Water Conservation Plan was developed and submitted to the DEP and DPH as part of the Diversion Permit Application on June 16, 1995. The Water Conservation Plan was designed with the goals of increasing the efficiency of the water distribution system, reducing waste, and encouraging conservation efforts through the implementation of methods and procedures aimed at achieving these goals. The initial conservation plan was incorporated as a component of the Water Supply Plan and submitted to the DPH for review and approval in October 1995. This was later revised and resubmitted in march 1996 to incorporate modifications required by DEP, prerequisite to the issuance of a Diversion Permit for the Black Bridge and Pine Meadow wells.

This section contains an updated detailed discussion on supply and demand management measures and long-term water conservation. The supply management measures are designed to improve the efficiency of, and eliminate waste in the production and distribution of water within the system. The demand management measures are designed to achieve permanent long-term savings by promoting incentives and technical assistance for consumers to reduce water use. The final part of this section includes information pertaining to the implementation of the described measures and the long-term goals of the Water Conservation Program.

A. System Description

A complete description of the New Hartford Water Company distribution system, the existing sources, and the system performance can be found in Sections III and IV of this Plan. References within this section to the existing system are taken directly from the information provided within those sections.

B. Demand Management

Demand management is defined as conservation measures, which achieve permanent long-term water savings by providing incentives and technical assistance for consumers to reduce water use. The specific demand management elements incorporated into this part include water use audits and technical assistance, equipment retrofit programs, rate structure, and public education. Appendix I presents a completed System Fact Sheet for the New Hartford Water Company. The

System Fact Sheet contains information related to water system demands and a listing of high volume users.

Current system safety factors have been calculated and are presented in Table 7.1. The safety factors are calculated by dividing the system demand by the available supply under three conditions; average day, maximum month average day, and peak day. The system demands for the average day, maximum month average day and peak day has been calculated as an average of the most recent five years of system demand data.

Future water demands and respective factors of safety have been calculated for 2009, 2020 and 2050 which represent the 5-year the 20-year, and the 50-year future planning periods. These are also presented in Table 7.1. Projected demands for maximum month average day and maximum day demands were calculated based on their respective ratio to average day demands, averaged over the five years. With these ratios, MMADD is 1.20 times ADD and MDD is 1.77 times ADD, all as shown in Table 7.1.

The goal of the demand management program is to effectuate minor changes is consumer demands that will result in an increase in the overall efficiency of water use. In promoting water conservation measures involving demand management, success of these measures is highly dependent on consumer participation and cooperation. Therefore, priority should be given to those program elements that will result in long- term water savings and will not require consumer habit changes. The effect of any one of the elements is difficult to estimate prior to implementation, or assess following implementation. Therefore, the demand management program as a whole should be assessed both during and following implementation of each element to establish its long-term impact on water usage. This assessment may be conducted as part of the annual water system evaluation described in Part C, Supply Management.

1. Water Use Audits and Technical Assistance

It is the policy of the New Hartford Water Company to assist any customer in determining the cause for an unusually high water bill. In providing these services, it has been determined that the most frequent causes of the unusually high bill are leaking fixtures and failures to close water supply lines to unnecessary equipment *(e.g.* air conditioners). Recommendations for process modifications pertaining to individual industries are best left to the industry's engineering staff. However, technical publications describing water conservation measures are a valuable resource to high quantity users and are available to all customers. A current list of publications offered by the NHWC has been included as Appendix J.

TABLE 7.1 DEMAND/MARGIN OF SAFETY

System: **New Hartford**

HISTORICAL DEMAND (GPD)

						AVAILABLE SUPPLY (MGD)			
						378,000	216,000	378,000	450,000
Year	ADD	MMADD	MDD	MMADD/ADD	MDD/ADD	MOS[1] ADD	MOS[2] ADD,LWO	MOS[1] MMADD	MOS[3] MDD
2000	136,000	161,000	206,000	1.18	1.51	2.78	1.59	2.35	2.18
2001	145,000	170,000	252,000	1.17	1.74	2.61	1.49	2.22	1.79
2002	173,000	195,000	317,000	1.13	1.83	2.18	1.25	1.94	1.42
2003	161,000	229,000	399,000	1.42	2.48	2.35	1.34	1.65	1.13
2004	117,000	128,000	148,000	1.09	1.26	3.23	1.85	2.95	3.04
5 Yr Mean	146,400	176,600	264,400	1.20	1.77	2.58	1.48	2.14	1.70
Maximum	173,000	229,000	399,000			2.18	1.25	1.65	1.13

PROJECTED DEMAND (MGD)

Year	ADD	MMADD	MDD	MMADD/ADD	MDD/ADD	MOS ADD,18hr	MOS ADD,LWO	MOS MMAD,18hr	MOS MDD,24hr
2009	121,101	145,316	213,821	1.20	1.77	3.12	1.78	2.60	2.10
2020	135,131	162,151	238,593	1.20	1.77	2.80	1.60	2.33	1.89
2050	179,932	215,911	317,696	1.20	1.77	2.10	1.20	1.75	1.42

ADD = AVERAGE DAY DEMAND
MMADD = MAX. MONTH AVERAGE DAY DEMAND
MDD = MAX. DAY DEMAND
MOS = MARGIN OF SAFETY

[1] MOS limited by 150 gpm treatment capacity at Black Bridge, 200 gpm at Pine Meadow, and 18 hour pumping
[2] 24 hours pumping Black Bridge Well at 150 gpm
[3] Limited by Diversion Permit

2. Retrofit Program

As required by Public Act 89-266, the New Hartford Water Company delivered at least one water conservation kit to each residential customer. The kits were delivered in 1991 and included a showerhead, two faucet aerators, two toilet tank dams, toilet leak detection dye, instructions, and a water conservation pamphlet. The kit also included a certification of installation to be filled out by the individual and returned to the NHWC. It is the policy of the NHWC to install these fixtures for any senior citizen or disabled person, and to make a second kit available to any customer upon request at no charge.

Upon completion of distribution, only two certifications of installation were returned. This limited response made it difficult to estimate if any savings resulted from the installation of the kits.

3. Rate Structure

The New Hartford Water Company operates on an enterprise fund accounting system. This system establishes a separate account from the general fund for the NHWC costs and revenues. For this system to operate correctly, the NHWC has established their current rate structure based on full-cost pricing. Full-cost pricing requires the NHWC to establish user costs that will allow recovery of the full cost to operate and maintain the system. The resulting rate structure for each year is developed based on the cost to operate and maintain the system during the previous fiscal year with estimates for inflation and capital improvements. The current rate schedule effective July 1, 2005 is included as Appendix K and establishes 8 categories of users based on meter size and all water usage is billed at $5.86 per thousand gallons.

4. Public Education

New Hartford Water Company has an ongoing program of customer education with respect to the intelligent use of water. NHWC believes it is important for all citizens to know where their drinking water comes from and how it is collected, stored, treated and distributed. Informed citizens will then share an awareness that high quality water is not easily attained. They will better understand that potable water is a product of a continuing cooperative effort between the community, NHWC and customers alike.

The NHWC provides an annual bill stuffer with information on water quality, source

protection and conservation. A copy of a recent bill stuffer is provided in Appendix L. The NHWC also has the ability to utilize the public education resources of The Connecticut Water Company. The annual "Consumer Confidence" report, as required by the Safe Drinking Water Act, is also mailed to all customers and is also included in Appendix L.

Flagging of unusually high-recorded uses is done through billing services provided by the contract operator, New England Water Utility Services as part of an ongoing program. customers whose meter reading represents a significant increase in consumption over the same period for the previous year are identified, reviewed and sent a letter. They are advised to inspect the premises' plumbing and outside faucets for undetected leaks.

The billing format for NHWC now includes consumption data for each account for the previous four billing periods for comparison. Customers can easily review their consumption history and can investigate and make adjustments themselves if they see a change in their water use. This additional information increases the customer's awareness of their water usage and encourages them to identify and correct any unexplained increases.

C. Supply Management

Supply management is defined as conservation measures, which improve the efficiency of and eliminate waste in, the production and distribution of water within the system. The specific supply management elements incorporated into this part include a distribution system survey, water consumption comparisons, meter management, an annual water system evaluation, leak detection and repair, pressure reduction, and hydrant management. The water consumption data presented represents a summation of the annual water sales to individual customers. As previously discussed, Table 6.2 summarizes the past 5 years of data and provides calculations for unaccounted-for and non-revenue water losses. These data indicate that unaccounted-for water was approximately 7% and non-revenue water was approximately 19% of the system supply during the 2004 year.

Non-revenue water is the difference between the total amount of water consumed and the amount of water delivered to the system. Unaccounted water is the difference between the total amount of water consumed plus an estimate of other authorized uses such as fire fighting, main flushing etc. and the amount of water delivered to the system. As Table 6.2 shows, historically a significant proportion of production has been non-revenue water.

The goal of the supply management program is to attempt to achieve and maintain a 15% non-revenue water loss. In promoting water conservation measures involving supply management, the NHWC should note that these measures tend to require extensive financial planning and long lead times to implement. The success of the supply management program will be determined by the ability of the NHWC to plan, budget for, and implement each of the elements. The planning process should include an evaluation to identify the benefits of each of the described program elements prior to their implementation. Priority should be given to those elements that will result in the greatest reduction in non-revenue water. Following implementation, each supply management element should be evaluated on an annual basis to identify its impact of the system efficiency. Through a process of annual assessment, the supply management program will be modified to meet the changing needs of the system. This assessment should be conducted at year-end as part of the Annual Water System Evaluation described in Sub-part C.3 of this section below.

1. Distribution System Survey

The NHWC completed its first comprehensive leak detection survey of the water system in July 1995. This survey utilized electronic sound amplification equipment to locate leaks within the distribution system and was performed by Connecticut Water Company. A second, complete comprehensive water distribution system leak detection survey was performed in 1999. During this survey five hydrant and service leaks, estimated at a total of 10gpm, were found and repaired. Another survey was performed in a limited section of the distribution system in 2000. During this survey, a hydrant was found leaking at 5 gpm, and a service was found leaking at 5 gpm, both were repaired. The most recent survey was conducted in October and November of 2004. Two service leaks were found each at 2gpm.

The goal of this program is to aide in the effort to reduce leaks within the distribution system to less than 1,500 gallons per day per mile which is roughly equivalent to 15% non-revenue water loss. It should be noted that in a small system such as this one, a 10 gpm leak can lead to a 10% increase in non-revenue water.

Sonic distribution system surveys are a useful tool in maintaining the distribution system. It is recommended by the DPH that a sonic survey be performed at five-year intervals.

2. Meter Management

a. Source Metering

In accordance with Section B19-13-102(n) of the Public Health Code, the New Hartford Water Company has metered 100% of its supply sources. Currently these sources consist of the Pine Meadow Well and the Black Bridge Well. Meter readings at both locations are taken daily. The meter readings are manually recorded and maintained by the NHWC as part of the system operating data. In September 1998 an annual production meter calibration program was initiated to insure accurate source production information.

b. Customer Metering

The New Hartford Water Company currently meters the water consumption of 100% of its 426 customers, with the exception of the individual units within the River Run Condominium complex. The River Run Condominium complex is served by a single meter. This meter records usage for the complex on the whole, not for each individual unit. Because the Association for the complex invoices individual residents for estimated water consumption as part of the monthly association fees, no plans are under consideration for expanding the meter program to include each individual unit.

Prior to July 1995, each of the 367 individual meters were read on a semi-annual basis with billing statements issued on the same schedule. As of July 1995, the NHWC altered their meter reading schedule to increase the frequency to quarterly. This allows the NHWC to more accurately track system demands and notify customers of changes in their use habits.

In March 1998 a meter change-out program was initiated to standardize meters on the Unigun remote meter reading system. The target was to change-out 150 meters per year. This was completed in 2000.

3. Annual Water System Evaluation

New Hartford Water Company is committed to an ongoing search for sources of lost water and seeks realistic, cost-effective methods to reduce or eliminate these losses. Again, it is the goal of the New Hartford Water Company to reduce its unaccounted water to 15%. A copy of

the Annual Water System Evaluation Worksheet for 2004 is provided in Appendix M.

4. Leak Detection and Repair

As previously discussed, the NHWC has been performing system wide leak detection surveys as a means of identifying sources of non-revenue water. The Annual Water System Evaluation Worksheet will serve as a useful tool in evaluating the effectiveness of the supply management program.

In conjunction with water system evaluations, the New Hartford Water Company now routinely performs leak detection. All leaks are repaired as soon as possible after they are discovered. The short term goal of this element will be to create a comprehensive leak detection and repair program aimed at decreasing non-revenue water to 15%. The long term goal will be to repair leaks to maintain the distribution system at 10% or less non-revenue water loss.

The leak detection and repair program incorporate visual observation, comparisons of monthly production data, daily observations, and as necessary, scheduled sonic leak detection surveys.

5. Pressure Reduction

Information compiled during a 1982 *"Water Distribution System Analysis"* indicated that 24% of the service connections were experiencing pressures in excess of 155 psi. As part of the recent system improvements, two pressure reducing valves were installed to split the system into two separate zones, a low and a high. The high zone operates at a gradient of 715' and the low zone gradient is 630'. The goal of the pressure reduction element of the supply management program is to maintain operating pressures in the distribution system between 25 psi and 125 psi

6. Hydrant Maintenance

New Hartford Water Company flushes its hydrants on an annual basis. Prior to the construction of the filtration plant at Black Bridge, monthly flushing of blow-offs on dead end mains was performed, but this has not been needed since the plant went online in 2001. During system wide leak detection surveys hydrants and blow-offs are also checked. In the event a hydrant is identified as leaking, it is either repaired or replaced as soon as practical. Currently, the NHWC budgets for the replacement of no less than 2 hydrants each year.

7. System Rehabilitation

From 1999 through 2002 the NHWC underwent major capital improvements of 2.234 million dollars, which was detailed in the previous supply plan.

The projects included reatment of the Black Bridge Well, the replacement of the steel river crossing near Route 219 and splitting the system into two pressure zones to reduce pressure in the lowest portion of the system, reconstruction of the Pine Meadow Well and construction of a second storage tank in the Greenwoods Industrial Park. In 2003 non-revenue water was again high due to several leaks and main breaks throughout the year. In 2004, non-revenue water was a reasonable 18.8% and unaccounted for water was finally acceptable at just 7.16%. These numbers are expected to be realized in the future also.

SECTION VIII – LAND USE AND OWNERSHIP

A. Description of Existing Land Use Patterns

Existing patterns of land use are shown on the Supply and Land Use Map, Figure 3.1 located in Appendix C. Land use in New Hartford is largely low density rural and suburban development with some higher density single family and multi-family as well as commercial/industrial use in and around New Hartford Center and Pine Meadow.

1. Residential

Residential uses are fairly evenly distributed throughout New Hartford. Both New Hartford Center and Pine Meadow contain concentrations of residences, many of which were originally constructed as mill housing, and are almost entirely built up. Other concentrations of residential development have occurred in Bakersville and West Hill. Both of these areas are not in the New Hartford Water Company's exclusive service area. Similarly, significant residential growth has occurred at the River Run Condominium Complex on Route 44. The River Run Condominium complex is located within the NHWC service area. One recent subdivision, Pine Meadow Farms, has been constructed within the past five years and has added some residential customers and demand.

2. Commercial

The corridor along Route 44 has experienced the most significant commercial development. From the Canton town line to south of Pine Meadow a mix of commercial uses, single-family residences, condominiums, industry, and a State-owned recreation area. Several vacant parcels also exist in the corridor. In Pine Meadow, mixed commercial uses have encroached into the predominantly residential area. New Hartford Center remains the primary focus of retail, service and community activity in town.

3. Industrial

Industrial facilities in New Hartford are located almost entirely in the northeast corner of the town, accessible to Routes 44 and 219. The former mills in New Hartford Center and Pine Meadow house a diverse group of small industrial operations. The Town developed the Greenwoods Industrial Park, located north of Route 219, in the

late 1970's. The 1990's downward trend in consumption from industrial users resulted from the conversion of the Hitchcock Chair plant to a warehouse and the closing of the Union Pin facility in 1992 and 1993. Industrial development during the 50-year planning period is discussed in Part B of this section.

B. Description of Anticipated Land Use Patterns

The primary goal for the Town of New Hartford as described in the 1994 *"Plan of Development"* and the *"2005 Plan of Conservation & Development"* proposed final plan dated 6/29/05, is to maintain the essentially rural character of New Hartford as a small New England town.

1. Residential

Within the NHWC service area, residential development is nearly complete with moderate to high density housing. Some undeveloped residential land exists within the New Hartford Center and Pine Meadow areas. The 1994 *"Town of New Hartford Plan of Development"* did not contain provisions for any future residential land development within the NHWC service area. However, the potential exists for additional high density housing in the form of low-income housing or additional condominium developments. As a result, the projected water consumption of the residential population is expected to increase at a rate proportional to the increase in population of the Town of New Hartford (refer to Tables 5.1 and 6.4).

2. Commercial

The corridor along Route 44 has experienced the most significant development of mixed commercial uses. Even with the increased development, vacant parcels of land zoned for commercial uses still exist. The 1994 *"Town of New Hartford Plan of Development"* did contain provisions for a proposed future business area along Route 44 on the northern border between New Hartford and Barkhamsted. This area is located in the service area of the NUWC and could have a minor impact on the quantity of water demanded. Therefore, a nominal 0.5% per year increase in water consumption for commercial facilities has been assumed throughout the 50-year planning period.

3. Industrial

There is presently some vacant industrial land within the service area of the New Hartford Water Company located at the Greenwoods Industrial Park. This land consists of approximately 45 additional acres of undeveloped land. This Plan has been prepared with the assumption that the remaining 45 acres of vacant land will be 85% developed with operational industrial facilities by the end of the 50-year planning period. No additional industrial zoned land within the exclusive service area of the NHWC was proposed in the 1994 *"Town of New Hartford Plan of Development"*.

4. Public Authority

The limited Public Authority land uses within the area served by the NHWC are not expected to change over the planning horizon. As a result, the water consumption for public authority uses is projected to increase a nominal 0.5% per year throughout the 50 year planning period.

C. Water Company Owned Lands

The NHWC owns 0.2 acres of land at the Pine Meadow Well and 1.38 acres of land at the Steele Road Reservoir. The 7.00 acres of land at Black Bridge Well is owned by the Town of New Hartford. The Route 219 Pumping Station is located within an easement on land owned by the MDC. The Greenwoods Industrial Park Tank site is leased.

1. Pine Meadow Well

Only a single 0.2 acre parcel of land is under the direct ownership and control of the New Hartford Water Company for this source of supply. This land was purchased by the Town of New Hartford in the name of the New Hartford Water Company on May 7, 1945. The deed for the purchase of the 0.2 acre parcel is recorded in the Town of New Hartford Land Records volume 48, page 153. The remainder of the land within a 200 foot radius of the well head is owned by individuals and used for residential or, in one case, commercial purposes.

2. Greenwoods Industrial Park Tank

The land associated with the 490,000 gallon water storage tank are under the control of the New Hartford Water Company and the MDC. Rights of access to operate and

maintain the water storage tank and the distribution piping were granted to the NHWC in a 35 year renewable lease which is dated October 20, 1989. The lease is recorded in the Town of New Hartford Land Records Volume 134, Page 502.

3. Steele Road Reservoir

The rights to develop a reservoir were first granted by Henry Seymour to Roger Mills *et al* on September 24, 1825. A subsequent probate settlement of the heir of Henry Seymour resulted in the transfer of ownership and control of a 1.38 acre parcel including the Steele Road Reservoir and dam to the New Hartford North End Water Company on December 17, 1903. The probate deed for this transaction is recorded in the Town of New Hartford Land Records Volume 29, Page 511. In the period from the 1903 transfer to the present, the assets of the New Hartford North End Water Company appear to have been acquired by the Town of New Hartford and subsequently the New Hartford Water Company. This reservoir is no longer used as a source, nor is it ever expected to be used in the future; therefore, the NHWC will seek to formally abandon it as a source but still retain the land.

4. Route 219 Pumping Station

The equipment and pumping station structure are owned by the NHWC, and the parcel of land is owned by the MDC. Access to maintain and operate the facility was granted to the Town of New Hartford in the form of an easement dated April 3, 1968. This easement is recorded in the Town of New Hartford Land Records Volume 66, Page 395. The lease has no expiration date and the easement area is approximately 60' by 110'.

5. Black Bridge Well

The land surrounding the Black Bridge Well is owned by the Town of New Hartford. The Town of New Hartford purchased this land on February 2, 1949 to allow the construction of the New Hartford Elementary School. The deed for this transaction is recorded in the Town of New Hartford Land Records Volume 51, Page 480. There is one private landowner within 200 feet of the well, but the portion of house lot within 200 feet of the well is not developed. A small part of the area is maintained as a lawn.

Table 8.1 presents an inventory of water company owned land. The table includes the percentage of Town or company owned land within the 200 foot radius surrounding each wellhead, and the acreage of non-water supply related land held by the water company *(i.e.* Steele Road Reservoir).

D. New Source Feasibility

Both the Black Bridge Well and the Pine Meadow Well draw from what is essentially the same aquifer, although the Zones of Contribution do not overlap. In addition, the area with the greatest potential for increased ground water supply is in the same aquifer. Although no specific sites have been identified, the characteristics of the aquifer north of Slashers Ledges are known and it is clear that the aquifer can be considered as a viable source of additional water supply. By inference, additional well sites probably exist within the stratified drift deposits south of Slashers Ledges and north of Satans Kingdom. Other potential ground water supplies exist in the Nepaug and Bakersville sections of the Town. However, they are too distant from the NHWC service area to be considered at this time.

TABLE 8.1

Water Company Owned Lands

Description	Owner	Assessor's Description Map-Block-Lot	Acreage	Percent of Land Owned Within 200' Radius
Steel Road Reservoir[1]	New Hartford Water Co.	44-A - 118 - 1	1.38	N/A
Pine Meadow Well	New Hartford Water Co.	30 - 13 - 22	0.20	6%
Black Bridge Well[2]	Town of New Hartford	44-B - 114 - 24	7.00	89.70%

Notes:

[1] The Steele Road Reservoir is considered non-water supply related land.

[2] The New Hartford Water Company is an entity of the Town of New Hartford.

SECTION IX - FUTURE SERVICE AREA

A. Map of Existing Service Area

A map of the New Hartford Water Company distribution system has been included as Drawing No.1, Distribution Map New Hartford System. The map includes the location of the current sources, the water storage tank, water mains, fire hydrants, pressure reducing stations, booster stations, and limits of service area. Figure 3.1, Supply and Land Use Map, located in Appendix C, also delineates the existing service area.

B. Map of Future Service Area

Neither the Town of New Hartford nor the New Hartford Water Company has plans to expand its service area for the foreseeable future.

C. Exclusive Service Area

The New Hartford Water Company claimed no expanded exclusive service area in the Upper Connecticut River Water Supply Management Area.

SECTION X – ANALYSIS OF FUTURE NEEDS AND ASSESSMENT OF OPTIONS

In this section, future system needs are identified and specific system improvements are discussed. These system needs have been determined from the evaluation of population and water consumption projections, available supply, service area, land use compatibility, development pressures and existing system needs, which are presented in Chapters 3 through 9 of this Supply Plan. System needs were prioritized in Section 4, with the highest priority given to health and water quality related problems. System improvements, which address high priority needs, are included in the five-year capital improvement program. System improvements, which are included in the 20 and 50 year planning periods, are discussed in general terms.

A. System Improvements

In November 1997 the Town of New Hartford hired Fay, Spofford and Thorndike, Inc., a consulting engineering firm, to prepare a water system master plan with a hydraulic analysis and model of the system. The master plan was completed in March 1999 and included a recommended plan for system improvements. The Town aggressively moved forward with the recommendations. On March 31, 1999, the Town was notified by USDA Rural Development that full funding ($1,724,000) for the Town's capital improvement project was approved. With the funding, treatment was provided at Black Bridge Well, Pine Meadow Well was reconstructed, an old river crossing has been replaced and distribution main and pressure reducing valves installed to split the system into two pressure zones. The Town also secured a subsequent $534,000 USDA loan/grant to cover some of the reconstruction work at Pine Meadow Well and for construction of a second tank at the Greenwoods Industrial Park site.

The improvements to be addressed in the short term and long term are included in Table 10.1, Five-Year and Long Term Spending Plan.

Long term improvements for the NHWC include continued replacement of undersized and old water mains. A copy of the long term improvement program is included in Appendix N.

B. Supply and Demand Considerations

It is anticipated that the actual quantity of supply to meet system demands will only slightly increase due to the past aggressive efforts to reduce non-revenue water which are now being recognized. As shown in Table 7.1, ADD by the year 2050 is expected to be approximately 180,000 gallons per day. Maximum month average day demand is estimated to be 20% more than the average day demand. Maximum day demand is estimated to be 77% greater than the average day demand. Projections for these demands are also shown in Table 7.1.

C. Margin of Safety Considerations

The DPH guidelines for determining margin of safety states that available water must be sufficient to meet projected average daily demands assuming the largest well is off line and the others may be pumping 24 hours. With completion of the Pine Meadow Well reconstruction, the system now has two wells with identical capacity (200 gpm). This results in a margin of safety of 20% at the end of the planning period in 2050. Therefore, additional supplies will not be required. Margin of safety is also presented in Table 7.1 for various conditions.

TABLE 10.1

FIVE YEAR AND LONG TERM SPENDING PLAN

	Estimated Cost						
Project Description	2005	2006	2007	2008	2009	20yr.	50yr.
Source Protection – Pine Meadow						200,000*	
Undersized Main Replacements						1,030,000*	1,740,000*
Misc. Distribution Improvements	25,000	25,000	25,000	25,000	25,000		
Inspect & Clean Ind. Park Tanks					10,000		
Update Water Supply Plan	35,000						
Leak Surveys			5,000				
TOTAL	$60,000	$25,000	$30,000	$25,000	$30,000	1,230,000*	1,740,000*

* Funding may come from outside sources.

SECTION XI – FINANCIAL PLANNING

A. Past and Present Financial Status

As stated in Section II, the New Hartford Water Company's budget is combined with the town sewer budget under the Water Pollution Control Authority (WPCA). The current operating budget is presented in Table 2.1; the retained earnings, cash assets, and assets and liabilities of the WPCA as of June 30, 2004, are presented in Tables 2.2 through 2.4 respectively. The rate structure for the NHWC is presented in Appendix K. The ability to secure needed revenue for capital improvements and compliance with statutory and regulatory requirements is affected by the fact that user fees account for 100 percent of the annnal operating income for the company. Additional revenue can only be generated by increasing the user charges or through borrowing.

B. Revenue Available for Future Expenditures

A five-year and long term spending plan is summarized in Table 10.1. In 1999, the Town of New Hartford secured a $1.724 million USDA loan/grant to proceed with major capital improvement projects. The Town also secured a second loan/grant from the USDA for $534,000 for additional system improvements. These funds were used through the year 2002.

The WPCA and the First Selectman collectively review the rate structure and adjust it annually so that a proper amount of funds are collected for operation of the water system and funding of improvements.

Potential additional revenue sources to meet these obligations may include:

1. Water Sales to Outside Users

Based upon the projected system safety factors, the NHWC has some excess water to provide outside sales. However, there are no nearby community water systems to supply water to..

2. Increased Water Rates

The current water rate structure for the NHWC is presented in Appendix K. Since the NHWC is statutorily prevented from imposing a one-time assessment on customers to fund system betterment projects, increased revenue from water sales must be done through increasing the rate structure. Increased water rates are not likely to provide significant additional capital improvement revenues. Rather, increased rates will most likely be dedicated to overcoming

any operation and maintenance budget shortfall.

3. Sale of General Obligation or Revenue Bonds

The NHWC, as an entity of the Town of New Hartford would be able to sell general obligation bonds to finance capital improvement programs. Based upon the specific financial obligations incurred by the sale of bonds, the water rate structure would have to be adjusted to accommodate repayment.

4. State and Federal Grants and Loans

The NHWC, as an entity of the Town of New Hartford, will continue to actively seek both state and federal grant and loan money as necessary. The Town of New Hartford provides surety against any loans, which the NHWC secures.

State and federal grants are an attractive revenue source since they do not require repayment Bonds, however, would require increasing the water rates to meet the repayment obligations.

5. Sale of Excess Company Owned Lands

With the installation of the water storage tanks, the NHWC has abandoned the Steele Road Reservoir as a source for water supply. It is conceivable that this property could be sold to raise revenue. However, the suitability of this land for development is limited, and hence likelihood of obtaining significant additional revenues from this property is very low.

C. Allocation of Revenue

The budgeted revenue allocation for the current fiscal year is presented in Table 2.1. It is assumed that future resources will be allocated in a similar manner. With the recent $2.258 million capital improvement program completed, the supply and distribution system is now more reliable and revenue expenditures for capital improvements have progressively decrease in the years following the end of the 5-year Capital Improvement Program. Now the NHWC maintains $25,000 per year for capital improvements. The program allows the NHWC to budget for, and evaluate system needs to ensure cost effective solutions are implemented.

SECTION XII - EMERGENCY CONTINGENCY PLAN

This section is intended to outline the potential emergencies that could affect the NHWC water supply and distribution capabilities, and to provide procedures to be followed to respond to each. This section should be studied carefully as emergencies resulting in failure of any or all parts of the system, or resulting in a shortage of water supply must be rectified in the most expedient manner possible. To ensure immediate response to emergencies, the NHWC must be familiar with, and understand, the procedures outlined below to maintain a state of readiness for emergency response.

This section was prepared with the guidance of the "Water Companies Planning Guidance for Emergency Contingency Plans" document. Included in Appendix O are blank copies of all of the guidance document tables used in preparing this plan and the completed "Certification of Response Plan Availability for Sabotage and Similar Attacks" form for the New Hartford Water Company. Completed copies of the "Interconnection Summary" and the "System Fact Sheet" have been included in Appendix E and Appendix H, respectively.

A. Vulnerability Analysis

Potential emergency situations and the anticipated effects on water system facilities and operations are summarized below. Items associated with the Barkhamsted Aqueduct that were presented in previous supply plans have been eliminated since this is now an emergency supply. Items associated with the Steele Road Reservoir have also been eliminated.

1. Contamination of Pine Meadow Well

The anticipated effect of contamination of the Pine Meadow Well would be immediate water quality deterioration in distribution system. Following deactivation of the Pine Meadow Well, system supply would be from the Black Bridge Well. No problems meeting system demands are anticipated.

2. Disruption of Electric Power Supply to Pine Meadow Well

The Pine Meadow Well is equipped with a stationary emergency power generator. The controls on the generator are set to automatically provide power to the Pine Meadow Well in the event the primary power supply is disrupted. No problems meeting system demands are anticipated.

3. Pine Meadow Well Inoperable

In the event the Pine Meadow Well became inoperable, the system supply would be limited to the Black Bridge Well. No problems are anticipated to meet all system demands when only one well is supply the system.

4. Contamination of Black Bridge Well

The anticipated effect of contamination of the Black Bridge Well would be immediate water quality deterioration in distribution system. Following deactivation of the well, system supply would be from the Pine Meadow Well. No problems are anticipated to meet all system demands when only one well is supply the system.

5. Disruption of Electric Power Supply to Black Bridge Well

The Black Bridge Well has a stationary emergency power generator. The controls on the generator will be set to automatically provide power to the Black Bridge Well in the event the primary power supply is disrupted. No problems meeting all system demands are anticipated.

6. Black Bridge Well Inoperable

In the event the Black Bridge Well became inoperable, the system supply would be limited to the Pine Meadow Well. Following completion of reconstruction, the Pine Meadow Well will be capable of sustaining system demands.

7. Break in 12" River Crossing (Route 219)

Upon isolation of the river crossing there would be some reduction in fire flow capacity.

8. Break in 12" River Crossing (Near Bridge Road)

Upon isolation of the river crossing there would be some reduction in fire flow capacity. In the event the river crossing could not be isolated, a decrease in operating pressure in portions of the system and a reduction in fire capacity would result.

9. Drought

Drought should not result in a significant reduction in the quantity of supply available. The Pine Meadow Well was pump tested at 265 gpm for 72 hours with a drawdown of less than 10 feet in 2000. Static water level was approximately 21.5 feet below grade yielding a pumping level no lower than 31.5 feet below grade. The bottom of the turbine pump is approximately 59 feet below the ground surface and the new screen extends from 47 - 77 feet below the ground surface. Drought conditions that would reduce the elevation of the water table under pumping conditions to the level of the bottom of the turbine pump are not anticipated. Similar conclusions can be drawn for Black Bridge Well.

10. Contamination in the Water Storage Tanks

Under current system conditions, the anticipated effect of contamination in the water tank would be immediate water quality deterioration in distribution system.

11. Physical Damage to the Water Storage Tanks

The most likely type of physical damage at the water storage tanks would likely be punctures due to high velocity projectiles. Damage due to corrosion is unlikely provided proper maintenance procedures are followed. Catastrophic failure of the structure is also possible but unlikely. The loss of both of the water storage tanks would result in decreased system operating pressure and reduced fire flow capacity.

The disruption of electric power at the water storage tank should not cause any adverse effect on the water supply system. The pump control system located on the tank site is equipped with a back-up battery power supply system.

12. Failure of the Pump Controls

The failure of pump controls at the water storage tanks can occur due to equipment failure or as a result of the loss of signal transmitted via phone lines. The loss of signal triggers an alarm system. No adverse effect is anticipated other than the inconvenience of monitoring the water elevation in the tanks by on site observation and cycling the pump at the Pine Meadow Well and Black Bridge Well manually.

B. Emergency Call-Up List

24-hours a day, NHWC customers may contact the NEWUS directly, toll free.

In the event that the reported (or discovered) problem is determined to be an emergency, NEWUS will notify customers initially via local radio and television broadcasts, and, if necessary door to door or due to the length of the emergency, via local newspapers. In addition, in June 1989, the Town of New Hartford adopted an "Emergency Operations Plan." This plan describes additional communications procedures to be used in the vent of a larger-scale disaster or emergency situation.

1. Water System Operator (Immediate Response)	Telephone No.
a. NEWUS Customer Service, 24-hours	1-800-286-5700

2. Emergency Contractors

a. Electrical Work

B.W. Morse & Sons
Brunning Road
New Hartford, CT 06057 — 860-379-9855

b. Excavation, Heavy Construction

Suburban Sanitation Service
18 Colonial Road
Canton, CT 06019 — 860-693-2737

c. Water Main Materials

Eastern Pipe Products Co.
124 Costello Road
Newington, CT 06131 — 800-621-3647

Public Works Supply Co., Inc.
133 Louis Street
Newington, CT 06111 — 860-667-0894

Ti-Sales Inc.
36 Hudson Road
Sudbury, MA 01776 800-225-4616

d. Water Storage Tank Repairs

North East Aquastore Inc.
150 River Road, Suite M-3
Montville, NJ 07045 201-263-3030

Fisher Tank Company
3131 W. Fourth Street
Chester, PA 19013-1899 610-494-7200

e. Pump Control Repairs

Aaron Associates of Connecticut, Inc.
478 West Main Street, P.O. Box 2731
Waterbury, CT 06723 203-753-1536

Bristol Babcock Inc.
1100 Buckingham Street
Watertown, CT 06795 860-945-2200

f. Water Utilities (Spare Parts, Equipment)

Connecticut Water Company 203-729-8243

g. Testing Laboratories (Water Quality Analysis)

Environmental Consulting Labs Inc.
1005 Boston Post Road
Madison, CT 06443 203-245-0568

Connecticut Testing Laboratories
165 Gracey Avenue
Meriden, CT 06062 203-634-3731

h. First Selectman (Media Inquiries)
Office at the Town Hall 860-379-3389

i. Fire Department (Reduced Fire Flow Capability) 860-379-3389

j. The Metropolitan District (Emergency) 860-278-0127

3. Government Agencies

a. Connecticut Department of Public Health (DPH) 860-509-7333
24 Hour Emergency Phone Number 860-509-8000

b. Connecticut Department of Environmental
Protection (DEP) - Oil and Chemical Spills 860-424-3338

c. U.S. Environmental Protection Agency (EPA)
- Oil or Hazardous Materials Spills 800-424-8802

4. Media

a. Radio

WSNG AM-610	Torrington	860-689-8050
WTIC AM-1080	Hartford	860-677-6700
WTIC FM-96.5	Hartford	860-677-6700
WDRC AM-FM	Bloomfield	860-243-1115

b. Television

WFSB Channel 3	Hartford	860-728-3333
WVIT Channel 30	West Hartford	860-521-3030
WTNH Channel 8	New Haven	203-296-8881
WTIC Channel 61	Hartford	860-527-6161

c. Newspaper

Register - Citizen	Winsted	860-379-2160
Hartford Courant	Hartford	860-241-6200

C. Inventory of Emergency Equipment

1. Inventory of Emergency Equipment

A limited inventory of water main repair items (repair clamps, pipe pieces, valves) is kept at the Sewage Treatment Plant. The New Hartford Water Company also has an arrangement with Eastern Pipe Products Co. (EPPCO) for 24-hour availability of repair items. Additional repair items are also available from the Connecticut Water Company's Naugatuck region. The trailer mounted booster pump for use at the Barkhamsted Aqueduct is also stored at CWC's Naugatuck region office. Mobilization of contractors and CWC work forces are also available through NEWUS on a 24-hour basis.

2. Sodium Hypochlorite

A 7-10 day supply of 12.5% sodium hypoclilorite is maintained.

Chemical metering pumps are also available for feeding sodium hypochiorite solution on an emergency basis.

D. Staged Contingency Plans

1. General Response

The general response procedure for emergency situations involves the following steps:

a. The contract operator (NEWUS) identifies or is notified of a water supply problem.

b. The contract operator determines the source, character and severity of problem.

c. The contract operator decides whether or not the problem is an emergency situation. An emergency situation is an occurrence, which impacts or has the potential of impacting operating conditions in a major portion of the water supply system. A number of anticipated potential emergency situations are described in Section A.

d. For emergency situations, the contract operator determines the level of response needed. Level of response and response procedure would be based on:

1. Type of Impact Due to Emergency
   Water quality deterioration
   Water quantity reductions
   Low pressure

2. Immediacy of Problem
   Immediate impact
   Long term impact
   Potential impact

3. Time Schedule for Solution
   Quick remedy (same day)
   Delayed solution (major construction, delivery time for parts)

e. Appropriate parties contacted to respond to emergency as required (See Section B)

1. Physical Repairs
   Contractor(s) as needed
   Equipment or part supplier(s)

2. Water Quality Impacts
   Testing Laboratory(s)
   Connecticut DPH
   Connecticut DEP (chemical or oil spill)
   U.S. EPA (hazardous material or oil spill)
   First Selectman (media contacts as required)

3. Water Quantity Impacts
   Fire Department (reduced fire flow availability)

4. Barkhamsted Supply Impacts
   The Metropolitan District

f. For severe emergencies, threatening availability of supply, staged contingency plans are activated.

g. The contract operator coordinates emergency response with the First Selectman and WPCA.

2. Response Procedures to Anticipated Emergency Situations

a. Contamination of Pine Meadow Well or Black Bridge Well.

1. Turn off well pump and isolate well from distribution system. Contact Connecticut DPH.
2. Take samples at well and locations in distribution system and have analyzed to determine extent and severity of contamination.
3 If analysis of samples indicates contamination situation, First Selectman to issue notice via media restricting or preventing use of water (with the concurrence of Connecticut DPH).
4 Flush the well. Flush water mains by successively opening fire hydrants starting from the location of the well.
5. Sample at the well and locations in the distribution system and have analyzed to determine water quality.
6. Repeat steps 4 and 5 until water quality returns to acceptable levels (per advice of Connecticut DPH).
7. First Selectman to issue notice via media rescinding water use restriction/prevention.

b. Disruption of Power Supply to Pine Meadow Well and/or Black Bridge Well.

1. Check to ensure that the emergency generator is operating properly.
2. Acquire fuel as necessary to ensure continuing operation of the emergency generator.

c. Pine Meadow Well or Black Bridge Well Inoperable.

1. Arrange for repair or replacement of defective equipment.

d. Break in either River Crossing

1. Isolate the affected river crossing from distribution system.
2. Notify Fire Department of potential reduced fire flow capability.
3. Make repairs as necessary and reconnect river crossing with distribution system.
4. Notify Fire Department of restored fire flow capability.

e. Drought

1. Drought conditions are not anticipated to affect the Pine Meadow Well or the Black Bridge Well.

f. Contamination in the Water Storage Tank(s)

1. Take samples at the water tank and at locations in distribution system and have analyzed to determine extent and severity of contamination.
2. If analysis of samples indicates contamination situation, First Selectman to issue notice via media restricting or preventing use of water (with concurrence of Connecticut DPH).
3. Flush the water tank. Also, flush water mains by successively opening fire hydrants starting from the water tank.
4. Sample at the water tank and at locations in the distribution system and have analyzed to determine water quality.
5. Repeat steps 3 and 4 until water quality returns to acceptable levels (per advice of Connecticut DPH).
6. First Selectman to issue notice via media rescinding water use restriction/prevention.

g. Physical Damage to the Water Storage Tank(s)

1. Valve off effected tank, operate system on one tank until repairs made.
2. If damage to both tanks, make temporary repairs to punctures to control leakage.
3. Reset pump controls to maintain water level in tank below the level of any punctures if appropriate.
4. Arrange for permanent repairs.

h. Disruption of Electric Power at the Water Storage Tank

1. Monitor the charge on the back-up battery power system until power is restored
2. Recharge the back-up battery power system as necessary until power is restored.

i. Failure of the Pump Controls

1. Manually control the pump at the Pine Meadow Well and Black Bridge Well.

E. Standard Media Messages for Contamination Situations

This Subsection has been incorporated into the response actions listed in Subsection F - Stages of Emergency Contingency Plan.

F. Stages of Emergency Contingency Plan

1 Water Supply Alert

Trigger Point:

If the Greenwoods Industrial Park tanks fails to recover to 60% of capacity (tank level of 21 feet) for 3 consecutive days. (400,000 gallons total remaining in storage)

Response Actions:

Internal notification and preparation.
Contact local and state agencies, including the DPH, concerning the initiation of a water supply alert.

Investigate any deviation from normal use registered on production meters.

Develop media messages for bill inserts or direct mailing to distribute to customers summarizing the situation. Customers will be cautioned to avoid wasting water and advised on sprinkling wisely.

Contract Operator is to prepare monthly reports to advise and update Town and State agencies of the water supply availability and demand situation.

Review water supply emergency contingency plan and update if necessary.

2. Water Supply Advisory

Trigger Point:

If the Greenwoods Industrial Park tanks fails to recover to 50% of capacity (tank level of 17 feet) for 3 consecutive days. (333,000 gallons total remaining in storage)

Response Actions:
Contact local and state agencies, including the DPH, concerning the initiation of a water supply advisory.

Internal measures will be implemented to maximize use of existing supplies and to schedule emergency equipment.

All supplementary water sources will be re-evaluated for short-term activation. This would include all "active" sources not currently in full use, as well as emergency sources of supply.

Any emergency source of supply requires DPH approval prior to use.

Bimonthly water supply status reports will be prepared by Contract Operator for evaluation and for distribution to state and local officials.

The media will be contacted to promote voluntary conservation in residential, commercial and industrial facilities to reduce demand by 10 percent from previous non-drought projected usage for the appropriate month. Mailings will be prepared for distribution to customers appealing for stringent voluntary conservation measures. Preparation for mandatory conservation, including necessary enforcement mechanisms, will be initiated.

Evaluation of potential funding needs for actions required under a Water Supply Alert, Advisory or Emergency, will be performed jointly by the Contract Operator and Town to ensure the availability of adequate funding through budgets or emergency measures.

3. Water Supply Emergency - Phase I

Trigger Point:

If the Greenwoods Industrial Park tanks fails to recover to 40% of capacity (tank level of 13.5 feet) for 3 consecutive days. (266,000 gallons total remaining in storage)

Response Actions:

Contact local and state agencies, including the DPH, concerning initiation of the water supply emergency Phase I plan. This is the first phase of mandatory conservation. At this level, the Town will ban all unnecessary water usage. No outside hose usage will be allowed, nor are in-ground sprinkler systems to be used. A 15 percent reduction in usage from previous non-drought projections for the appropriate month will be targeted.

The media and all customers will be notified on the implementation of the first phase of mandatory conservation.

Local police will be asked to help enforce water use restrictions.

Weekly water supply status reports will be prepared by Contract Operator for evaluation and for distribution to state and local officials.

All possible supplementary water sources will be activated and prepared for use. Coordination with local officials concerning alternative facilities for obtaining water will be initiated, as required.

Re-evaluation of priority among users will be initiated and revised if necessary

4. Water Supply Emergency - Phase II

Trigger Point:

If the Greenwoods Industrial Park tanks fails to recover to 30% of capacity (tank level of 10 feet) for 3 consecutive days. (200,000 gallons total remaining in storage)

Response Actions:

Contact local and state agencies, including the DPH, concerning initiation of the water supply emergency Phase II plan. Additional conservation measures including special reading of consumer meters will be put into effect and enforced by local police. Outside water use bans will continue and restrictions on non-essential commercial and industrial users will be imposed. Mandatory restrictions will be put into place and a 20 percent reduction in usage from previous non-drought projects for the appropriate month will be targeted.

Twice weekly water supply status reports will be prepared by Contract Operator for evaluation and for distribution to state and local officials.

All supplementary water sources, upon DPH approval, will be put into service.

Press releases will be developed to inform customers of the drought status and how to best cope with the situation.

Warnings will be issued to those users exceeding a normal quota of water. Repeat violators of restrictions and warnings will have service reduced by insertion of a flow restrictor in the service line. Fines may be assessed by the civil authority.

A plan will be formulated in concert with state and local officials for strict rationing of water if phase III should be reached. The needs of high priority customers, homes, commerce and fire protection will be established and prioritized. Plans will be made for emergency service of drinking and cooking water by tanker to any areas where normal water service must be terminated.

Alternate means of obtaining additional water supply will be investigated, including the possible use of "inactive" sources of supply, tank truck deliveries, and emergency interconnections with other public water utilities.

5. Water Supply Emergency - Phase III

Trigger Point:

If the Greenwoods Industrial Park tanks fails to recover to 20% of capacity (tank level of 8.5 feet) for 3 consecutive days. (133,000 gallons total remaining in storage)

Response Actions:

The pre-arranged drought hazard rationing plan described above in Phase II, will be initiated in cooperation with appropriate local and state officials, including the DPH. The details of the rationing program will depend upon the nature of the individual emergency but will provide for the bare essentials of life sustenance for as long as possible. The plan will consider needs of high priority customers, homes, commerce and fire protection. Non essential commercial and industrial use would be cut off in accordance with the established priorities. It may be necessary to set a storage minimum to be held for extinguishing fires, the amount needed depending upon the nature of the emergency and structures in the service area. Provision for emergency services for bathing will be coordinated with local officials, and arrangements will be instituted for emergency service of drinking and cooking water by tanker to any areas where normal water service must be cut off. Mandatory rationing of water will be strictly enforced.

It is important to have this type of civil defense response to natural disaster in place in each community to cover all types of emergencies that may result from wind storm, flood, fire, earthquake or large scale accident such as severe contamination of air, land or water by dangerous chemicals. A tank truck spill, or a rupture or leak of an in-ground gasoline, oil or chemical storage tank could suddenly incapacitate a reservoir or a groundwater aquifer, despite the best planning to forestall such an occurrence. The object of planning allowable uses of well and reservoir watersheds is to reduce the likelihood of such an event.

Recovery from Emergency Conditions - As recovery from the emergency conditions are achieved, the level of emergency measures will descend as the appropriate trigger levels are met in the reverse order.

G. Critically Dependent Water Users

A priority service list is provided in Appendix O.

H. Sources of Emergency Water Supply

In the event of a Water Supply Advisory, the NHWC would begin to evaluate potential, alternate potable water supplies. Connecticut Water Emergency Services in Naugatuck is an available source of emergency water.

Additionally, the MDC connection on Route 219 could be activated as a source of raw water in the event of a dire emergency. The use of this source would require the approval of the DPH and notification of the MDC.

I. Mitigation

Because wells are currently equipped with on-site standby power system, the primary emergency situations to which the NHWC is vulnerable are contamination of a well or the aquifer, equipment breakage, and natural disasters.

Natural disasters are unavoidable, however the NHWC's contingency planning will help to reduce the severity of the effects and the duration of hardships. Equipment breakage is unavoidable; however routine maintenance and servicing of equipment will extend the service life and usability of the equipment. In the event of minor equipment breakage, the NHWC is prepared to repair, replace, or manually operate the equipment as needed until suitable permanent replacements may be obtained. In the event of major equipment failure, the NHWC would be required to obtain the services of outside contractors to repair or replace the equipment.

In the event of a release of materials that threaten the local aquifers, the NHWC would immediately notify the DEP, DPH, the resident trooper, and the local fire department. All further activities and actions on the part of the NHWC would be dependent upon the type, nature and extent, and the proximity of the spill to either of the wells. All activities would be coordinated directly with the above agencies.

If a release immediately threatens either of the water supply wells, the affected well would immediately be deactivated, and the DEP and DPH would be notified. Water quality samples would be collected from the well and locations within the distribution system to determine the

severity and extent of any contamination, which had already reached the well or the distribution system. Further activities would depend upon the analytical results and the guidance of the DPH. Alternate potable water sources will be evaluated if the situation warrants.

The NHWC has the resources of Connecticut Water Service to rely on in the event of an emergency. Connecticut Water Service includes, NEWUS, Connecticut Water Company and Connecticut Water Emergency Services, which can provide bulk deliveries of potable drinking water.

J. Recovery From Emergencies

When an emergency situation appears to be easing, the NHWC will evaluate the degree of relief and the trend of the water supply. As the water supply recovers above the trigger point of a given water emergency stage, the situation will be evaluated to determine the likelihood of the situation again worsening, and if no regression appears likely, the water emergency will be eased to the lower level. If at any time, the situation appears to warrant, the emergency stage will be held at its present level so long as is deemed necessary by the NHWC or the DPH.

APPENDIX A

1986 Town Ordinances Creating the New Hartford Water and Sewer Commission
and
1987 Town Ordinance Creating the New Hartford Water Pollution Control Authority

ORDINANCE

TOWN OF NEW HARTFORD

BE IT ORDAINED that the ordinance creating the New Hartford Water and Sewer Commission duly enacted at a Town Meeting on February 5, 1986 is hereby amended as follows:

1. The New Hartford Water and Sewer Commission shall be renamed and designated the New Hartford Water Pollution Control Authority.

2. In addition to the powers granted in the ordinance of February 6, 1986, the New Hartford Water Pollution Control Authority shall have all powers granted to water pollution control authorities by the Connecticut General Statues.

3. In all other respects the ordinance of February 6, 1986 remains in full force and effect.

This ordinance shall be effective fifteen (15) days after publication in a newspaper with circulation in the Town of New Hartford.

Patricia J. Halloran, CMC
Town Clerk
Town of New Hartford

Effective Date: July 13, 1987

AN ORDINANCE CREATING A WATER AND SEWER COMMISSION

BE IT ORDAINED that the ordinance creating the New Hartford Sewer Commission duly enacted at a Town Meeting on August 26, 1963 and amended at a Town Meeting on January 14, 1965, and the resolution duly enacted at a Town Meeting on October 7, 1968 creating a Water Commission and combining it with the Sewer Commission, and the ordinance duly enacted on March 6, 1980 again separating the New Hartford Water Commission from the Sewer Authority of the Town of New Hartford are all hereby rescinded.

BE IT FURTHER ORDAINED that there is hereby created a Commission to be known as the New Hartford Water and Sewer Commission. Said Commission shall consist of seven members, five of whom must be users of Town supplied water and/or users of the Town sewer system as well as electors of the Town of New Hartford, and two of whom must be non-users of Town supplied water and/or non-users of the Town sewer system as well as electors of the Town of New Hartford.

The members of said New Hartford Water and Sewer Commission shall serve without compensation for the following initial terms: 3 members for 3 years, 2 members for 2 years, and 2 members for 1 year. Thereafter, all members shall serve a term of 3 years from the date of their appointment. All appointments shall be made and vacancies filled by the Board of Selectmen.

Said New Hartford Water and Sewer Commission shall be responsible for administration and financial management of the Town water and sewer plants. Said Commission may exercise all powers granted to such authorities by the General Statutes of Connecticut including the power to establish policies and regulations and to create a budget. Said Commission shall have the responsibility of establishing water and sewer rates sufficient to ensure at least a break-even operation that may provide for amortization of indebtedness and carry the operations of the water and sewer plants without cost to the general taxpayers of the Town.

This ordinance shall be effective 15 days after publication in a newspaper with circulation in the Town of New Hartford.

Patricia J. Halloran, CMC
Town Clerk
Town of New Hartford

Effective Date: February 27, 1986

TOWN OF NEW HARTFORD

ORDINANCE

BE IT ORDAINED: that the ordinance passed at Town Meeting on February 5, 1986 creating a Water and Sewer Commission be amended as follows: All terms of all Commission members shall expire on December 31st of the respective year of each term. This ordinance to take effect 15 days after publication date.

Patricia J. Halloran, CMC
Town Clerk
Town of New Hartford

Effective Date: April 25, 1986

APPENDIX B

Original 1949 Agreement and 1963 and 1965 Amendments
Between Allied Connecticut Towns and Metropolitan District
for
Water Supply to be Obtained from Metropolitan District

AGREEMENT made this 18th day of April, 1949 by and between The Allied Connecticut Towns, Incorporated, a corporation incorporated under the laws of the State of Connecticut, hereinafter sometimes called the "Corporation", acting herein by Hedleigh H. Howd, its President duly authorized and empowered hereunto by vote of its board of directors, party of the first part, and The Metropolitan District, a municipal corporation specially chartered by the General Assembly of the State of Connecticut, having its territorial limits within the County of Hartford in said state, hereinafter sometimes called the "District" acting herein by Edward N. Allen, its Chairman, duly authorized hereunto by vote of its District Board,

W I T N E S S E T H :

WHEREAS, the District is desirous of building a dam for water supply purposes at the Hogback, so-called, in the Town of Hartland, in Hartford County, in the State of Connecticut, for the purpose of impounding and diverting the waters of the West Branch of the Farmington River for a water supply; and

WHEREAS, the Corporation is a lower riparian owner on said stream; and

WHEREAS, one of the purposes for which said Corporation was formed is to conserve, protect and promote the natural beauties, the natural resources and the recreational facilities of the State of Connecticut; and

WHEREAS, the District owns and operates various other reservoirs which, together with the proposed Hogback reservoir, will have a safe yield of water therefrom sufficient to meet the needs of the inhabitants within its territorial limits for many years to come; and

WHEREAS, the Corporation has opposed the granting of

authority by the General Assembly to the District for the purpose of building a dam at said Hogback and the moving of trunk-line highways and the right of eminent domain in connection with the same; and

WHEREAS, various sportsmen's organizations located within the state of Connecticut and allied with the Corporation have also opposed the granting of said authority for the building of said dam as aforesaid because of the limitation of boating, hunting, fishing and other recreational activities which would result from said construction;

NOW THEREFORE:

In consideration of the premises and other valuable considerations the parties hereto agree as follows:

1. The Corporation, as a riparian owner, will not hereinafter assert its common law rights as such riparian owner as to the flow of the West Branch of the Farmington River through or along its property but shall be restricted to such riparian rights as it may be entitled to by virtue of this contract.

2. The District has inserted in the so-called Hogback bill, House Bill No. 610, which it has introduced into the General Assembly at its session of 1949, a provision prohibiting the development for water supply purposes of said West Branch of the Farmington River below said Hogback dam site to and including Satan's Kingdom and of Sandy Brook, Mad River and Still River, or of any other tributaries of said West Branch which enter the said river between said points, and the District hereby agrees specifically that for the period of seventy-five (75) years hereafter it will not construct any dam or similar obstruction to said river between said points at any time or attempt to do so, except at Greenwood's Pond as hereinafter provided.

3. The District hereby agrees to have said House Bill

amended to the effect that the District shall not have any right of eminent domain in respect to land or property rights upon, beneath, along or bordering said West Branch of the Farmington River from a point immediately below said Hogback dam site to and including Satan's Kingdom, except for the construction, repair and maintenance of pipe lines for water supply purposes.

4. The District further agrees that in the event said riperian proprietors or any of them who are parties to an agreement with The Metropolitan District dated March 31, 1931, shall demand by virtue of said contract that the District shall build any further dam or dams below Hogback dam site on said West Branch of the Farmington River to and including Satan's Kingdom or on any of said tributaries or that the District shall impound for them or any of them any of the water flowing between Hogback dam on said West Branch and above said Satan's Kingdom or in any of said tributaries the District will invoke the provision in said contract for relief on the part of the Metropolitan District which states, "Nothing in this agreement shall prevent The Metropolitan District from furnishing all the water required for the needs of its inhabitants and of others who may be entitled thereto, and if the said District shall be unable to supply the riparian owners with the amount of water which it may be obligated to furnish by the provisions of said agreement, it will make up the equivalent of such shortage by electrical energy or otherwise."

5. The District agrees that in the event it shall obtain authority for the right of eminent domain from the General Assembly to build said dam and reservoir at Hogback it will allow and permit boating and fishing upon the Hogback reservoir, so-called, and that it will allow and permit hunting and fishing upon all the watershed area of said Hogback reservoir which may be owned by the District, subject only to such proper rules and regulations as may be promulgated from time to time by a commission of seven members consisting of one member of the State Department of Health to be appointed by the Connecticut Public Health Council, one member of the State Board of Fisheries and Game to be appointed by said Board

one member of the Water Bureau of the District to be appointed by the District chairman, and one representative from each of the towns of Colebrook, Barkhamsted, New Hartford and Hartland to be appointed by the Board of Selectmen of each of said towns, such representative as far as possible to be selected from a sportsmen's organization. The members of said commission shall serve without compensation.

6. The District agrees to maintain through or over said Hogback dam a minimum flow of fifty cubic feet per second at all times and to hold back at said dam only such flow of said West Branch as shall be in excess of one hundred fifty cubic feet per second above the dam site exclusive of any water discharged from the Otis Reservoir watershed.

7. The District agrees to construct not later than fifteen years after the effective date of said Hogback bill a dam at or near the site of the former dam at Greenwood's Pond, the water impounded thereby to be made available for boating, fishing and recreation, subject to its use by the District for power or compensation or other purposes but not for drinking or public water supply purposes.

8. The District agrees to explore with the Connecticut Flood Control and Water Policy Commission the possibilities of making use of said Hogback reservoir for flood control purposes by increasing the height of the dam.

9. The District agrees that it will sell to approved purchasers at prices to be agreed upon between the parties, any land owned by it in the West Branch or East Branch areas and located outside the watersheds of said streams and their tributaries which it shall determine to be unnecessary for its District purposes, except land located in that area of the town of Colebrook which lies east of said West Branch, south of the Massachusetts State line and west of the town line of Hartland,

and to make available for purchase in the same manner land situated upon any of said watersheds which are so located, that, in its opinion, use or occupancy thereof will not be detrimental to the water supply system under proper regulations.

10. The District agrees that it will use its best efforts to induce the Connecticut State Highway Department to complete, as soon as practicable, the reconstruction of the highway from the Washington Hill section on Route 179 to Route 20, just west of West Granby.

11. The Corporation agrees, in consideration of the promises and agreements of the District herein contained, to withdraw all its opposition to the passage of said bill, to render to the District reasonable support and assistance for its passage, to send a written communication to the Committee on Cities and Boroughs, to which said bill has been referred, stating the favorable disposition of the Corporation toward the passage of said bill and to make known to the representatives to the General Assembly from the towns of Colebrook, Winchester and New Hartford that it favors the passage of said bill.

12. Said District will have said House Bill No. 610 amended to the effect that the provisions of this contract, in so far as they may be beyond the corporate powers of either party hereto, are ratified and confirmed and made obligatory upon the parties. The provisions of this contract shall become effective only upon the effective date of this act.

In witness whereof the parties hereto have hereunto caused their respective corporate names to be set and their respective

corporate seals to be affixed hereto and to a duplicate copy of the same tenor and date at Hartford, Connecticut, the day and year first above written.

Signed, sealed and delivered in the presence of:

THE ALLIED CONNECTICUT TOWNS, INCORPORATED

E. Welles Eddy
Carrington A. Phelps

By Hadleigh H. Howd
Its President Hereunto Duly Authorized

THE METROPOLITAN DISTRICT

By Edward N. Allen
Its Chairman Hereunto Duly Authorized

STATE OF CONNECTICUT }
COUNTY OF Hartford } ss. Hartford, April 18th, 1949

Personally appeared The Allied Connecticut Towns, Incorporated, signer and sealer of the foregoing instrument, acting herein by Hadleigh H. Howd, its President hereunto duly authorized, who acknowledged the same to be his free act and deed and the free act and deed of said corporation, Before me,

W. Arthur Countryman, Jr.
Notary Public

STATE OF CONNECTICUT }
COUNTY OF HARTFORD } ss. Hartford, April 18th, 1949

Personally appeared The Metropolitan District, signer and sealer of the foregoing instrument, acting herein by Edward N. Allen, its Chairman hereunto duly authorized, who acknowledged the same to be his free act and deed and the free act and deed of said District, Before me,

W. Arthur Countryman, Jr.
Notary Public

In consideration of the agreements of the Metropolitan District set forth in an agreement between it and The Allied Connecticut Towns, Incorporated, a copy of which is hereto attached and made a part hereof, the undersigned hereunto duly authorized, hereby agree to actively support passage of House Bill No. 610 commonly known as the Hogback bill.

Dated at Hartford, Connecticut this 18th day of April, A.D. 1949.

In the presence of:

LITCHFIELD COUNTY LEAGUE OF SPORTSMEN'S CLUBS

By Edward L. Jenkins
Its President
Duly Authorized

CONNECTICUT STATE LEAGUE OF SPORTSMEN'S CLUBS

By Samuel Gold
Legislative Chairman

AMENDMENT TO AGREEMENT BETWEEN ALLIED CONNECTICUT TOWNS AND THE METROPOLITAN DISTRICT

Agreement made this 18th day of February, 1963 by and between the Allied Connecticut Towns, Incorporated, a corporation incorporated under the laws of the State of Connecticut, acting herein by Hadleigh H. Howd, its President duly authorized and empowered hereunto by vote of its board of directors, party of the first part, and The Metropolitan District, a municipal corporation specially chartered by the General Assembly of the State of Connecticut, acting herein by Edward J. McDonough, its Chairman, duly authorized hereunto by vote of its District Board, party of the second part,

WITNESSETH:

WHEREAS, The Allied Connecticut Towns, Incorporated, and The Metropolitan District entered into an agreement made the 16th day of April 1949; and

WHEREAS, the paragraph numbered 7 of said agreement provides that "The District agrees to construct not later than fifteen years after the effective date of said Hogback bill a dam at or near the site of the former dam at Greenwood's Pond, the water impounded thereby to be made available for hunting, fishing and recreation, subject to its use by the District for power or compensation or other purposes but not for drinking or public water supply purposes"; and

WHEREAS, there is consideration being given by the Allied Connecticut Towns, Incorporated, and officials of several towns in the Farmington River Valley to the substitution of individual recreational developments in the said several towns, to be constructed by The Metropolitan District in lieu of said dam at Greenwood's Pond; and

WHEREAS, it is expected that it may be some time before decision can be made by the parties hereto on the premise of such substitution and on the details of such individual recreational developments; and

WHEREAS, it would be undesirable to commence the construction of a dam at Greenwood's Pond until such decision shall have been made;

NOW THEREFORE:

It is mutually agreed between the parties hereto that paragraph 7 of said agreement between the Allied Connecticut Towns, Incorporated, and The Metropolitan District be amended to read: "The District agrees to construct not later than seventeen years after the effective date of said Hogback bill a dam at or near the site of the former dam at Greenwood's Pond, the water impounded thereby to be made available for hunting, fishing and recreation, subject to its use by the District for power or compensation or other purposes but not for drinking or public water supply purposes".

In witness whereof the parties hereto have hereunto caused their respective corporate names to be set and their respective corporate seals to be affixed hereto and to a duplicate copy of the same tenor and date at Hartford, Connecticut, the day and year first above written.

THE ALLIED CONNECTICUT TOWNS, INCORPORATED

By: Hadleigh H Howd

Hadleigh H Howd, its President hereunto duly authorized

Signed, sealed and delivered in the presence of:

Carmina R. Lavieri

Carmina R. Lavieri

Dorothy F. Battistoni

Dorothy F. Battistoni

THE METROPOLITAN DISTRICT

By: Edward J. McDonough

Edward J. McDonough, its Chairman hereunto duly authorized

STATE OF CONNECTICUT)
LITCHFIELD) ss. Winchester February 13, 19 6
COUNTY OF [redacted])

Personally appeared The Allied Connecticut Towns, Incorporated, signer and sealer of the foregoing instrument, acting herein by Hadleigh H. Howd, its President hereunto duly authorized, who acknowledged the same to be his free act and deed and the free act and deed of said corporation,
Before me,

Carmine R. Lavieri

Notary Public
Carmine R. Lavieri

STATE OF CONNECTICUT) Hartford Feb. 19 19 6
) ss.
COUNTY OF HARTFORD)

Personally appeared The Metropolitan District, signer and sealer of the foregoing instrument, acting herein by Edward J. McDonough, its Chairman hereunto duly authorized, who acknowledged the same to be his free act and deed and the free act and deed of said District, Before me,

William H Jr.

Notary Public

AND THE METROPOLITAN DISTRICT

Agreement made this 14th day of January 1965 by and between The Allied Connecticut Towns, Incorporated, a corporation incorporated under the laws of the State of Connecticut, acting herein by Hadleigh H. Howd, its President duly authorized and empowered hereunto by vote of its board of directors, party of the first part, and The Metropolitan District, a municipal corporation specially chartered by the General Assembly of the State of Connecticut, acting herein by Edward J. McDonough, its Chairman, duly authorized hereunto by vote of its District Board, party of the second part,

WITNESSETH:

WHEREAS, The Allied Connecticut Towns, Incorporated, and The Metropolitan District entered into an agreement made the 18th day of April 1949; and

WHEREAS, the paragraph numbered 7 of said agreement provides that "The District agrees to construct not later than fifteen years after the effective date of said Hogback bill (July 26, 1949) a dam at or near the site of the former dam at Greenwood's Pond, the water impounded thereby to be made available for hunting, fishing and recreation, subject to its use by the District for power or compensation or other purposes but not for drinking or public water supply purposes"; and

WHEREAS, consideration has been given by The Allied Connecticut Town Incorporated, and officials of several towns in the Farmington River Valley to th substitution of individual recreational developments and feeder water pipe lines in the said several towns, to be constructed by The Metropolitan District in lie of said dam at Greenwood's Pond; and

WHEREAS, in order to provide time for such consideration, paragraph numbered 7 of said agreement of April 18, 1949, was amended by an agreement dated February 18, 1963 to read: "The District agrees to construct not later tha seventeen years after the effective date of said Hogback bill a dam at or near t site of the former dam at Greenwood's Pond, the water impounded thereby to be made available for hunting, fishing and recreation, subject to its use by the Di trict for power or compensation or other purposes but not for drinking or public water supply purposes"; and

WHEREAS, number 208 of the Special Acts of the January session of the 1963 General Assembly provides that the District and The Allied Connecticut Towns, Incorporated, are empowered to enter into an agreement amending said agreement of April 18, 1949, to the effect that the District, in lieu of reconstructing the dam at Greenwood's Pond as required in said agreement of April 1 1949, may construct feeder water pipe lines and recreational developments in or more towns, on land owned by such towns or on the lands of, or to be acqui by, said District, and to the effect that the District is empowered to expend n previously appropriated by it for the reconstruction of Greenwood's Dam, for s feeder water pipe lines and for said recreational developments;

1. The Allied Connecticut Towns, Incorporated, shall relieve The Metropolitan District of any and all obligation to construct a dam at or near the site of the former dam at Greenwood's Pond, which obligation was set forth in paragraph numbered 7 of the agreement between The Allied Connecticut Towns, Incorporated and The Metropolitan District dated April 18, 1949, and in the agreement dated February 18, 1963, amending said agreement of April 18, 1949. Said agreement dated April 18, 1949, shall remain in full force and effect with respect to all rigl and duties described in the other paragraphs of said agreement.

2. The Metropolitan District, in lieu of the construction of said dam, sh at its expense, construct feeder water pipe lines and recreational developments as follows:

Project A. A 10-inch feeder water pipe line, in the town of New Hartford from the District's 48-inch Barkhamsted-Nepaug transmission line on the east si of the East Branch of the Farmington River at the intersection of Conn. Route 219 and Farmington River Turnpike, to the New Hartford Water Company's distributio system near the Fire House on the east side of the West Branch of the Farmingto River near Conn. Route 219, as shown and described on study sheets prepared b the District, marked Acc. H-3341.12b and H-3341.6. The materials and constru tion methods shall be in conformity with the District's standard specification for distribution piping. Water shall be furnished by the District at whatever pressu prevails in the transmission line. The District shall deed the 10-inch pipe line the town of New Hartford beyond a water meter which will be furnished and insta by the District at the east end of the line. The town of New Hartford shall be re ponsible for the maintenance and operation of the pipe line and shall pay the Di trict for water used upon such reasonable terms and conditions as may be agreed upon, in conformity with Section 3 of Number 505 of the Special Acts of the 193 General Assembly.

Project B. A recreation area on the northeast side of the Stancliff Cove of the Compensating Reservoir in the town of Barkhamsted, including beach impr ments, buildings and appurtenances, together with a gravel access road from the recreation area to the state highway (Route 318) north of the Reservoir, all as s and described on study sheets prepared by the District, marked Acc. H-3340.29 H-3340.901, H-3340.903, H-3340.904, H-3340.803, H-3340.804, H-3340.80 and H-3340.806. The District shall grant a joint easement to the towns of Bark hamsted and New Hartford for the recreation area and access road shown on sai study sheets. Maintenance and operation of the recreation area, sanitary facil and access road shall be by, and at the expense of, the said towns. The Distri will maintain the water levels in the Compensating Reservoir within the limits s able for recreation until Sept. 15th of each year, as is the present practice; hov ever, the District reserves the right to vary the elevation of the Reservoir as th interests of the District may require during any emergency.

of Conn. Route 83 and
New Hartford, including grading, access roads and sanitary facilities, as shown and described on study sheets prepared by the District, marked H-3340.30, H-3340.531 and H-3340.803. The District shall deed to the town of New Hartford, for recreational purposes, the parcel of land, containing the recreation area and access roads, as shown on said study sheets. Maintenance and operation of the recreation area, sanitary facilities and access road shall be by, and at the expense of, the town.

Project D. Demolish the major part of the old masonry abutments of Greenwoods Dam in New Hartford and regrade the abutment and intake areas, all as shown and described on study sheets prepared by the District, marked Acc. H-3340.32 and H-3340.540.

Project E. A recreation area south of Mt. Pisgah Road and east of Conn. Route 183 and the Town Hall in the town of Colebrook, including a dam to create a swimming pool, buildings and appurtenances, together with the construction o an access road from Conn. Route 183, all as shown and described on study shee prepared by the District, marked Acc. H-3340.24b, H-3340.401, H-3340.402a, H-3340.403, H-3340.801, H-3340.803, H-3340.805, and H-3340.806. Said recreation area and access road are to be built on land owned by the town of Co brook. If, in the opinion of the health officer of the town of Colebrook, there i insufficient stream inflow to sustain adequate sanitary conditions in the pool, t District shall, in collaboration with the town authorities, construct a well and pumping facilities to supplement water inflow to the swimming pool. However, District's obligation towards the construction of this well and pumping facilitie shall be limited to $7,500.

Project F. Enlarge the present recreation area at the Colebrook Consoli ted School on Smith Hill Road in the town of Colebrook, including grading and s facing with topsoil, as shown and described on study sheets prepared by the Di trict, marked Acc. H-3340.31 and H-3340.420. This recreation area enlargeme is all contained on land owned by the town of Colebrook.

Project G. A recreation area on the southeast corner of Mountain Road Skinner Road in the East Hartland section of the town of Hartland, including a to create a swimming pool, gravel access road, buildings and appurtenances, as shown and described on study sheets prepared by the District, marked Acc. H-3340.27b, H-3340.701, H-3340.702, H-3340.703, H-3340.801, H-3340.80 H-3340.805 and H-3340.806. Land for said recreation area, as shown on stud sheets, shall be acquired by the District, at a cost of approximately $10,000. and conveyed to the town of Hartland. If, in the opinion of the health officer o the town of Hartland, there is insufficient stream inflow to sustain adequate sa tary conditions in the pool, the District shall, in collaboration with the town a orities, construct a well and pumping facilities to supplement water inflow to t swimming pool. However, the District's obligation towards the construction o this well and pumping facilities shall be limited to $7,500. In the event that t land described above for this recreational area is not available for approximate

$10,000., or should it be judged unsuitable for this type of recreation by the health officer, Project G shall be renegotiated between the District and the Town of Hartland to provide equivalent recreational facilities elsewhere at approximately the same estimated cost to the District.

3. In addition to the construction of the various stated projects, The Metropolitan District shall convey to the Union Agricultural Society of Barkhamsted any "recapture" or other rights it may have in a parcel of land on the east side of Conn. Route 20 and Still River in the Riverton section of the town of Barkhamsted. Title to this parcel stands in the name of said Union Agricultural Society of Barkhamsted. Said District shall convey to The Riverton Grange, Inc., a parcel of land, approximately 3/4-acre in size, located on the west side of Conn. Route 20 and north of Still River in the Riverton section of the town of Barkhamsted, and south of and adjoining present property of The Riverton Grange, Inc.

4. The study sheets, prepared by The Metropolitan District and referred to herein, are made a part of this agreement.

5. The entire cost of the foregoing projects shall be borne by the Metropolitan District, including, but not limited to the following expenses:

(a) All engineering and technical services.

(b) All materials and labor.

(c) The construction features, including roads, parking areas, buildings, pools, beaches and grading as shown on colored sketches of the projects and exhibited by the Metropolitan District at the meeting of the members of Allied Connecticut Towns, Inc. on December 29, 1964 at the C. Lavieri Agency located on Route #44 in the Town of Barkhamsted shall be built to the details shown on the study sheets made a part of this agreement.

(d) All grading, seeding and miscellaneous landscaping and shrubbery.

6. All production and workmanship shall be in accord with the study sheets referred to herein and are to be of the highest quality in accord with the high standards of construction as previously made by the District in the towns of Hartland, Barkhamste and Colebrook.

7. After ratification of the agreement, the District will immediately start the necessary engineering to permit the start of

construction work on all of the projects as soon as possible in 1965 with work to continue throughout the year except as prevented by weather conditions or other events or happenings beyond the control of the Metropolitan District, of such nature as to impede the progress or development of the work.

8. The Metropolitan District shall comply with all federal and state laws appurtenant to the work during the course of construction and shall save the various towns in which such projects shall be located, respectively, harmless in respect to claims of adjoining property owners, claims arising from alleged negligence or malfeasance of the employees or agents of the District or independent contractors of the District for the duration of the construction period of each project.

9. This agreement shall become effective only upon ratification by the legislative bodies of the towns of Colebrook, Hartland, Barkhamsted and New Hartford, prior to the convening of the 1965 sess of the General Assembly, as required by Special Act 208 of the January Session of the 1963 General Assembly.

In witness whereof the parties hereto have hereunto caused their respective corporate names to be set and their respective corporate seals to be affixed hereto and to a duplicate copy of the same tenor and date at Hartford, Connecticut, the day and year first above written.

THE ALLIED CONNECTICUT TOWNS, INCORPORATED

By: _____

Hadleigh H. Howd, its President
hereunto duly authorized

Signed, sealed and delivered in the presence of

_____

_____

By: _____

Harold A. Morton, its Secretary
hereunto duly authorized

THE METROPOLITAN DISTRICT

By: _____

Edward J. McDonough, its Chairman
hereunto duly authorized

STATE OF CONNECTICUT)
) ss. Winchester, January 14, 19 6
COUNTY OF HARTFORD)

Personally appeared The Allied Connecticut Towns, Incorporated, signer and sealer of the foregoing instrument, acting herein by Hadleigh H. Howd, its President hereunto duly authorized, who acknowledged the same to be his free act and deed and the free act and deed of said corporation, Before me,

Notary Public

STATE OF CONNECTICUT)
) ss. Winchester, January 14, 19
COUNTY OF HARTFORD)

Personally appeared The Allied Connecticut Towns, Incorporated, signer and sealer of the foregoing instrument, acting herein by Harold A. Morton, its Secretary hereunto duly authorized, who acknowledged the same to be his free act and deed and the free act and deed of said corporation, Before me,

Notary Public

STATE OF CONNECTICUT)
) ss. Hartford. JAN 14 1965 19
COUNTY OF HARTFORD)

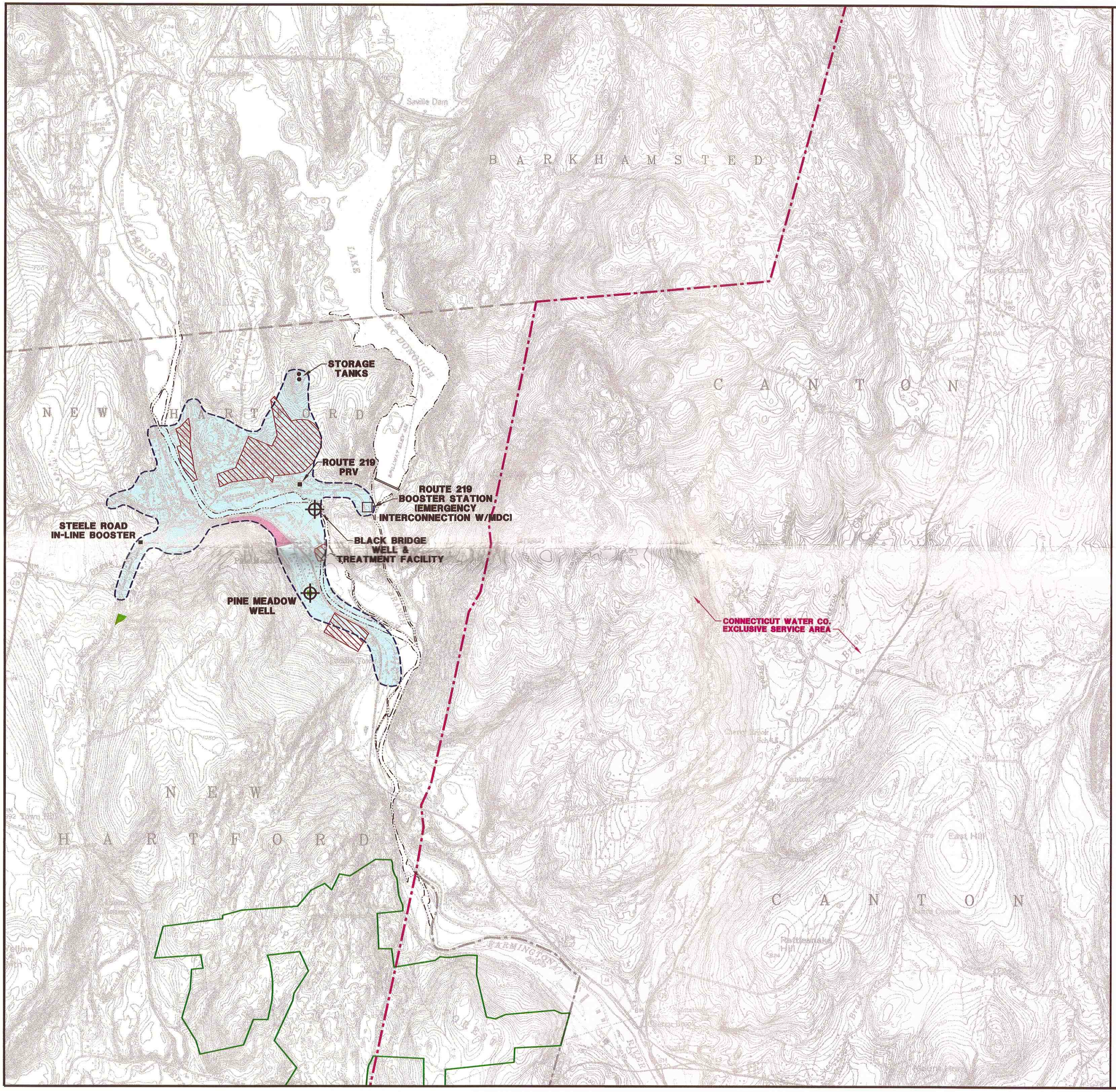
Personally appeared The Metropolitan District, signer and sealer of the foregoi instrument, acting herein by Edward J. McDonough, its Chairman hereunto duly authorized, who acknowledged the same to be his free act and deed and the fre act and deed of said District, Before me,

Notary Public

Ratified by Town Meeting
Votes as follows
Colebrook - on January 14, 1965
New Hartford
Barkhamsted } - on January 26, 1965
Hartland
1965 Legislature to convene on February 3, 1965

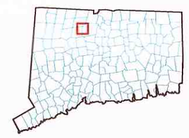
APPENDIX C

SUPPLY AND LAND USE MAP



LEGEND

- WATER SUPPLY DIVERSION
- RIVER / STREAM
- INTERCONNECTION
- EXCLUSIVE SERVICE AREA BOUNDARY
- DEVELOPED COMMERCIAL LAND
- COMMERCIAL AND INDUSTRIAL ZONING
- EXISTING SERVICE AREA
- 5 YEAR SERVICE AREA
- 20 YEAR SERVICE AREA
- 50 YEAR SERVICE AREA
- COMPANY OWNED LAND
- CONSERVATION LAND



LOCATION MAP

2000 0 2000 4000

SCALE IN FEET

FIGURE 3.1
SUPPLY AND LAND USE MAP

NEW HARTFORD WATER COMPANY

Connecticut Water

93 WEST MAIN STREET
CLINTON, CT 06413

OCTOBER, 2005

APPENDIX D

SAFE YIELD CALCULATIONS
Pine Meadow Well and Black Bridge Well
(As prepared by Loureiro Engineering Associates, P.C.)

Black Bridge Well Pump Test

Introduction

The Black Bridge Well was constructed in 1988, but has never been used. The primary purpose of running a pump test on this well was to provide information for supporting an estimated safe yield for this well and secondarily to provide data for the Level A mapping and Diversion Permit being prepared for this well.

Procedure

The pump test for the Black Bridge Well was quite straightforward. About two weeks prior to running the test, a brief step drawdown test was run on the well, and the well was pumped for approximately four hours to clear it and verify the information developed during construction. This test indicated that the specific yield measured during construction of approximately 10 gallons per minute per foot had not changed appreciably; as a result, the test was run at a rate of 200 gallons per minute.

The pump used was an engine driven turbine pump.

Discharge from the pump was to the Farmington River, about 100 feet downstream of the ell. The flow in the Farmington at the time of the test was over 100 cubic feet per second, and the discharge from the well was insignificant.

Preliminary data on the water levels in a number of monitoring wells had been being gathered by hand for much of the summer. These data are summarized in the tables in Appendix A. Data for the test itself was gathered using hand methods in some of the more distant wells, but the Black Bridge Well itself and MW-5, 6, 7, 8/9, 10, 11, 12, 13, 14, 18, 19, and 25 were instrumented with automatic data collectors for the week prior to the test and for the duration of the test. Graphs of the resulting drawdown information are found in this Appendix.

The test itself was accomplished by starting the turbine pump and verifying the flow. The pump was run for five days at 200 gallons per minute. There were no difficulties or interruptions, or significant rainfall encountered during the test. Data were collected during the recovery phase of the test as well, which also lasted five days, beginning with the end of pumping.

Results

As noted above, a number of wells were instrumented for the Black Bridge Well pump test. Not all of these wells were expected to show an impact from the test, nor did they.

The instrumentation in the Black Bridge Well and MW-6, 10, 11, and 12 produced excellent data. These data are presented in the graphs of drawdown *vs.* time for the pumping and recovery phases of this test, as well as in the graph of distance *vs.* drawdown. Unfortunately, the instrumentation in MW-13 failed completely, and no usable data were obtained from this well.

It had been expected that significant drawdown would be observed in MW-7, as this well is close to the pumped well and between it and the river. However, neither the instrument nor the hand data show any impact from the pumping on this well. The same pattern is seen in this well as in MW-14, however, namely a distinct daily drop in ground water level. This drop is small, but highly periodic. The cause of this drop is unknown. MW-8/9, located nearest across the river, showed not noticeable effect from the test. As noted above, MW-19 also showed no effect. MW-18, located as background near the Route 219 pumping station, showed a wholly unexpected effect very similar to a recharge taking place in this location with a rate in the vicinity of 10 to 20 gallons per minute. The cause of this effect is unknown.

The results from this pump test have been analyzed. The approximate transmissivity from the test is 19,000 square feet per day. This transmissivity equates to a conductivity in the vicinity of this well of 330 ft per day, which is within 3 % of the value from the calibrated model.

As may be seen from the summary tables, following, the results of the analysis, particularly from the drawdown phase, show excellent agreement except for MW-12, which shows a significantly higher value for apparent transmissivity than the others. As may be noted from the site map, this well is located beyond MW-11. It is possible that the higher value in this direction may reflect higher transmissivity to the north vs. to the east or west; indeed, the geological interpretation (q.v.) of the area strongly suggests that this result, in conjunction with the insensitivity of MW-7, means that the primary recharge area for the Black Bridge Well will be the reach of river roughly between MW-12 and MW-14, with relatively shallow bedrock being found south of MW-12. This would also account for the insensitivity of MW-14. It might also account for the insensitivity of MW-8/9, if the shallow bedrock extends across the river in this area. This implies a shallow bedrock ledge in this area. This is not impossible, however, as there is bedrock exposed in the Farmington River a short distance north of Black Bridge.

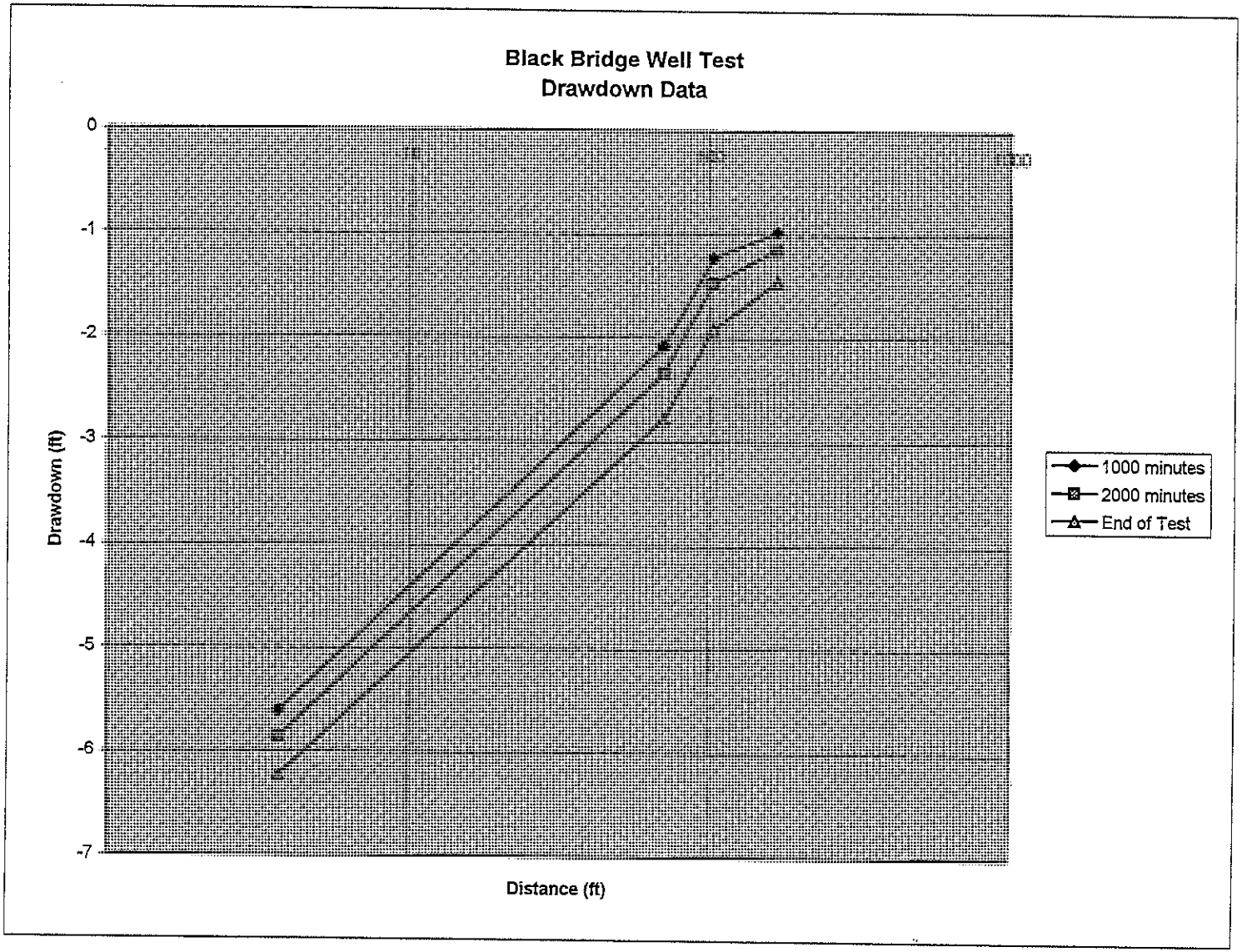
The pump test data raw data appear to show that the drawdown did not reach equilibrium prior to the end of the test. However, comparison of the drawdown data in the wells affected by the

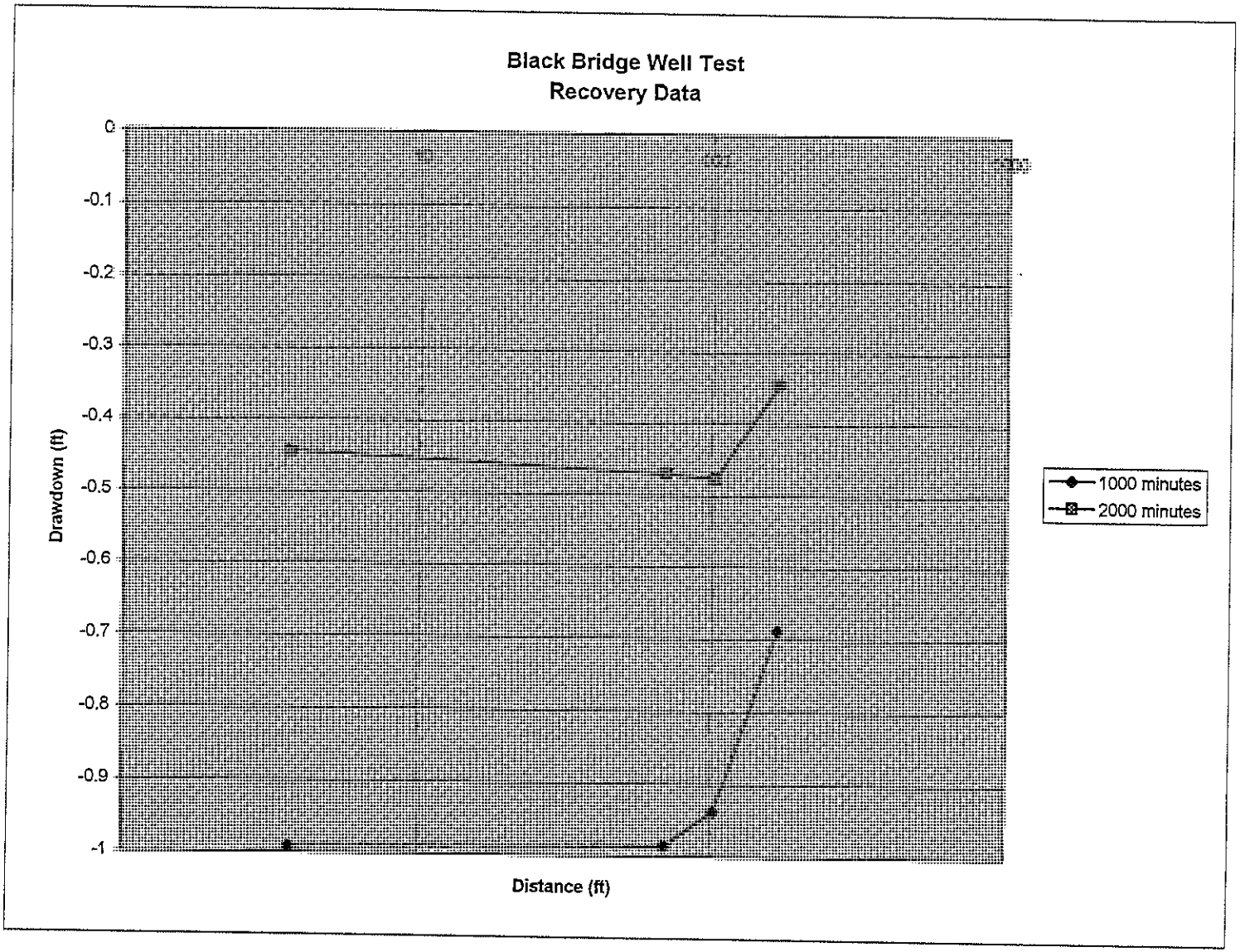
test and the background wells (e.g. MW-8/9) indicate that the residual drawdown seen at the end of the test may be due to the regional decline in ground water rather than to pumping. For example, in MW-6, the comparison of the drawdown with the change shown in MW-8/9 shows that the drawdown first reaches the value seen at the end of the test 3.57 days into the test, and varies within a small range (6.26 to 6.30 feet) from then until the end of the test. While this is by no means conclusive, it does suggest that while equilibrium may not have been reached, it was certainly approached.

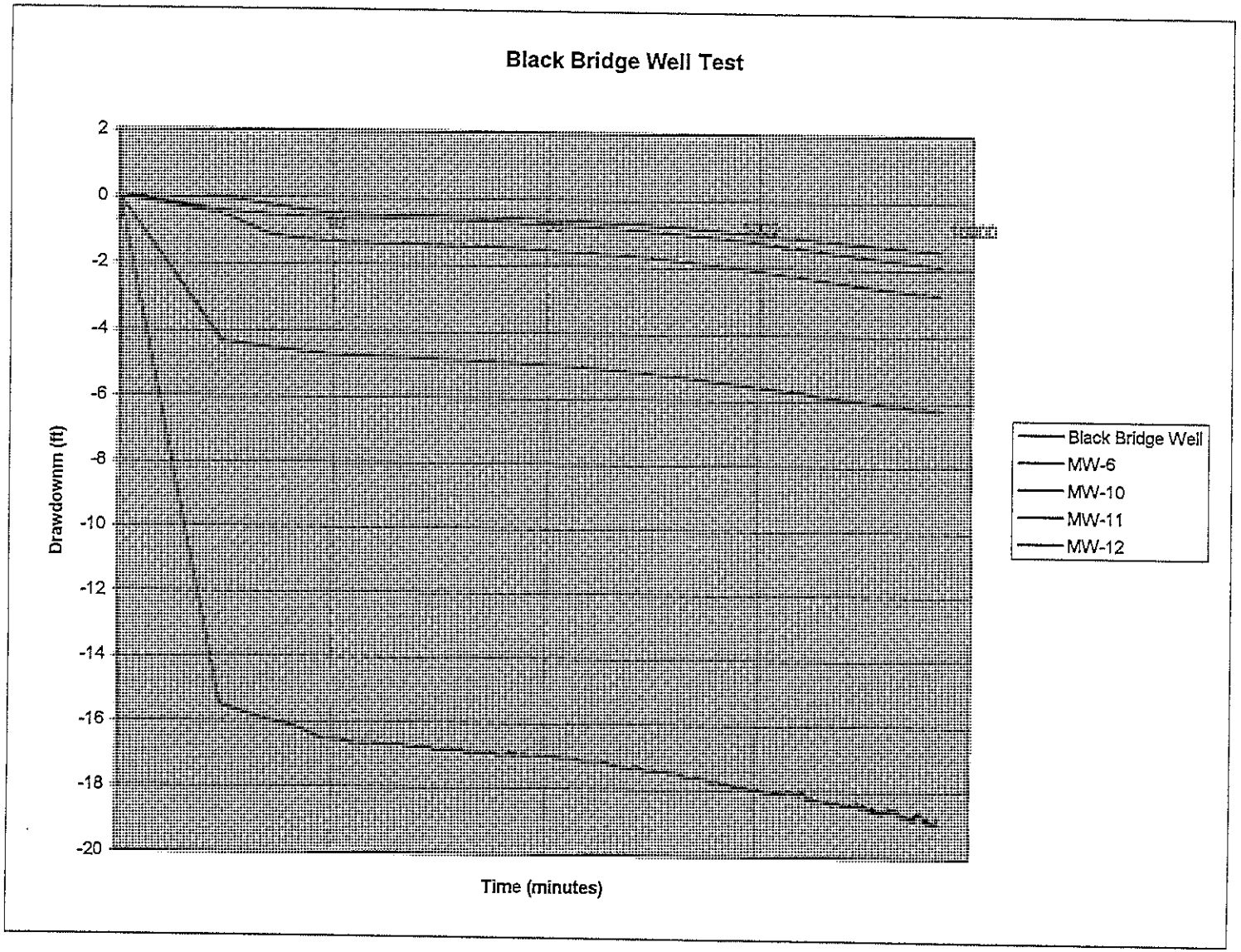
There is considerable variance between the approximate formation transmissivity suggested by the specific capacity of the well and the formation transmissivity derived from the pump test data. The conventional formula for the relationship between formation transmissivity and specific capacity is:

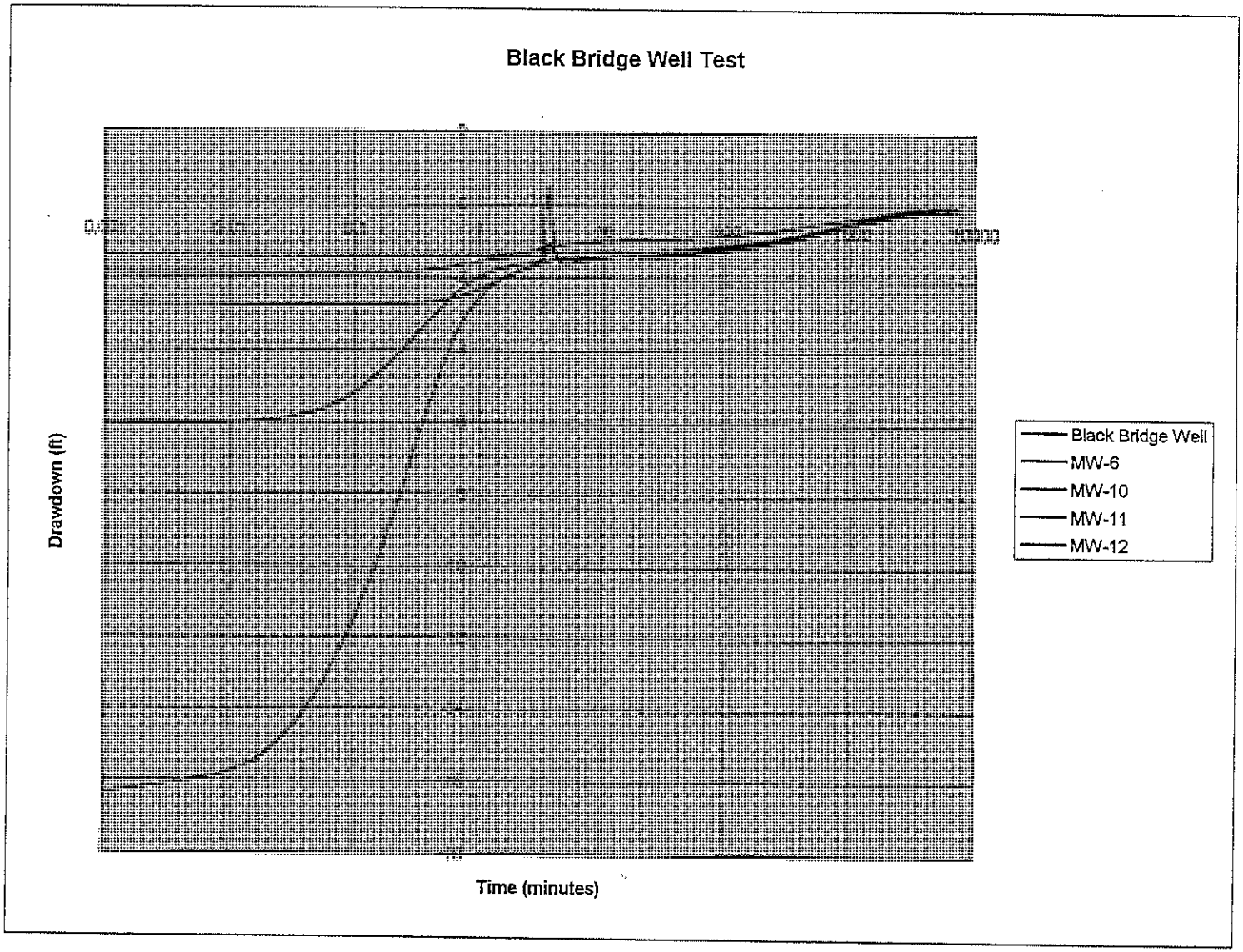
$$T=2{,}000*SC$$

In this case, SC is 10 gallons per minute per foot, which gives a transmissivity of 20,000 gallons per day per foot. Examination of the distance drawdown relationship shows, however, that the drawdown in the pumped well is considerably greater than would be expected from the effective radius of the well. The actual drawdown measured was about 19 feet; the distance relationship, which is otherwise highly regular, predicts a drawdown of about 7.5 feet. This suggests that there are considerable turbulent flow losses in the approach to the well. Using an apparent drawdown of 8 feet at 200 gallons per minute gives an SC of 25 gallons per minute per foot, which gives a formation transmissivity of 50,000 gallons per day per foot. This is still lower than the value obtained from the analysis of the pump test data, but not unreasonably so.


Black Bridge Well Test
Drawdown Data
0
-1
-2
-3
-4
-5
-6
-7
Drawdown (ft)
Distance (ft)
1000 minutes
2000 minutes
End of Test


Black Bridge Well Test
Recovery Data
0
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
-0.7
-0.8
-0.9
-1
Drawdown (ft)
Distance (ft)
1000 minutes
2000 minutes


Black Bridge Well Test
2
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
Drawdownm (ft)
Time (minutes)
Black Bridge Well
MW-6
MW-10
MW-11
MW-12


Black Bridge Well Test
Drawdown (ft)
Time (minutes)
Black Bridge Well
MW-6
MW-10
MW-11
MW-12

Summary of Analysis

		T (gpd/ft)
Black Bridge Drawdown		
	Black Bridge Well	92119
	MW-6	135527
	MW-10	132172
	MW-11	130328
	MW-12	193862
	Distance	73739
Black Bridge Recovery		
	Black Bridge Well	128526
	MW-6	131984
	MW-10	154202
	MW-11	140709
	MW-12	204848
	Average	138001

Pine Meadow Well Pump Test

Introduction

The Pine Meadow Well has been in service for many years. The primary purpose of running a pump test on this well was to provide input data for the Level A mapping required for this well. A secondary purpose was to provide support data for the Level A mapping and Diversion Permit being prepared for the Pine Meadow Well.

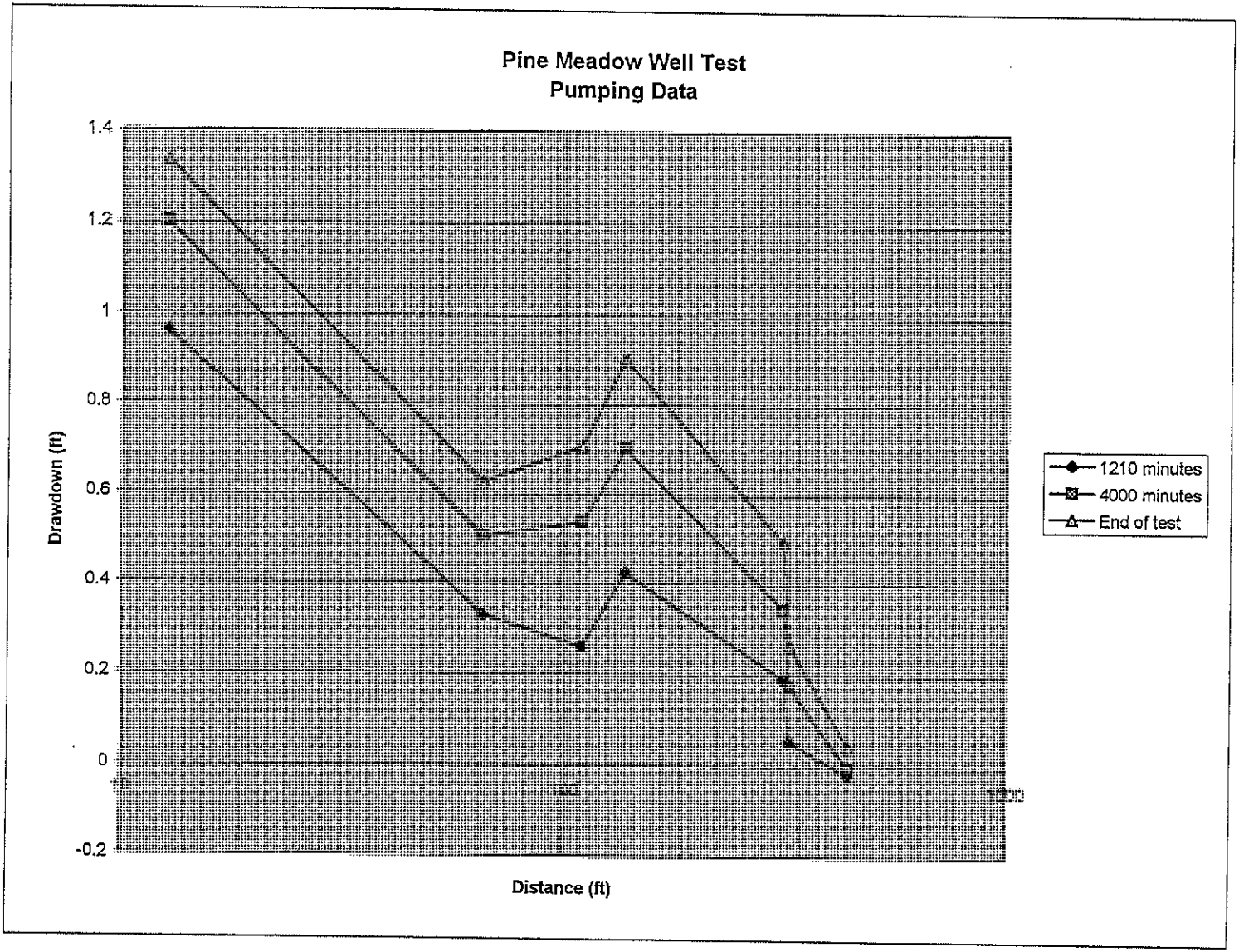
Procedure

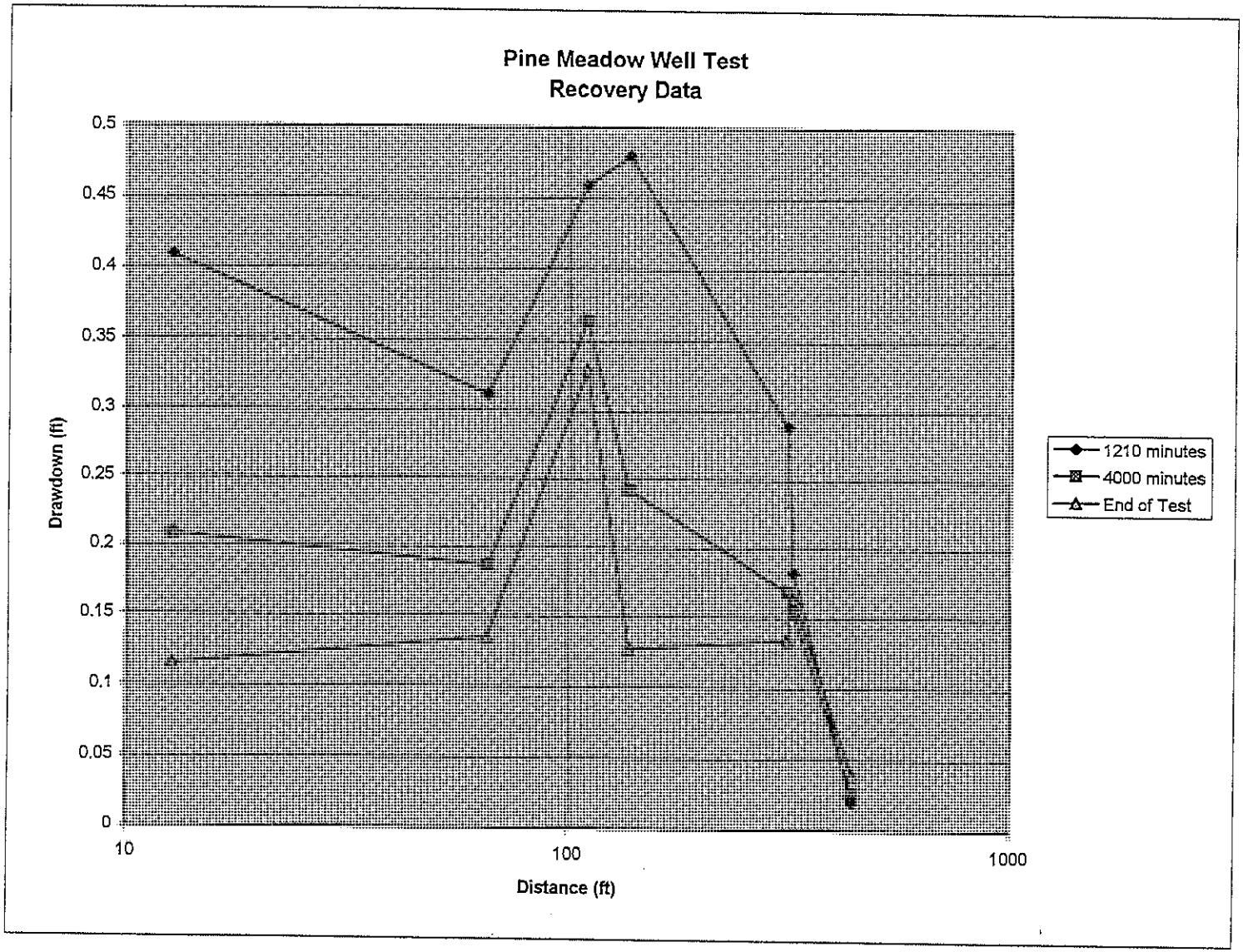
The Pine Meadow Well test presented a somewhat different challenge. This well, as noted above, has been running more or less continuously for many years, and had been running continuously for a number of months prior to the beginning of the test. Therefore, we assumed that the ground water in the vicinity had reached approximate equilibrium conditions in drawdown prior to the start of testing on this well. Therefore, the test was run backwards: the pump was turned off for five days, during which time "recovery" data were collected. The pump was then turned back on, and "drawdown" data were collected for five days.

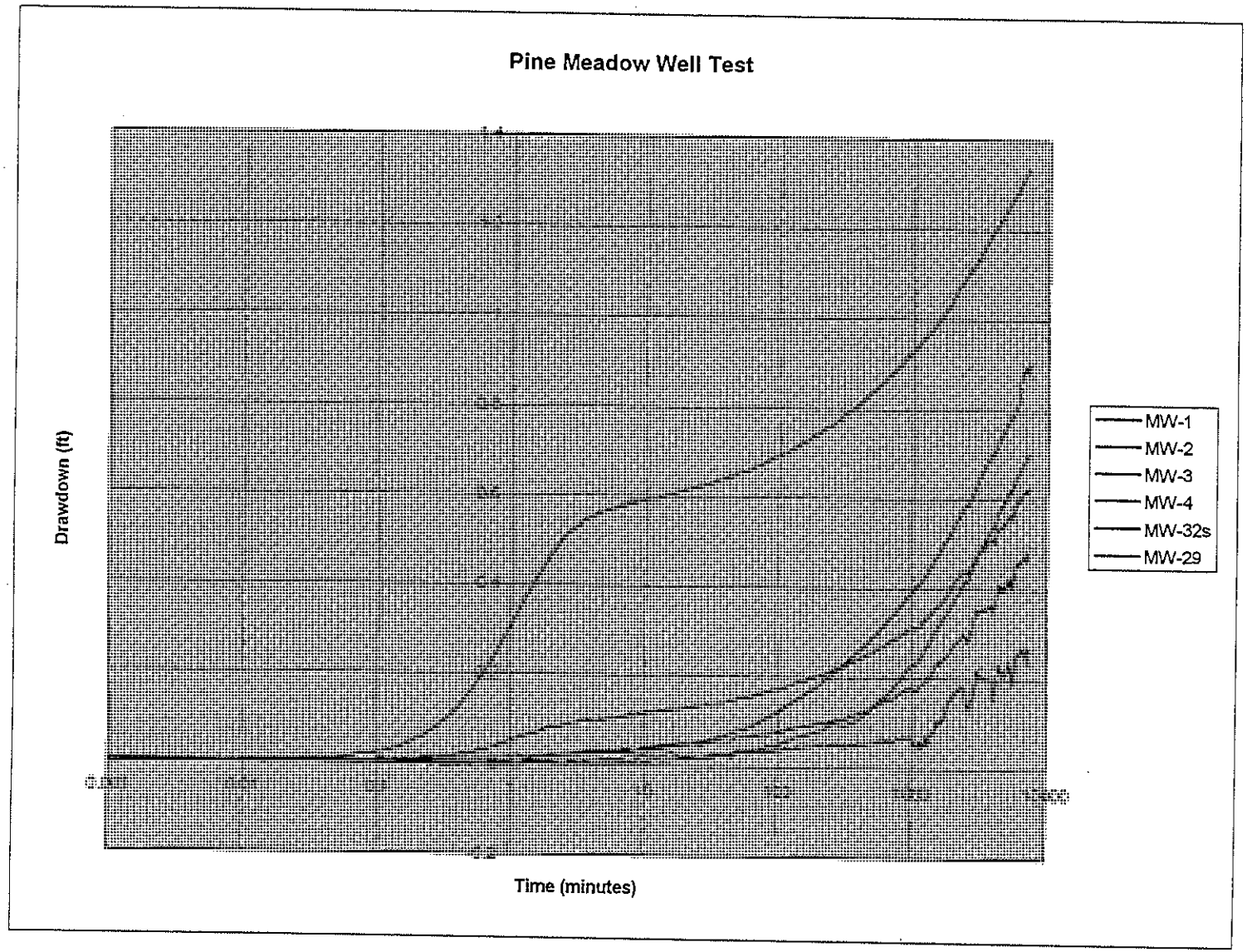
The wells instrumented for the Pine Meadow Well test were MW-1, 2, 3, 4, 15, 16/20, 17, 25, 29, 32, and 32S. Hand data were taken from the remaining wells, as well as from these wells. It is not possible to measure drawdown in the Pine Meadow Well itself, due to the construction of the well.

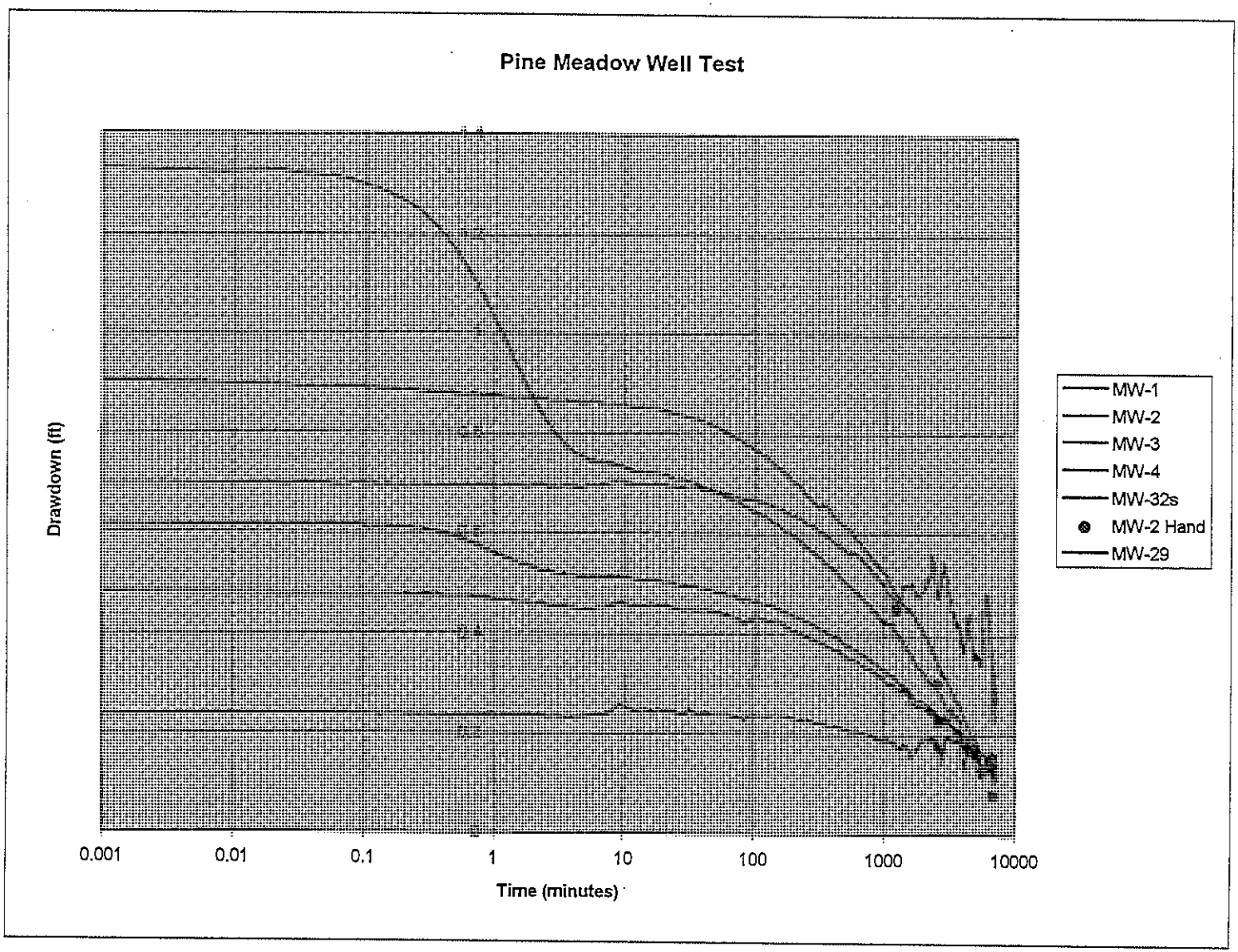
Results

Analysis of the data from the pumping test revealed that the aquifer in this vicinity had not fully recovered in the five days allowed for the test. Inasmuch as the well had been pumped for a number of years prior to the test, this is not entirely surprising. Nonetheless, the data are entirely usable and the data from the various wells shows good agreement. A tabular and graphical summary of the results is presented following. The effective formation transmissivity obtained from this test was approximately 13,000 square feet per day. The conductivity in this vicinity is approximately 240 feet per day, within 1 % of the results from the calibrated model.


Pine Meadow Well Test
Pumping Data
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
Drawdown (ft)
Distance (ft)
1210 minutes
4000 minutes
End of test


Pine Meadow Well Test
Recovery Data
Drawdown (ft)
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
10
100
1000
Distance (ft)
1210 minutes
4000 minutes
End of Test


Pine Meadow Well Test
Drawdown (ft)
Time (minutes)
MW-1
MW-2
MW-3
MW-4
MW-32s
MW-29


Pine Meadow Well Test
Drawdown (ft)
0.001
0.01
0.1
1
10
100
1000
10000
Time (minutes)
MW-1
MW-2
MW-3
MW-4
MW-32s
MW-2 Hand
MW-29

Summary of Analysis

Pine Meadow Drawdown	*T (gpd/ft)*
MW-1	110983
MW-2	167287
MW-3	172047
MW-32s	87319
MW-4	646932
MW-29	179693
Pine Meadow Recovery	
MW-1	85838
MW-2	73300
MW-3	112076
MW-32s	69826
MW-4	195459
MW-29	115350
Distance	69609
Average	103654

APPENDIX E

INTERCONNECTION SUMMARY

INTERCONNECTION SUMMARY (FORM 1)

Name of Your Water Company: New Hartford Water Company

List each interconnection by name and/or location. Indicate name of water company connected to, the purpose for the interconnection (i.e., P= Purchase; S= Sell; PS= Purchase and sell- two directional flow), and the status (i.e., A= Active; E= Emergency; I= Inactive).

Number	Name and/or Location of Interconnection	Company Connected To	Purpose	Status
#1	Barkhamsted Aqueduct	MDC	P	E
#2				
#3				
#4				
#5				
#6				
#7				
#8				

INTERCONNECTION SUMMARY (FORM 2)*

Name of Your Water Company New Hartford Water Company

	Number (from Form 1)			
	#1	#2	#3	#4
Treated (Yes/No)	Yes			
Metered (Yes/No)	Yes			
Total Annual Metered Flow (mg) (Year=2000)	0			
Total Number of Days Used (Year=2000)	0			
Max. Daily Capacity				
Physical (mgd):	0.72			
Material	cast iron			
Pipe Diameter (inches)	10/12			
Flow Line Elevation (USGS)	380'			
Date Installed	N/A			
Contractual Agreement (Yes/No)	No			
Max. Daily Contractual Flow (mgd):	No Restrictions			
Max. Annual Contractual Flow (mg):	No Restrictions			
Min. Daily Contractual Flow (mgd):	No Restrictions			
Contract Expiration Date:	None			
Are Contractual Amounts Guaranteed? (Yes/No)	No Restrictions			
Other Information:				

* Use additional sheets of Form #2 if you have more than four interconnections.

Appendix F Water Quality Data

TABLE F.1.1 SUMMARY OF POTABLE WATER QUALITY STANDARDS
mg/l

PARAMETER	ENVIRONMENTAL PROTECTION AGENCY MCL (1)	MCLG (2)	PROPOSED MCLG	SMCL (3)	CONNECTICUT DPH ACTION LEVEL (4)	BLACK BRIDGE WELL RAW WATER QUALITY 2001-2005 MIN	MAX	AVERAGE	NUMBER OF SAMPLES	COMMENTS
EPA REGULATED SYNTHETIC ORGANIC CHEMICALS (5)										
BENZENE	0.0050	0.0000			0.0010	-	-	-	0	
CARBON TETRACHLORIDE	0.0050	0.0000			0.0050	-	-	-	0	
1,2-DICHLOROETHANE	0.0050	0.0000			0.0010	-	-	-	0	
1,1-DICHLOROETHYLENE	0.0070	0.0070			0.0070	-	-	-	0	
p DICHLOROBENZENE	0.0750	0.0750			0.0750	-	-	-	0	
1,1,1-TRICHLOROETHANE	0.2000	0.2000			0.2000	-	-	-	0	
TRICHLOROETHYLENE	0.0050	0.0000			0.0050	-	-	-	0	
VINYL CHLORIDE	0.0020	0.0000			0.0020	-	-	-	0	
EPA NONREGULATED SYNTHETIC ORGANIC COMPOUNDS (6)										
CHLOROFORM						-	-	-	0	
BROMODICHLORMETHANE						-	-	-	0	
CHLORODIBROMOMETHANE						-	-	-	0	
BROMOFORM						-	-	-	0	
trans 1,2-DICHLOROETHYLENE			0.0700			-	-	-	0	
CHLOROBENZENE										
m DICHLOROBENZENE										
METHYLENE CHLORIDE					0.0250	-	-	-	0	
cis 1,2-DICHLOROETHYLENE			0.0700							
o DICHLOROBENZENE			0.6200							
DIBROMOMETHANE										
1,1-DICHLOROPROPENE										
TETRACHLOROETHYLENE			0.0000		0.0200	-	-	-	0	
TOLUENE			2.0000		1.0000					
p XYLENE										
o XYLENE										
m XYLENE										
1,1-DICHLOROETHANE						-	-	-	0	
1,2-DICHLOROPROPANE			0.0060		0.0100	-	-	-	0	
1,1,2,2-TETRACHLOROETHANE										
ETHYLBENZENE			0.6800							
1,3-DICHLOROPROPANE										
STYRENE			0.1400							
CHLOROMETHANE										
BROMOMETHANE										
1,2,3-TRICHLOROPROPANE										
1,1,1,2-TETRACHLOROETHANE										
CHLOROETHANE										
1,1,2-TRICHLOROETHANE										
2,2-DICHLOROPROPANE										
o CHLOROTOLUENE										
p CHLOROTOLUENE										
BROMOBENZENE										
1,3-DICHLOROPROPENE					0.0100	-	-	-	0	
1,2 DIBROMOETHANE					0.0001	-	-	-	0	
DIBROMOCHLOROPROPANE (DBCP)										

TABLE F.1.1 SUMMARY OF POTABLE WATER QUALITY STANDARDS
mg/l

	ENVIRONMENTAL PROTECTION AGENCY				CONNECTICUT DPH	BLACK BRIDGE WELL RAW WATER QUALITY 2001-2005				
PARAMETER	MCL (1)	MCLG (2)	PROPOSED MCLG	SMCL (3)	ACTION LEVEL (4)	MIN	MAX	AVERAGE	NUMBER OF SAMPLES	COMMENTS
PHC SECTION 19-13-B102(e)(7) ORGANIC COMPOUNDS (7)										
1,2,3 TRIMETHYLBENZENE										
n BUTYL BENZENE										
n PROPYLBENZENE										
1,2,4-TRICHLOROBENZENE										
DICHLORODIFLUOROMETHANE										
TRICHLOROTRIFLUORETHANE										
EPA REGULATED PESTICIDES										
2,4,5-TP SILVEX	0.0100		0.0520		0.0100	-	-	-	0	
2,4-D	0.1000		0.0700		0.1000	-	-	-	0	
ENDRIN	0.0002				0.0002	-	-	-	0	
LINDANE	0.0040		0.0002		0.0040	-	-	-	0	
METHOXYCHLOR	0.1000		0.3400		0.1000	-	-	-	0	
TOXAPHENE	0.0050		0.0000		0.0050	-	-	-	0	
INORGANIC COMPOUNDS										
ARSENIC	0.0500		0.0500		0.0500	<0.05	<0.05	-	5	
BARIUM	1.0000		1.5000		1.0000	-	-	-	0	
CADMIUM	0.0100		0.0050		0.0100	-	-	-	0	
CHLORIDE				250	250	-	-	-	0	
CHROMIUM	0.0500		0.1200		0.0500	-	-	-	0	
COPPER			1.3000	1.0000	1.0000	-	-	-	0	
CYANIDE					0.2000	-	-	-	0	
FLUORIDE	4.0	4.0		2.0	2.0	-	-	-	0	
IRON				0.3000		<0.05	0.050	<0.05	20	
LEAD	0.0500		0.0200		0.0500	-	-	-	0	
MANGANESE				0.0500		0.210	0.340	0.260	20	
MERCURY	0.0020		0.0030		0.0020	-	-	-	0	
NITRATE-N	10.0000		10.0000		10.0000	-	-	-	0	
NITRITE-N			1.0000		1.0000	-	-	-	0	
SELENIUM	0.0100		0.0450		0.0100	-	-	-	0	
SILVER	0.0500				0.0500	-	-	-	0	
SODIUM					28	-	-	-	0	
OTHER										
COLIFORM	1-4/100 ml		0			0	0	0.000	20	
COLOR						0	13	0.750	20	
METHYLENE BLUE ACTIVE SUBSTANCES					0.5000	0.0	<0.05	-	5	
ODOR (DOHS Odor scale)						NONE	NONE	-	20	
pH						5.43	6.50	-	20	
TURBIDITY						<0.10	0.30	0.087	20	

TABLE F.1.2 SUMMARY OF POTABLE WATER QUALITY STANDARDS

mg/l

	ENVIRONMENTAL PROTECTION AGENCY				CONNECTICUT DPH	PINE MEADOW WELL RAW WATER QUALITY 2001-2005				
PARAMETER	MCL (1)	MCLG (2)	PROPOSED MCLG	SMCL (3)	ACTION LEVEL (4)	MIN	MAX	AVERAGE	NUMBER OF SAMPLES	COMMENTS
EPA REGULATED SYNTHETIC ORGANIC CHEMICALS (5)										
BENZENE	0.0050	0.0000			0.0010	-	-	-	0	
CARBON TETRACHLORIDE	0.0050	0.0000			0.0050	-	-	-	0	
1,2-DICHLOROETHANE	0.0050	0.0000			0.0010	-	-	-	0	
1,1-DICHLOROETHYLENE	0.0070	0.0070			0.0070	-	-	-	0	
p DICHLOROBENZENE	0.0750	0.0750			0.0750	-	-	-	0	
1,1,1-TRICHLOROETHANE	0.2000	0.2000			0.2000	-	-	-	0	
TRICHLOROETHYLENE	0.0050	0.0000			0.0050	-	-	-	0	
VINYL CHLORIDE	0.0020	0.0000			0.0020	-	-	-	0	
EPA NONREGULATED SYNTHETIC ORGANIC COMPOUNDS (6)										
CHLOROFORM						-	-	-	0	
BROMODICHLORMETHANE						-	-	-	0	
CHLORODIBROMOMETHANE						-	-	-	0	
BROMOFORM						-	-	-	0	
trans 1,2-DICHLOROETHYLENE			0.0700			-	-	-	0	
CHLOROBENZENE										
m DICHLOROBENZENE										
METHYLENE CHLORIDE					0.0250	-	-	-	0	
cis 1,2-DICHLOROETHYLENE			0.0700							
o DICHLOROBENZENE			0.6200							
DIBROMOMETHANE										
1,1-DICHLOROPROPENE										
TETRACHLOROETHYLENE			0.0000		0.0200	-	-	-	0	
TOLUENE			2.0000		1.0000					
p XYLENE										
o XYLENE										
m XYLENE										
1,1-DICHLOROETHANE						-	-	-	0	
1,2-DICHLOROPROPANE			0.0060		0.0100	-	-	-	0	
1,1,2,2-TETRACHLOROETHANE										
ETHYLBENZENE			0.6800							
1,3-DICHLOROPROPANE										
STYRENE			0.1400							
CHLOROMETHANE										
BROMOMETHANE										
1,2,3-TRICHLOROPROPANE										
1,1,1,2-TETRACHLOROETHANE										
CHLOROETHANE										
1,1,2-TRICHLOROETHANE										
2,2-DICHLOROPROPANE										
o CHLOROTOLUENE										
p CHLOROTOLUENE										
BROMOBENZENE										
1,3-DICHLOROPROPENE					0.0100	-	-	-	0	
1,2 DIBROMOETHANE					0.0001	-	-	-	0	
DIBROMOCHLOROPROPANE (DBCP)										

TABLE F.1.2 SUMMARY OF POTABLE WATER QUALITY STANDARDS

mg/l

PARAMETER	ENVIRONMENTAL PROTECTION AGENCY MCL (1)	MCLG (2)	PROPOSED MCLG	SMCL (3)	CONNECTICUT DPH ACTION LEVEL (4)	PINE MEADOW WELL RAW WATER QUALITY 2001-2005 MIN	MAX	AVERAGE	NUMBER OF SAMPLES	COMMENTS
PHC SECTION 19-13-B102(e)(7) ORGANIC COMPOUNDS (7)										
1,2,3 TRIMETHYLBENZENE										
n BUTYL BENZENE										
n PROPYLBENZENE										
1,2,4-TRICHLOROBENZENE										
DICHLORODIFLUOROMETHANE										
TRICHLOROTRIFLUORETHANE										
EPA REGULATED PESTICIDES										
2,4,5-TP SILVEX	0.0100		0.0520		0.0100	-	-	-	0	
2,4-D	0.1000		0.0700		0.1000	-	-	-	0	
ENDRIN	0.0002				0.0002	-	-	-	0	
LINDANE	0.0040		0.0002		0.0040	-	-	-	0	
METHOXYCHLOR	0.1000		0.3400		0.1000	-	-	-	0	
TOXAPHENE	0.0050		0.0000		0.0050	-	-	-	0	
INORGANIC COMPOUNDS										
ARSENIC	0.0500		0.0500		0.0500	-	-	-	0	
BARIUM	1.0000		1.5000		1.0000	-	-	-	0	
CADMIUM	0.0100		0.0050		0.0100	-	-	-	0	
CHLORIDE				250	250	-	-	-	0	
CHROMIUM	0.0500		0.1200		0.0500	-	-	-	0	
COPPER			1.3000	1.0000	1.0000	-	-	-	0	
CYANIDE					0.2000	-	-	-	0	
FLUORIDE	4.0	4.0		2.0	2.0	-	-	-	0	
IRON				0.3000		<0.05	0.080	<0.05	5	
LEAD	0.0500		0.0200		0.0500	-	-	-	0	
MANGANESE				0.0500		<0.01	0.020	<0.02	5	
MERCURY	0.0020		0.0030		0.0020	-	-	-	0	
NITRATE-N	10.0000		10.0000		10.0000	-	-	-	0	
NITRITE-N			1.0000		1.0000	-	-	-	0	
SELENIUM	0.0100		0.0450		0.0100	-	-	-	0	
SILVER	0.0500				0.0500	-	-	-	0	
SODIUM					28	-	-	-	0	
OTHER										
COLIFORM	1-4/100 ml		0			0	0	0.000	60	
COLOR						0	6	0.250	60	
METHYLENE BLUE ACTIVE SUBSTANCES					0.5000	0.00	<0.05	-	5	
ODOR (DOHS Odor scale)						NONE	V. FAINT	-	60	
pH						5.28	6.90	-	60	
TURBIDITY						0.01	0.60	0.090	60	

TABLE F.2.1 SUMMARY OF POTABLE WATER QUALITY STANDARDS

mg/l

PARAMETER	ENVIRONMENTAL PROTECTION AGENCY MCL (1)	MCLG (2)	PROPOSED MCLG	SMCL (3)	CONNECTICUT DPH ACTION LEVEL (4)	BLACK BRIDGE WELL QUALITY ENTERING SYSTEM 2001-2005 MIN	MAX	AVERAGE	NUMBER OF SAMPLES	COMMENTS
EPA REGULATED SYNTHETIC ORGANIC CHEMICALS (5)										
BENZENE	0.0050	0.0000			0.0010	ND	<0.0005	-	5	
CARBON TETRACHLORIDE	0.0050	0.0000			0.0050	ND	<0.0005	-	5	
1,2-DICHLOROETHANE	0.0050	0.0000			0.0010	ND	<0.0005	-	5	
1,1-DICHLOROETHYLENE	0.0070	0.0070			0.0070	ND	<0.0005	-	5	
p DICHLOROBENZENE	0.0750	0.0750			0.0750	ND	<0.0005	-	5	
1,1,1-TRICHLOROETHANE	0.2000	0.2000			0.2000	ND	<0.0005	-	5	
TRICHLOROETHYLENE	0.0050	0.0000			0.0050	ND	<0.0005	-	5	
VINYL CHLORIDE	0.0020	0.0000			0.0020	ND	<0.0005	-	5	
EPA NONREGULATED SYNTHETIC ORGANIC COMPOUNDS (6)										
CHLOROFORM						ND	0.0097	-	5	
BROMODICHLORMETHANE						ND	0.0025	-	5	
CHLORODIBROMOMETHANE						ND	0.0018	-	5	
BROMOFORM						ND	<0.0005	-	5	
trans 1,2-DICHLOROETHYLENE			0.0700			ND	<0.0005	-	5	
CHLOROBENZENE						-	<0.0005	-	5	
m DICHLOROBENZENE						-	<0.0005	-	5	
METHYLENE CHLORIDE					0.0250	ND	<0.0005	-	5	
cis 1,2-DICHLOROETHYLENE			0.0700			-	<0.0005	-	5	
o DICHLOROBENZENE			0.5200			-	<0.0005	-	5	
DIBROMOMETHANE						-	<0.0005	-	5	
1,1-DICHLOROPROPENE						-	<0.0005	-	5	
TETRACHLOROETHYLENE			0.0000		0.0200	ND	<0.0005	-	5	
TOLUENE			2.0000		1.0000	-	<0.0005	-	5	
p XYLENE						-	<0.0005	-	5	
o XYLENE						-	<0.0005	-	5	
m XYLENE						-	<0.0005	-	5	
1,1-DICHLOROETHANE						ND	<0.0005	-	5	
1,2-DICHLOROPROPANE			0.0060		0.0100	-	<0.0005	-	5	
1,1,2,2-TETRACHLOROETHANE						-	<0.0005	-	5	
ETHYLBENZENE			0.6800			-	<0.0005	-	5	
1,3-DICHLOROPROPANE						-	<0.0005	-	5	
STYRENE			0.1400			-	<0.0005	-	5	
CHLOROMETHANE						-	<0.0005	-	5	
BROMOMETHANE						-	<0.0005	-	5	
1,2,3-TRICHLOROPROPANE						-	<0.0005	-	5	
1,1,1,2-TETRACHLOROETHANE						-	<0.0005	-	5	
CHLOROETHANE						-	<0.0005	-	5	
1,1,2-TRICHLOROETHANE						-	<0.0005	-	5	
2,2-DICHLOROPROPANE						-	<0.0005	-	5	
o CHLOROTOLUENE						-	<0.0005	-	5	
p CHLOROTOLUENE						-	<0.0005	-	5	
BROMOBENZENE						-	<0.0005	-	5	
1,3-DICHLOROPROPENE						-	<0.0005	-	5	
1,2 DIBROMOETHANE					0.0100	-	<0.0005	-	5	
DIBROMOCHLOROPROPANE (DBCP)					0.0001	-	<0.00002	-	5	
						-	<0.00002	-	5	

TABLE F.2.1 SUMMARY OF POTABLE WATER QUALITY STANDARDS

mg/l

	ENVIRONMENTAL PROTECTION AGENCY				CONNECTICUT DPH	BLACK BRIDGE WELL QUALITY ENTERING SYSTEM 2001-2005				
PARAMETER	MCL (1)	MCLG (2)	PROPOSED MCLG	SMCL (3)	ACTION LEVEL (4)	MIN	MAX	AVERAGE	NUMBER OF SAMPLES	COMMENTS
PHC SECTION 19-13-B102(e)(7) ORGANIC COMPOUNDS (7)										
1,2,3 TRIMETHYLBENZENE						-	<0.0005	-	5	
n BUTYL BENZENE						-	<0.0005	-	5	
n PROPYLBENZENE						-	<0.0005	-	5	
1,2,4-TRICHLOROBENZENE						-	<0.0005	-	5	
DICHLORODIFLUOROMETHANE						-	<0.0005	-	5	
TRICHLOROTRIFLUORETHANE						-	<0.0005	-	5	
INORGANIC COMPOUNDS										
ARSENIC	0.0500		0.0500		0.0500	-	<0.05	-	1	
BARIUM	1.0000		1.5000		1.0000	-	<0.5	-	1	
CADMIUM	0.0100		0.0050		0.0100	-	<0.005	-	1	
CHLORIDE				250	250	-	23.00	-	1	
CHROMIUM	0.0500		0.1200		0.0500	-	<0.05	-	1	
COPPER			1.3000	1.0000	1.0000	-	0.040	-	1	
CYANIDE					0.2000	-	<0.05	-	1	
FLUORIDE	4.0	4.0		2.0	2.0	-	0.10	-	1	
IRON				0.3000			0.05	<0.05	20	
LEAD	0.0500		0.0200		0.0500	-	<0.005	-	1	
MANGANESE				0.0500		-	0.03	<0.01	20	
MERCURY	0.0020		0.0030		0.0020	-	<0.002	-	1	
NITRATE-N	10.0000		10.0000		10.0000	-	1.20	-	1	
NITRITE-N			1.0000		1.0000	-	<0.002	-	1	
SELENIUM	0.0100		0.0450		0.0100	-	<0.01	-	1	
SILVER	0.0500				0.0500	-	<0.01	-	1	
SODIUM					28	-	24.00	-	1	
OTHER										
pH				6.4-10	<6.4; >10	6.30	9.70	-	1825	
CHLORINE RESIDUAL (FREE)						0.20	1.30	0.48	1825	
SODIUM					28	15.70	26.6	21.60	17	

TABLE F.2.2 SUMMARY OF POTABLE WATER QUALITY STANDARDS

mg/l

PARAMETER	ENVIRONMENTAL PROTECTION AGENCY				CONNECTICUT DPH	PINE MEADOW WELL QUALITY ENTERING SYSTEM 2001-2005				
	MCL (1)	MCLG (2)	PROPOSED MCLG	SMCL (3)	ACTION LEVEL (4)	MIN	MAX	AVERAGE	NUMBER OF SAMPLES	COMMENTS
EPA REGULATED SYNTHETIC ORGANIC CHEMICALS (5)										
BENZENE	0.0050	0.0000			0.0010	-	<0.0005	-	7	
CARBON TETRACHLORIDE	0.0050	0.0000			0.0050	-	<0.0005	-	7	
1,2-DICHLOROETHANE	0.0050	0.0000			0.0010	-	<0.0005	-	7	
1,1-DICHLOROETHYLENE	0.0070	0.0070			0.0070	-	<0.0005	-	7	
p DICHLOROBENZENE	0.0750	0.0750			0.0750	-	<0.0005	-	7	
1,1,1-TRICHLOROETHANE	0.2000	0.2000			0.2000	-	<0.0005	-	7	
TRICHLOROETHYLENE	0.0050	0.0000			0.0050	-	<0.0005	-	7	
VINYL CHLORIDE	0.0020	0.0000			0.0020	-	<0.0005	-	7	
EPA NONREGULATED SYNTHETIC ORGANIC COMPOUNDS (6)										
CHLOROFORM						ND	<0.0005	-	7	
BROMODICHLORMETHANE						ND	<0.0005	-	7	
CHLORODIBROMOMETHANE						ND	<0.0005	-	7	
BROMOFORM						ND	<0.0005	-	7	
trans 1,2-DICHLOROETHYLENE			0.0700			ND	<0.0005	-	7	
CHLOROBENZENE						-	<0.0005	-	7	
m DICHLOROBENZENE						-	<0.0005	-	7	
METHYLENE CHLORIDE					0.0250	ND	<0.0005	-	7	
cis 1,2-DICHLOROETHYLENE			0.0700			-	<0.0005	-	7	
o DICHLOROBENZENE			0.6200			-	<0.0005	-	7	
DIBROMOMETHANE						-	<0.0005	-	7	
1,1-DICHLOROPROPENE						-	<0.0005	-	7	
TETRACHLOROETHYLENE			0.0000		0.0200	ND	<0.0005	-	7	
TOLUENE			2.0000		1.0000	-	<0.0005	-	7	
p XYLENE						-	<0.0005	-	7	
o XYLENE						-	<0.0005	-	7	
m XYLENE						-	<0.0005	-	7	
1,1-DICHLOROETHANE						ND	<0.0005	-	7	
1,2-DICHLOROPROPANE			0.0060		0.0100	-	<0.0005	-	7	
1,1,2,2-TETRACHLOROETHANE						-	<0.0005	-	7	
ETHYLBENZENE			0.6800			-	<0.0005	-	7	
1,3-DICHLOROPROPANE						-	<0.0005	-	7	
STYRENE			0.1400			-	<0.0005	-	7	
CHLOROMETHANE						-	<0.0005	-	7	
BROMOMETHANE						-	<0.0005	-	7	
1,2,3-TRICHLOROPROPANE						-	<0.0005	-	7	
1,1,1,2-TETRACHLOROETHANE						-	<0.0005	-	7	
CHLOROETHANE						-	<0.0005	-	7	
1,1,2-TRICHLOROETHANE						-	<0.0005	-	7	
2,2-DICHLOROPROPANE						-	<0.0005	-	7	
o CHLOROTOLUENE						-	<0.0005	-	7	
p CHLOROTOLUENE						-	<0.0005	-	7	
BROMOBENZENE						-	<0.0005	-	7	
1,3-DICHLOROPROPENE						-	<0.0005	-	7	
1,2 DIBROMOETHANE					0.0100	-	<0.0005	-	7	
DIBROMOCHLOROPROPANE (DBCP)					0.0001	-	<0.00002	-	7	
						-	<0.00002	-	7	

TABLE F.2.2 SUMMARY OF POTABLE WATER QUALITY STANDARDS

mg/l

PARAMETER	ENVIRONMENTAL PROTECTION AGENCY				CONNECTICUT DPH	PINE MEADOW WELL QUALITY ENTERING SYSTEM 2001-2005				
	MCL (1)	MCLG (2)	PROPOSED MCLG	SMCL (3)	ACTION LEVEL (4)	MIN	MAX	AVERAGE	NUMBER OF SAMPLES	COMMENTS
PHC SECTION 19-13-B102(e)(7) ORGANIC COMPOUNDS (7)										
1,2,3 TRIMETHYLBENZENE						-	<0.0005	-	7	
n BUTYL BENZENE						-	<0.0005	-	7	
n PROPYLBENZENE						-	<0.0005	-	7	
1,2,4-TRICHLOROBENZENE						-	<0.0005	-	7	
DICHLORODIFLUOROMETHANE						-	<0.0005	-	7	
TRICHLOROTRIFLUORETHANE						-	<0.0005	-	7	
INORGANIC COMPOUNDS										
ARSENIC	0.0500		0.0500		0.0500	<0.05	<0.05	-	1	
BARIUM	1.0000		1.5000		1.0000	< 0.50	< 0.50	-	1	
CADMIUM	0.0100		0.0050		0.0100	<0.005	<0.005	-	1	
CHLORIDE				250	250	<0.05	<0.05	-	1	
CHROMIUM	0.0500		0.1200		0.0500	<0.05	<0.05	-	1	
COPPER			1.3000	1.0000	1.0000	0.090	0.090	-	1	
CYANIDE					0.2000	<0.01	<0.01	-	1	
FLUORIDE	4.0	4.0		2.0	2.0	0.50	0.50	-	1	
IRON				0.3000		ND	0.060	0.010	5	
LEAD	0.0500		0.0200		0.0500	<0.005	<0.005	-	1	
MANGANESE				0.0500		<0.01	0.030	0.010	5	
MERCURY	0.0020		0.0030		0.0020	<0.001	<0.001	-	1	
NITRATE-N	10.0000		10.0000		10.0000	0.300	0.300	0.15	1	
NITRITE-N			1.0000		1.0000	0.003	0.003	-	1	
SELENIUM	0.0100		0.0450		0.0100	<0.01	<0.01	-	1	
SILVER	0.0500				0.0500	<0.01	<0.01	-	1	
SODIUM					28	13.20	13.20	-	1	
OTHER										
pH				6.4-10	<6.4; >10	6.00	9.80	-	1643	
SODIUM					28	2.6	17.7	12.55	11	

TABLE F.3.1 SUMMARY OF POTABLE WATER QUALITY STANDARDS

mg/l

	ENVIRONMENTAL PROTECTION AGENCY				CONNECTICUT DPH	NEW HARTFORD DISTRIBUTION SYSTEM 2001-2005				
PARAMETER	MCL (1)	MCLG (2)	PROPOSED MCLG	SMCL (3)	ACTION LEVEL (4)	MIN	MAX	AVERAGE	NUMBER OF SAMPLES	COMMENTS
EPA REGULATED PESTICIDES										
2,4,5-TP SILVEX	0.0100		0.0520		0.0100	-	-	-	-	
2,4-D	0.1000		0.0700		0.1000	-	-	-	-	
ENDRIN	0.0002				0.0002	-	-	-	-	
LINDANE	0.0040		0.0002		0.0040	-	-	-	-	
METHOXYCHLOR	0.1000		0.3400		0.1000	-	-	-	-	
TOXAPHENE	0.0050		0.0000		0.0050	-	-	-	-	
INORGANIC COMPOUNDS										
ARSENIC	0.0500		0.0500		0.0500	-	-	-	-	
BARIUM	1.0000		1.5000		1.0000	-	-	-	-	
CADMIUM	0.0100		0.0050		0.0100	-	-	-	-	
CHLORIDE				250	250	-	-	-	-	
CHROMIUM	0.0500		0.1200		0.0500	-	-	-	-	
COPPER			1.3000	1.0000	1.0000	-	-	-	-	
CYANIDE					0.2000	-	-	-	-	
FLUORIDE	4.0	4.0		2.0	2.0	-	-	-	-	
LEAD	0.0500		0.0200		0.0500	-	-	-	-	
MERCURY	0.0020		0.0030		0.0020	-	-	-	-	
METHYLENE BLUE ACTIVE SUBSTANCES					0.5000	-	-	-	-	
NITRATE-N	10.0000		10.0000		10.0000	-	-	-	-	
NITRITE-N			1.0000		1.0000	-	-	-	-	
SELENIUM	0.0100		0.0450		0.0100	-	-	-	-	
SILVER	0.0500				0.0500	-	-	-	-	
SODIUM					28	-	-	-	-	
BACTERIOLOGICAL AND PHYSICAL										
2005										
COLIFORM	1/100 ml		0			0	0	0.000	48	
COLOR					15	0	5	0.080	48	
ODOR (DOHS Odor scale)					FAINT	NONE	V. FAINT	V. FAINT	48	
pH					<6.4; >10	7.00	9.30	-	48	
TURBIDITY					5.0	0.04	0.46	0.12	48	
CHLORINE RESIDUAL					4.00	0.30	0.80	0.42	48	
2004										
COLIFORM	1/100 ml		0			0	0	0.000	63	
COLOR					15	0	9	0.783	63	
ODOR (DOHS Odor scale)					FAINT	NONE	V. FAINT	V. FAINT	63	
pH					<6.4; >10	7.00	9.30	-	63	
TURBIDITY					5.0	0.04	0.55	0.12	63	
CHLORINE RESIDUAL					4.00	0.30	0.80	0.41	63	

TABLE F.3.1 SUMMARY OF POTABLE WATER QUALITY STANDARDS
mg/l

PARAMETER	ENVIRONMENTAL PROTECTION AGENCY MCL (1)	MCLG (2)	PROPOSED MCLG	SMCL (3)	CONNECTICUT DPH ACTION LEVEL (4)	NEW HARTFORD DISTRIBUTION SYSTEM 2001-2005 MIN	MAX	AVERAGE	NUMBER OF SAMPLES	COMMENTS
EPA REGULATED PESTICIDES										
2003										
COLIFORM	1/100 ml		0			0	0	0.000	84	
COLOR					15	0	14	0.080	84	
ODOR (DOHS Odor scale)					FAINT	NONE	FAINT	V. FAINT	84	
pH					<6.4; >10	6.50	9.10	-	84	
TURBIDITY					5.0	0.05	1.36	0.12	84	
CHLORINE RESIDUAL					4.00	0.20	0.80	0.32	84	
2002										
COLIFORM	1/100 ml		0			0	0	0.000	56	
COLOR					15	0	2	0.10	56	
ODOR (DOHS Odor scale)					FAINT	NONE	V. FAINT	NONE	56	
pH					<6.4; >10	6.70	9.30	-	56	
TURBIDITY					5.0	0.05	0.36	0.09	56	
CHLORINE RESIDUAL					4.00	0.00	0.70	0.34	56	
2001										
COLIFORM	1/100 ml		0			0	1	0.00	84	1 POSITIVE SAMPLE, REPEATS CLEAN
COLOR					15	0	2	0.03	84	
ODOR (DOHS Odor scale)					FAINT	NONE	V. FAINT	NONE	84	
pH					<6.4; >10	6.40	9.90	-	84	
TURBIDITY					5.0	0.04	0.80	0.080	84	
CHLORINE RESIDUAL					4.00	0.00	1.00	0.240	84	CHLORINATION STARTED IN APRIL

TABLE F.4.1 SUMMARY OF POTABLE WATER QUALITY STANDARDS

END NOTES

(1) MCL - Maximum Contaminant Level; as defined by the Safe Drinking Water Act (SDWA)

(2) MCLG - Maximum Contaminant Level Goal; as defined by the SDWA

(3) SMCL - Secondary Maximum Contaminant Level; nonenforceable standards which represent reasonable goals for drinking water, as defined by the SDWA

(4) Action Level - Maximum Permissible Level established by the Connecticut Public Health Code or Action Level established by the Department of Health Services (DOHS) as guidelines for potable water

(5) Quarterly monitoring beginning 1/1/88 for systems over 10,000 persons

(6) Monitoring beginning 1/1/88 for systems over 10,000 persons

(7) Twice a year monitoring for systems serving over 1000 persons or that routinely chlorinate

New Hartford Water

2004 Annual Consumer Report on the Quality of Tap Water

Prepared by New England Water Utility Services

To Our Customer: We are pleased to present a summary of the quality of the water provided to you during the past year. The Safe Drinking Water Act (SDWA) requires that utilities issue an annual "Consumer Confidence" report to customers in addition to other notices that may be required by law. This report details where our water comes from, what it contains, and the risks our water testing and treatment are designed to prevent. New Hartford is committed to providing you with the safest and most reliable water supply. Informed consumers are our best allies in maintaining safe drinking water.

We encourage public interest and participation in our community's decisions affecting drinking water. Regular WPCA meetings occur on the first Thursday of every month, at the New Hartford Town Hall. The public is welcome. Also, more information is available on the World Wide Web at http://www.waterdata.com.

Water Source

New Hartford is supplied by groundwater pumped from two wells located in the northeast portion of the Town of New Hartford. The wells are known as Pine Meadow and Black Bridge Wells. Both wells are gravel packed design and located in a stratified drift aquifer. The Black Bridge well is 85 feet in depth and Pine Meadow well is 70 feet in depth. The Black Bridge well is 8" in diameter and has a pumping capacity of 200 gallons per minute (gpm). The Pine Meadow well is 10" in diameter and has a pumping capacity of 140 gpm. Both wells are used to meet the water system demands. In 2004 the total annual water production was 44.803 million gallons with an average daily demand of 122,748 gallons per day.

Protecting Water Source

Many people don't know that most contaminants enter rivers, lakes, and reservoirs from storm water runoff of streets, golf courses, athletic fields, construction sites, farms, and neighborhoods like yours. You can help reduce polluted runoff using the following guidelines:

- Restrict the use of lawn chemicals, especially before heavy rains.
- Dispose of pet waste properly so that it does not wash into a nearby stream or storm drain.
- Have septic tanks inspected every two years, and cleaned as needed. Make septic system repairs as soon as possible.
- Do not pour used motor oil on the ground or into storm drains. Contact the town for proper disposal of household chemicals.
- Report muddy runoff from construction sites to your town's zoning or wetland officials.

The State of Connecticut Department of Public Health (DPH) has completed an assessment of our drinking water sources and has assigned them with an overall susceptibility rating of "moderate" This rating indicates that our water sources have a moderate risk of contamination. The completed assessment report is available on the Drinking Water Division's website: www.dph.state.ct.us/BRS/Water/SWAP/swap.htm. More information on the source water assessment program can also be found on the Environmental Protection Agency's website: epa.gov/safewater/protect/swap.html.

Water Conservation

Conserving water helps to ensure that we have an adequate supply of water for public health and safety, especially during peak demands seasons. Conserving can also lower your water bill, and depending on the community where you live it may also reduce your sewer bill.

Here are some things you can do to conserve:

- Repair leaking toilets - check for toilet leaks by putting a drop of food coloring in the tank. If the food coloring seeps into the bowl without flushing, there is a leak.
- Consider installing a 1.6 gallon per flush toilet.
- Don't flush tissues or spiders down the toilet, use a waste basket instead
- Fix leaking fixtures
- Run full loads in the dishwasher
- Set the water level in the washing machines to match the amount of clothes being washed
- Water lawns and gardens in the early morning
- Use mulch around plants and shrubs
- Use a bucket rather than a running hose to wash cars

An Explanation of the Water-Quality Data Table

The table shows the results of our water-quality analyses. Every regulated contaminant that we detected in the water, even in the minutest traces, is listed here. The table contains the name of each substance, the highest level allowed by regulation (MCL), the ideal goals for public health, the amount detected, the usual sources of such contamination, footnotes explaining our findings, and a key to units of measurement. Definitions of MCL and MCLG are important. The state allows us to monitor for some contaminants less than once per year because the concentrations of these contaminants do not change frequently. All 2004 water quality analyses were conducted by the following state certified laboratories: Environmental Consulting Labs, Inc. (PH-0535), Averill Laboratories (PH-0513) and the State of Connecticut Laboratory (CL-0197).

Maximum Contaminant Level or MCL: The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal or MCLG: The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Action Level (AL): The concentration of a contaminant which, if exceeded, triggers treatment or other requirement that a water system must follow.

Maximum Residual Disinfectant Level (MRDL): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfectant Level Goal (MRDLG): The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contamination

The data presented in this report is from the most recent testing done in accordance with regulations.

Key to Table

AL = Action Level
MCLG = Maximum Contaminant Level Goal
NL = Notification Level
r = picocuries per liter (a measure of radioactivity)
parts per billion, or micrograms per liter (µg/l)
MCL = Maximum Contaminant Level
N/A = Not Applicable
NTU = Nephelometric Turbidity Units
ppm = parts per million, or milligrams per liter (mg/l)

Regulated Contaminants

Contaminant	Date Tested	Unit	MCL	MCLG	Detected Level	Range	Major Sources	Violation
Inorganic Contaminants								
Chloride	2002	ppm	250	250	23	3.4 - 23	Road salt	NO
1 Copper	2004	ppm	AL=1.3	1.3	* 1.29	0.08 – 1.34	Corrosion of household plumbing systems	NO
Fluoride	2002	ppm	4.0	4.0	0.5	< 0.1 – 0.5	Erosion of natural deposits	NO
2 Lead	2004	ppb	AL=15	0	* 6	< 1 – 6	Corrosion of household plumbing systems	NO
Nitrate	2004	ppm	10	10	1.7	0.1 – 1.7	Runoff from fertilizer use; Erosion of natural deposits	NO
Nitrite	2004	ppb	1	1	0.01	< 0.01 – 0.01	Runoff from fertilizer use; Erosion of natural deposits	NO
Microbiological Contaminants								
3 Turbidity	2004	NTU	5	N/A	1.5	< 0.05 – 1.5	Erosion of natural deposits	NO
Radioactive Contaminants								
Alpha emitters	2001	pCi/L	15	0	0.38	0.38 +/– 0.63	Erosion of natural deposits	NO
Disinfectant and Disinfection By-Products								
Chlorine Residual	2004	ppm	MRDL 4.0	MRDLG 4.0	0.8	0.3 – 0.8	Chlorination	NO
TTHMs [Total Trihalomethanes]	2004	ppb	80	0	11.5	N/A	By-product of drinking water chlorination	NO
Haloacetic Acids	2004	ppb	60	N/A	7	N/A	By-product of drinking water chlorination	NO

* 90th percentile value

Water-Quality Table Footnotes

1. One of the ten samples taken in 2004 was above the action level (1.3 ppm) for copper. Compliance with the Lead and Copper rule is based on the 90th percentile value. The "Detected Level" listed is the value used for compliance purposes.
2. None of the ten samples taken in 2004 were above the action level (15 ppb) for lead. Compliance with the Lead and Copper rule is based on the 90th percentile value. The "Detected Level" listed is the value used for compliance purposes
3. Turbidity: Is a measure of the cloudiness of the water. Turbidity has no health effects. However, turbidity can provide a medium for microbial growth.

New Hartford had no Violations in 2004

Special Educational Statements

Copper Health Effects:
Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's Disease should consult their personal doctor. Flushing the tap for several minutes before use greatly reduces the concentration of copper in the water.

Lead Health Effects:
Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure. Flushing the tap for several minutes before use greatly reduces the concentration of lead in the water.

Unregulated Contaminants

Contaminant	Date Tested	Unit	MCL	MCLG	Detected Level	Range	Major Sources	Violation
Inorganic Contaminants								
Sodium	2002	ppm	NL=28	N/A	24	13.2 – 24	Additive for corrosion control, road salt	NO
Sulfate	2002	ppm	N/A	N/A	10	9 - 10	Erosion of natural deposits	NO

Radon is a radioactive gas that occurs naturally in ground water and is released from water into the air during household use. At high exposure levels it can cause lung cancer. The U.S. Environmental Protection Agency (EPA) is preparing a regulation which will specify a Maximum Contaminant Level (MCL) for radon. This maximum will likely be in the 300 to 4,000 picocuries per liter (pCi/L) range. New Hartford sampled for radon in 1997. The result of the sample was 398 pCi/L, near the lowest proposed MCL.

Required Additional Health Information

To ensure that tap water is safe to drink, EPA prescribes limits on the amount of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants do not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791).

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include:
(A) Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
(B) Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban storm runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
(C) Pesticides and herbicides, which may come from a variety of sources such as agriculture, stormwater runoff, and residential uses.
(D) Organic chemical contaminants, including synthetic and volatile organics, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff and septic systems.
(E) Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities. In order to ensure t') water is safe to drink, EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. F. .egulations establish limits for contaminants in bottled water which must provide the same protection for public health.
Some people may be more vulnerable to contaminants in drinking water than is the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium are available from the Safe Drinking Water Hotline (800-426-4791).

National Primary Drinking Water Regulation Compliance

Other Monitoring

As with many groundwater systems, New Hartford well water has a significant concentration of dissolved minerals such as iron and manganese. These minerals do not pose a health risk but can cause aesthetic problems such as discolored water and staining of plumbing fixtures and clothes. To address this problem, New Hartford Water has completed the installation of a filtration system to help reduce the concentration of these nuisance minerals to an acceptable level. In addition to these minerals and the contaminants previously listed, New Hartford also had the water tested for pH, color, odor, silicates and the presence of total coliform bacteria. New Hartford had no violations for any of these parameters in 2004.

This report was prepared by New England Water Utility Services (NEWUS) of Clinton, Connecticut. In addition to this report, NEWUS also provides New Hartford with contract operation of the water system. The contract operation includes the services of a state certified operator who monitors the water system for compliance with all state and federal drinking water regulations. The operating contract also includes services such as making emergency repairs when needed, making recommendations for improving water quality and increasing system reliability.

We'll be happy to answer any questions about New Hartford and our water quality. Call Mr. Adamaitis at (203) 267-1708 with questions or concerns related the New Hartford water system. Water Quality Data for community water systems throughout the United States is available at www.waterdata.com.

NEWUS is a subsidiary of Connecticut Water Service, Inc.

APPENDIX G

Minimum Design Standards

3.6 MINIMUM DESIGN STANDARDS

The State of Connecticut has included minimum design criteria as a portion of its recently-published Final Regulations for issuing certificates of public convenience and necessity for small (less than 1000 customers) water companies. This section briefly reviews these criteria, discusses their adequacy, and recommends additional minimum standards where necessary.

3.6.1 DPUC Design Criteria

The Final Regulations noted above were published by DPUC on September 28, 1987, and included design criteria as Section 16-262m-8. This Section of the regulations begins by providing a summary of key definitions, and then goes on to identify criteria associated with facility location, design population and demand, water supply requirements, source protection, well construction and water quality, atmospheric storage tanks, on-site standby power, transmission and distribution systems, materials of construction, fire protection, service pipes (service connections), and pump house requirements. Key points for each of these topics include the following:

- Definition of terms:

  - average daily demand = representative 24 hour water usage computed at 75 gallons per person per day.

  - peak hour demand = one-third of the average daily demand.

  - safe daily yield of a water supply system = all water delivered to the system from all sources operating simultaneously at their individual safe yields for an 18 hour period.

  - safe yield of a well = for unconsolidated aquifers, a site-specific determination based on the impact of dry period minimum water table elevations on the yield of the well and the impacts of decreased streamflow or pollutant induction; for confined or bedrock aquifers, 90 percent of the hourly yield for 18 hours per day, hourly yield based on a cone of depression which holds stable for 24 hours (lower

yields to be used if the calculated figures would cause unacceptable associated impacts or when records indicate the yield to be less than calculated.)

- Facility location (including treatment plants, pumping stations, storage tanks, etc.; excluding water intakes and connecting pipelines):

  - above the 100 year flood plain and outside of the floodway boundary.

  - all chlorine storage and use areas at least 300 feet from any residence.

  - not in an area subject to fires or other natural or man-made disasters.

- Water Supply Requirements:

  - must maintain a system safe yield of 115% of average daily demand.

  - must be capable of meeting average daily demand with largest well or pump out of service.

  - must subject all wells to a 72 hour yield test in which drawdown is to a stable level for at least 24 hours; test should be performed during summer dry periods if possible.

  - periodic review required of yield, especially for deep rock wells.

- Source Protection:

  - minimum distances established to septic systems, buried oil tanks, sanitary sewers, surface waters, drains, and miscellaneous pollutant sources; separation distances required increase as well capacities increase, with greater distances required for high-rate gravel-packed wells with high bedrock levels and soil percolation rates.

  - control of separation space must be by the water supply owner.

- Well Construction and Water Quality:

  - well construction based on the previously-promulgated Regulations of the Well Drilling Industry.

  - quality must conform to State requirements, with suitable treatment required if necessary.

- each well must be equipped with a level probe, low water level pump shut-off, and lightning protection devices.

Atmospheric Storage Tanks:

- must be equipped with bolted entry hatches, capped and locked filler pipes, sight glass gauge, screened vent pipe, high and low water signal system, drain valve with discharge to the ground (not to a sanitary sewer).

- usable tank capacity equal to the greater of 200 gallons per residential customer or the system's average daily demand, with allowances made for commercial and industrial use.

- hydropneumatic tanks and transfer pumps must be sized to accommodate peak hourly demand; at least two transfer pumps operating alternately must be installed between the atmospheric and hydropneumatic tanks, each capable of pumping the peak hourly rate and each protected by low water shutoff controls.

- the usable volume of the hydropneumatic tank shall allow for storage of five minutes discharge from the largest transfer pump.

On-Site Standby Power:

- should have a permanent or portable generator to power the largest well pump, one transfer pump, all booster stations, and all treatment systems.

- fuel storage must be above ground with full containment.

Transmission and Distribution System:

- minimum distribution pipe = 6 inches; smaller permitted in cul-de-sacs or areas where the system cannot be extended.

- minimum distribution pipe = 8 inches where fire protection is provided.

- all mains to be installed within the rights-of-way of paved roadways to facilitate access.

- normal operating pressures to be between 35 and 125 psi at service connections, with pressure reducers provided where needed.

- dead-ends are to be avoided, with blow-offs installed if a dead-end is necessary.

- isolation valves required to facilitate repairs and flushing and at all intersections of water mains.

- customer booster pumps are prohibited except in extreme circumstances.

- a means of air relief must be provided at system high points and protected from flooding or contamination.

- all appurtenant structures such as chambers, pits, etc. shall not be connected to a sewer, and must drain to the ground surface or to underground absorption pits.

- pipes must be laid with a minimum cover of 4.5 feet (deeper if greater frost penetration is expected), provided with freezing protection at aerial crossings, and kept clean during installation; trenches must provide suitable bedding for at least six inches below the pipe invert, be kept as free of water as possible, continuously and uniformly backfilled in tamped layers to a height great enough to protect the pipe, covered overnight or when work is halted (with the pipe plugged).

- minimum separation distances are established between water lines and gravity and force sanitary sewers, drains, and/or manholes; force sanitary sewer restriction are inviolate, while alternate protection means such as sleeving, encasement, etc. can be provided upon approval where clearances cannot be maintained between crossing water mains and gravity sanitary sewers and drains.

Materials:

- in general, AWWA standards must be met for all materials, coatings, equipment, and testing.

- tracer wires must be used with nonmetallic pipe

- all facilities must be disinfected and meet appropriate pressure and leakage tests before being put into service.

Fire Protection:

- requirements for fire protection set on a case-by-case basis.

- whenever fire protection is required, it must be in accordance with the recommendations of the Fire Underwriter's Insurance Services Office, DPUC, and the utility that will eventually own the water system.

- no fire hydrants will be permitted unless at least 150,000 gallons of water are in atmosphere storage.

Service Pipes:

- minimum size = 3/4 inch; depths similar to distribution requirements.
- separate fire service connection.
- direct service to be provided from the water main without crossing intervening properties; separate metered connection for each unit adaptive to individual ownership (with some exceptions, such as high-rise apartment complexes, multi-storied homes, commercial buildings, and high-rise condominiums, which will be reviewed on a case-by-case basis by DPUC).
- shutoff valves to be provided at property line and interior of premises, with detector check meter on fire service.
- no interconnection between public and nonpublic systems without special permission.

Pumphouse Requirements:

- rodents and small animals shall be prevented from entering facilities; locked gates and fences to be provided, along with suitable lighting, HVAC, and access facilities.
- all manual and automatic controls, wiring and appurtenances to be installed in accordance with the National Electrical Code and provided with over and under voltage protection.
- easily-read instantaneous and totalizing meters must be installed to measure each source of supply independently.
- water treatment to be in accordance with procedures established by DOHS.

3.6.2 Review of DPUC Criteria

With the several references to previous State regulations, AWWA standards, Department of Health Services standards and regulations, the Public Health Code, and the National Electric Code, the DPUC design criteria become fairly comprehensive in scope, and can serve as a basic minimum design framework for all water companies, regardless of size. However, case-by-case exceptions to these criteria should be made if justifiable, particularly for larger utilities which do not fall under the jurisdiction of the DPUC regulations. Some specific examples of areas which should be subject to flexible interpretation include the following:

- average day and peak hourly demands different than those defined in the DPUC criteria should be acceptable if adequate historical information is available to justify a deviation (true for both large and small systems).

- the safe daily yield of systems which do not rely on confined or bedrock aquifers should be based on all sources operating simultaneously at their safe yield for a 24 hour (rather than 18 hour) period.

- facility location (especially wells) should be permitted within flood plains with proper protection.

- a 15 percent margin of safety between safe yield and average day demand may be excessive for certain systems, and should be examined on a case-by-case basis to determine the true adequacy of the source and system.

- only fuel oil stored on a wellfield or water supply watershed should be required to be installed aboveground; other storage should be done in accordance with DEP and EPA regulations based on site-specific criteria (in particular, underground storage may be preferable in areas where vandalism is a concern).

- pressure gauges should be an acceptable alternate for sight glass gauges on storage tanks; both should be adequately protected from vandals.

- emergency power may not be necessary for all portions of certain systems - high level systems may still deliver water at adequate pressure during power outages.

- where required due to unavailability of roadway rights-of-way or other engineering considerations, main placement should be permitted in easements which are out of the rights-of-way of a paved road.

- blanket permission should be given to allow master meters on "vertical" developments (e.g. high-rise office buildings, apartments, condominiums, etc.) regardless of their potential for individual unit ownership (individually metered connections should still be provided for "horizontal" developments.)

- it should be clear that pumping of chambers or pits is acceptable for areas where permanent drains are not feasible.

- in order to avoid repumping, it may occasionally be cost-effective to exceed the maximum pressure of 125 psi specified in the DPUC regulations, with pressure regulators provided at individual service connections.

- in special cases, it may be advisable to allow temporary or permanent individual booster pumps to serve homes which are either an excessive distance from, or elevation above, the distribution system, subject to the following conditions:

  - in no case can system pressures be less than 25 psi
  - the booster pump is needed as a temporary measure as a system is upgraded
  - properly installed and approved backflow preventers are provided, along with low water pressure cut-off switches
  - if possible, the need for a booster pump should be noted on the legal description of the property

- case-by-case flexibility should be granted for variations in minimum depth of cover, with depths of less than 4.5 feet allowable with proper protection and insulation.

A review of other generally-accepted standards also shows some minor deficiencies in the DPUC criteria, with suggested additions including the following:

- A two to three foot safety factor should be included for facilities elevation above the 100 year flood level.
- Surface water intakes should be designed to allow selective withdrawal from multiple levels, with protection by coarse screens or racks on each intake; intake velocities should be less than 0.5 fps.
- Status of remote pumping stations should be telemetered to a central location; pressure gages should be required on the discharge line from each pump (again, some flexibility may be needed for smaller systems.)
- Minimum and maximum clearance to the ground of six and thirty-six inches, respectively, should be specified for overflow and drain pipes from storage facilities; provisions should be included to drain the storage facility without service interruptions; properly-protected vents should be required; a maximum level variation should be required based on a case-by-case analysis.
- Reference should be made to AWWA or Ten State Standards for items such as flushing methodology at system dead ends; minimum isolation valve spacing, pipe restraints at bends, tees, dead ends, etc.; and minimum acceptable classes of various materials.

- Fire protection connections should be treated as system dead ends, with appropriate provisions made for regular flushing (further cross-connection control regulations on fire protection connections will be forthcoming from DOHS).

3.6.3 Individual Utility Standards

The DPUC regulations as noted are designed to address smaller utilities with a customer base of less than 1000. They do, however, provide a good framework for all utilities within the Water Supply Management Area to use. Many larger utilities have their own minimum design standards which parallel or in some instances are more stringent than those set forth earlier in this section. Those utilities which do possess more stringent standards (or site-specific variations of the DPUC standards) have the right to require developers to comply with these standards when constructing an extension to their existing system or service area. The new DPUC regulations (Section 16-262m-7) appear to support this contention by stipulating that the "specifications for materials, equipment, and testing shall be in accordance with ... the specified water utility which will eventually own the system ...". It is important for a utility to maintain consistency of design parameters throughout its service area as system expansion occurs, and to provide the appropriate pipe sizing to be consistent with continued expansion of the system.

3.6.4 Impact on Existing Systems

Concern has been expressed by some WUCC members that the criteria set forth in the new DPUC regulations (Sections 16-262m-1 to 16-262m-9) could have a significant impact on smaller systems if they desire to expand. This concern is specifically related to whether an entire system would have to be brought up to the minimum design criteria if expansion occurs, even if the water utility has provided an adequate supply of water at sufficient pressure to their customers. DPUC has stated that it is their intent to review an entire existing system for conformance to the regulations if expansions of five percent or more are contemplated by a regulated water company, with particular emphasis during this review on whether or not the proposed expansion will compromise existing service under any potential

average or peak demand conditions. The regulations do allow for a hearing process for aggrieved parties with which situations such as this could be addressed. However, it is uncertain if this process would look favorably upon the smaller systems.

3.6.5 Fire Protection Issue

Much discussion during subcommittee meetings revolved around the issue of fire protection. Although some comments were made which called for uniform State-wide standards for fire protection, the subcommittee ultimately decided it was best to continue to leave the decision as to whether or not fire protection is to be provided in the hands of the community fire marshall. If fire protection is to be provided, standards will be those used by the local community, or, at the community's option, those recommended by the State Fire Marshal. These requirements will normally conform to either ISO (Insurance Standards Organization) or NFPA (National Fire Protection Association) standards, leaving open the possibility that a utility which provides service to more than one community may have to meet differing requirements.

Utilities have addressed this issue in various ways in the past. For example, the Connecticut Water Company will provide fire protection as required by a municipality or DPUC. The Company will not accept responsibility for fire protection systems which are separate from the potable water system (e.g., tankers, ponds, etc.).

The General Water Co., which owns and operates three utilities (Newtown Water, New Milford Water and Woodbury Water Companies) in the Housatonic Public Water Supply Management Area, has been faced with fire protection issues during rate cases. In Woodbury, the DPUC required that a particular main be installed to meet fire flows as a contingency to the approval of the company's rate increase. Recently in New Milford, the company required a developer to install sufficient storage and piping to meet fire flows in his proposed condominium complex, in an effort to decrease the probability that fire protection questions will impact future rate cases.

Providing water for all purposes, including fire protection, is an obligation of Class A water utilities (those with gross revenues in excess of $100,000) regulated by the DPUC. However, many small systems which principally serve apartment or condominium complexes or smaller housing projects were not designed with fire protection in mind. Fire protection is often provided to such systems through the use of on-site ponds or tanker-supplied pumpers, rather than being incorporated into system design. There also appears to be some movement toward individual sprinkler systems - a circumstance which may reduce the need for traditional fire protection requirements in terms of storage, minimum main size, etc.

From a minimum design standards point of view, fire protection becomes a difficult subject to address in terms of general requirements for the various WUCC members. The new DPUC regulations do address this issue to some degree, stating that a minimum 8-inch diameter pipe (and at least 150,000 gallons of storage) be used for systems providing fire protection. Suggestions have been made that the WUCC's minimum design standards call for 8-inch pipe whenever a system might eventually be called upon to supply fire protection. This is a sensitive issue for the smaller utilities, however, and is probably best left to case-by-case analysis, bearing in mind that initial installation of smaller pipe may preclude the eventual cost-effective provision of conventional fire protection.

3.6.6 Conclusions and Recommendations

The new DPUC regulations for issuing certificates of public convenience and necessity for small utilities set forth minimum design criteria under Section 16-262m-8. These criteria provide an excellent framework from which to build the minimum design standards for the Water Management Area for both small and large utilities. These criteria have the advantage that they are set in law, and are thus legislatively supported. Additional items which may be added to enhance these have been suggested for the WUCC's consideration. It is recommended that these DPUC criteria be used as the basis for the WUCC minimum design standards with appropriate additions made on a consensus basis.

It must also be made clear that individual utilities have the right to impose their own site-specific standards within their existing or exclusive service areas. Furthermore, it is also important that the regulatory agencies support the imposition of these generally more stringent standards and preclude developers from attempting to shop for the cheapest service.

The WUCC has a continuing concern regarding the impact of any accepted set of minimum design standards. It was generally agreed that such rules or standards are essential and, at a minimum, must be applied to new systems or greatly expanded system. However, it is also important that some realistic measure be incorporated for upgrading the existing portion of systems desiring to expand. For example, a system which is adding two or three houses, although it may represent a five percent or greater expansion, is certainly a different issue than expansion encompassing one hundred or more customers. There is indeed merit to having streamlined procedures for existing smaller utilities desiring minimal degree of expansion - a practice which DPUC intends to follow on a case-by-case basis.

In reviewing the draft versions of this document, DPUC again noted that the principal use of the minimum standards will be the evaluation of new small water systems. Expansion should be "substantially" in compliance with minimum standards, with DPUC examining expansion requests principally in terms of the expanded system's ability to continue to provide a continuous and adequate supply of water for existing and future customers with a reasonable margin of safety. New facilities needed to provide adequate service or safety margins will be required to meet minimum design standards.

APPENDIX H

MONTHLY WATER PRODUCTION DATA

2000 - 2004

New Hartford Water Company, Year End December 31, 2000

Monthly Production Data

Month	Monthly Produced or Purchased (in 1,000's of Gallons)		
	Pine Meadow Well	Black Bridge Well	Total
January	1993	2987	4980
February	1859	2095	3954
March	2026	2374	4400
April	1954	2696	4650
May	1992	2606	4598
June	1931	2421	4352
July	1887	2597	4484
August	0	3782	3782
September	0	3610	3610
October	0	3838	3838
November	0	3410	3410
December	0	3689	3689
Water Year Total	13642	36105	49747

New Hartford Water Company, Year End December 31, 2001

Monthly Production Data

Month	Monthly Produced or Purchased (in 1,000's of Gallons)		
	Pine Meadow Well	Black Bridge Well	Total
January		3999	3999
February		3863	3863
March		4568	4568
April		4215	4215
May		4414	4414
June	404	4099	4503
July	1884	3399	5283
August	1539	3213	4752
September	875	3297	4172
October	727	3788	4515
November	717	3566	4283
December	1455	2831	4286
Water Year Total	7601	45252	52853

New Hartford Water Company, Year End December 31, 2002

Monthly Production Data

Month	Monthly Produced or Purchased (In 1,000's of Gallons)		
	Pine Meadow Well	Black Bridge Well	Total
January	946	3129	4075
February	825	3684	4509
March	851	4321	5172
April	583	4414	4997
May	612	4744	5356
June	655	4860	5515
July	1020	4940	5960
August	1621	4430	6051
September	3297	2503	5800
October	2104	3365	5469
November	1881	3116	4997
December	1979	3298	5277
Water Year Total	16373	46804	63177

New Hartford Water Company, Year End December 31, 2003

Monthly Production Data

Month	Monthly Produced or Purchased (in 1,000's of Gallons)		
	Pine Meadow Well	Black Bridge Well	Total
January	2596	2954	5550
February	2489	3019	5508
March	3445	3100	6545
April	2193	1962	4155
May	564	3213	3777
June	815	2721	3536
July	486	3394	3880
August	980	2864	3844
September	3207	3640	6847
October	2883	4211	7094
November	535	3497	4032
December	431	3682	4113
Water Year Total	20623	38257	58880

New Hartford Water Company, Year End December 31, 2004

Monthly Production Data

Month	Monthly Produced or Purchased (in 1,000's of Gallons)		
	Pine Meadow Well	Black Bridge Well	Total
January	617	3011	3628
February	590	2804	3394
March	598	2865	3463
April	593	2455	3048
May	666	2807	3473
June	631	3018	3649
July	620	2965	3585
August	675	3042	3717
September	810	2628	3438
October	595	2832	3427
November	876	3057	3933
December	483	3494	3977
Water Year Total	7753 ~~5799~~	34978 ~~25595~~	42731 ~~31394~~

APPENDIX I

SYSTEM FACT SHEET

SYSTEM FACT SHEET- WATER COMPANIES
(All production and demand information in gallons)
(use separate fact sheet for each system)
NEW HARTFORD WATER COMPANY

To be filled out for both Water Conservation Plans and Emergency Contingency Plans.

Are you currently under any agency order or consent agreement? If yes, describe **No**

Number of service connections: 425+124=549[1] Estimated population in service area: 1343*

Average annual number of new service connections added over the last 5 years: 11

Average annual demand: 42,731,000[2] Annual average day demand: 117,000 gpd
Max. month average day demand: 128,000 gpd Max. one day (peak) demand: 148,000 gpd
Max. month to average day ratio: 1.09 Peak day to average day ratio: 1.26
Peak hour demand: NA

System safe yield and available supply or treatment capacity: 450,000 gpd *(MDD) 378,000 gpd (ADD)*

Estimate non-revenue water for each of the last five years:

Thous galls.	Year: 2000	Year: 2001	Year: 2002	Year: 2003	Year: 2004
Quantity	19,276	17,847	24,550	27,802	8,018
Percentage	39%	34%	39%	47%	19%

	Residential**	Commercial	Industrial	Institutional	Public Authority	Non-Revenue	Total
Average annual demand (Thous Galls.)	26,067	5,595	2,697	N/A	354	8,018	42,731
% of total water use	61%	13%	6%	N/A	1%	19%	100%
Number of service connections	375	39	8	N/A	4	N/A	426
Number of connections metered	All	All	All	N/A	All	N/A	426
Water rates	***						
Annual revenues	NA	NA	NA	N/A	N/A	N/A	NA

** Includes apartments and condominiums.
*** See attached rate schedule

List local public officials, interest groups or individuals to be involved in assessment of water conservation measures:

William Baxter, First Selectman, Town of New Hartford

* Residential Only
NA = Not Available N/A = Not Applicable
1. The River Run Condominium complex is a wholesale purchaser, retailing to 124 users. It is counted as one service connection (number of individual units served) has been increased by 124 to equal 549.
2. Calender year 2004.

SYSTEM FACT SHEET- WATER COMPANIES
(continued)

List high-volume users by name or type of use, their existing water use, and the major uses of water in their premise (at least the top 10 water users and all those using 5% or more of the system's water.

High-Volume Users	Average Day Demand (gpd)	Uses of Water
River Run Condominiums	10,273	Residential
Prestige Cleaners	2,948	Commercial
Soap & Suds	1,454	Commercial
Comm. Prop. Landlord	1,418	Commercial
Hitchcock Chair Co.	1,407	Industrial
Hurley Manufacturing	1,347	Industrial
Executive Greetings	1,315	Industrial
Chatterleys	896	Commercial
Carver Properties LLC	730	Residential
Comm. Prop. Landlord	694	Commercial

APPENDIX J

AVAILABLE TECHNICAL PUBLICATIONS ON WATER CONSERVATION

The following technical publications are available:

Conserving Water: A Guide for Residential Audits (CT DEP)

Conserving Water: A Guide for Commercial Water Audits (CT DEP)

Conserving Water: A Guide for Industrial Water Audits (CT DEP)

Conserving Water: A Guide for Institutional Water Audits (CT DEP)

Conserving Water: Plan on It (CT DPH)

Water Audit and Leak Detection Guidebook (CA Dept. of Water Resources)

Water Conservation (AWWA – William O. Maddaus)

Business & Industry Water Use – A Self-Conducted Water Audit for Large and Small Businesses (Mesa Consolidated Water District)

APPENDIX K

Approved Rate Structure

2005 - 2006

LEGAL NOTICE
TOWN OF NEW HARTFORD
WATER POLLUTION CONTROL AUTHORITY

At a special meeting held at the New Hartford Town Hall on June 23, 2005, the New Hartford Water Pollution Control Authority unanimously passed a vote which set the Water and Sewer Rates for the fiscal year 2005-2006 as follows:

APPROVED RATES 2005-2006

WATER CHARGES

BASIC SERVICE

METER SIZE	CHARGE PER QUARTER
3/4" X 5/8"	$25.20
3/4"	37.80
1"	63.00
1 1/2"	126.00
2"	201.60
3"	378.00
4"	630.00
6"	1260.00

WATER USAGE CHARGE

All water usage will be billed at $5.86 per thousand gallons.

FIRE PROTECTION CHARGES

Public Fire Service Charges.....110.00 per hydrant per quarter
Private Fire Service Charges.....110.00 per hydrant per quarter
Sprinkler heads per quarter.....50 cents each

SPECIAL CHARGES

To turn service off: **no charge**
To turn service on after repairs:
During regular working hours*: **$24.00**
After regular working hours: **$90.00 per hr (3 hr minimum)**
To turn service on and install meter:
For new customers during regular working hours*: **no charge**
After regular working hours: **$90.00 per hr (3 hr minimum)**
To turn on service temporarily disconnected, (including seasonal customers and termination for non-payment):
During regular working hours*: **$24.00**
After regular working hours: **$90.00 per hr (3 hr minimum)**
Frozen Meter Charges
Remove and install replacement meter, repair damaged meter:
During regular working hours*: **$90.00**
After regular working hours: **$90.00 plus $90 per hr (3 hr minimum)**

SEWER USAGE CHARGES

Usage Rate.....$10.97 per thousand gallons
Minimum Charges:
Metered customers: $68.56 (6250 gallons) per quarter
Non-metered customers: $197.46 (18,000 gallons) per quarter

* Regular working hours: Monday through Friday 8:00 AM to 4:30 PM.

APPENDIX L

SOURCE PROTECTION / WATER CONSERVATION

BILL STUFFER

WATER QUALITY AND SOURCE PROTECTION

...e 1999, under the Source Water Assess...t Program, the Connecticut Department of Public Health (DPH) will begin performing source water assessments of all public drinking water supplies in Connecticut. The assessments will include:

- A delineation (maps) of the land area surrounding surface water (reservoir) and groundwater (well) supplies from which the supply receives water
- An inventory of all potential sources of contamination within the delineated area
- An analysis of the susceptibility of the water supply source to potential contamination.

The DPH will seek comments from the public while these assessments are being performed. All of the assessments are due to be completed by 2003. Once completed, the assessment reports will be made available to the public.

Also beginning in 1999, all water utilities will provide their drinking water customers with annual water quality reports. As required by the Safe Drinking Water Act Amendments of 1996 (SWDA), this report will include information on:

- Your drinking water supply
- Terms used in the report
- Levels of regulated contaminants found in the water and their associated drinking water standards
- Information on health effects related to any contaminant which exceeds its drinking water standard
- Information on levels of unregulated contaminants specified by the Environmental Protection Agency (EPA)

Sources of Information

There are many sources of information available about drinking water quality and source protection:

- Calling your local water utility, health department or land use control agencies;
- Local or regional watershed associations;
- Environmental organizations

You may also want to contact the following sources:
Connecticut DPH, Water Supplies Section
(860) 509-7333
Connecticut DEP, Bureau of Water Management
(860) 424-3704
Connecticut DEP, Natural Resources Center
(860) 424-3540
Natural Resources Conservation Service
1-800-805-8313
EPA Drinking Water Hotline
1-800-426-4791
There are also numerous websites such as www.USEPA.gov.

Printed on recycled paper.

YOUR DRINKING WATER Protect It! Conserve It!

The Source Water Assessment Program (SWAP) and water conservation are important tools to help ensure high quality drinking water. Connecticut has some of the best laws, regulations, and programs in the United States for protecting drinking water supply sources. You can help to protect and conserve your public drinking water supply by being an informed consumer.

Public involvement in decisions by local and state agencies regarding land use activities in water supply source areas will help protect the public water supplies now and into the future.

The following programs have been developed to protect and preserve your drinking water supplies and make important water quality information available to the public.

We encourage you to review the information that will be provided to you.

CONSERVATION

The largest amount of water you use indoors is spent just flushing the toilet. Toilets are also the location for the greatest number of indoor leaks. You can find leaks in your toilet and SAVE UP TO 100 GALLONS OF WATER PER DAY!

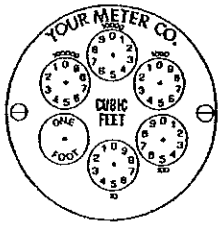
- Toilet leaks are hard to find and normally are caused by a problem with one or more of the following parts: bad flapper valve, flapper valve seat, ballcock valve, float arm, or over-flow tube.
- Check for leaky toilets (put a drop of food coloring in the tank and let it sit - if the water in the bowl turns color, you have a leak)
- Consider replacing your five gallon per flush toilet with an efficient 1.6 gallon per flush unit. This will permanently cut your water consumption by 25%.

Faucet leaks are easy to detect. If it drips, or worse, continues to keep running after you shut it off, it needs to be fixed. If the dripping water is hot, it is costing you money to heat the water.

Water dripping from the shower head when the shower is off or running out of the spout when the shower is on is usually caused by bad washers or seats which need replacing. Fix leaking fixtures as soon as possible. A leaking faucet or toilet can dribble away thousands of gallons of water a year.

SIZE OF LEAK	WATER WASTED
1/32" drip	18,500 gal. every 3 months
1/16" trickle	74,000 gal. every 3 months
1/8" stream	296,000 gal. every 3 months
1/4" stream	1,181,000 gal. every 3 months

Use your water meter to check for leaks. Start by making sure that all water-using appliances are not being used, including automatic ice makers. If your meter has a low-flow indicator (leak detector), it should not be moving. If it is, water is passing through the meter and there is a leak. Otherwise, note the meter reading on the dial and then check again after an hour. If the meter has moved, then you have some leaks that should be repaired. Fixing leaks saves money.



More Conservation Measures

- Run only full loads in dishwashers and washing machines. Rinse all handwashed dishes at once.
- Turn off the faucet while brushing your teeth or shaving.
- Store a jug of ice water in the refrigerator for a cold drink.
- Use low-flow shower heads, faucet aerators or flow restrictors. Another new device which is becoming available on the market is a high efficiency clothes washer.
- Outside watering - The most effective time to water is early in the morning. Never water your lawn on windy or rainy days. Use an efficient, slow soaking irrigation system. Never water the driveways or sidewalks.

Doing It Together...
Working with state regulators, public health professionals and other water utilities, we have a strong commitment to protect Connecticut's drinking water supplies and to inform consumers about water quality and conservation issues.

Your utility professionals through the Connecticut Section of the American Water Works Association, dedicated to providing clean, safe drinking water.

APPENDIX M

Annual Water System Evaluation Worksheet

New Hartford Water Company

2004

ANNUAL WATER SYSTEM EVALUATION WORKSHEET

For New Hartford Water Company – 2004

Line	Item	Water Volumes (in 1000's of Gallons) Subtotal
1	Uncorrected Total Water Supply to the Distribution System (Total of Source Meters)	42,731
2	Adjustments to Total Water Supply	
	2A Source Meter Error (+ or -)	0
	2B Change in Reservoir and Tank Storage (+ or -)	0
	2C Other Contributions or Losses	0
3	Total Adjustments to Total Water Supply (+ or -) (Add lines 2A, 2B, and 2C)	0
4	Adjusted Total Water Supplied to the Distribution System (Add line 1 and line 3	42,731
5	Uncorrected Total Metered Water Use	34,713
6	Adjustments Due to Meter Reading Lag Time (+ or -)	0
7	Subtotal: Metered Deliveries (Add line 5 and line 6)	34,713
8	Total Sales Meter Error and System Services Meter Errors (+ or -)	0
9	Corrected Total Metered Water Deliveries (Add line 7 and line 8)	34,713
10	Corrected Total Unmetered Water (Subtract line 9 from line 4)	8,018

ANNUAL WATER SYSTEM EVALUATION WORKSHEET

For New Hartford Water Company – 2004

Line	Item	Water Volumes (in 1000's of Gallons) Subtotal
11	Authorized Unmetered Water Uses	
	11A Firefighting and Firefighting Training	251
	11B Main Flushing	37
	11C Storm Drain Flushing	0
	11D Sewer Cleaning	0
	11E Street Cleaning	65
	11F Landscaping in Large Public Areas	
	Parks and Playgrounds	0
	Cemeteries	0
	Other Landscaping	0
	11G Swimming Pools	0
	11H Construction Sites	0
	11I Water Quality and Other Testing (pressure testing pipe, water quality, etc.)	0
	11J Process Water at Treatment Plants (includes usage at the town wastewater plant)	4,606
	11K Other Unmetered Uses	0
12	Total Authorized Unmetered Water (Add lines 11A through 11K)	4,959
13	Total Water Losses (Subtract line 12 from line 10)	3,059

ANNUAL WATER SYSTEM EVALUATION WORKSHEET

For New Hartford Water Company – 2004

Line	Item	Water Volumes (in 1000's of Gallons) Subtotal
14	Identified Water Losses	
	14A Accounting Procedure Errors	0
	14B Illegal Connections	0
	14C Malfunctioning Distribution System Controls	0
	14D Discovered Leaks	0
	14E Theft	0
15	Total Identified Water Losses (Add lines 14A through 14E)	0
16	Potential Water System Leakage (Subtract line 15 from line 13)	3,059
17	Unavoidable Leakage Rate (Multiply Miles of Main by 1500 GPD per Mile)	6,335
18	Recoverable Leakage (Subtract line 17 from line 16)	-3,276
19	Excess Leakage Rate (Line 18 divided by miles of main)	0

APPENDIX N

NEW HARTFORD WATER COMPANY

Long Term Improvement Program

APPENDIX N

NEW HARTFORD WATER COMPANY

Long Term Improvement Program

The following long term improvement program is divided into three phases to address system upgrades, replacements and source protection that will be required through the 20 and 50 year planning horizons. The first phase addresses source protection and water main installations and replacements to enhance system fire flows and water quality.

The water main projects are listed in order of priority, for each area, and expand out from previous system improvements. The first area is around the Town Hall, then in the Pine Meadow area followed by the Greenwoods Road area north of the river. These projects may be completed separately or combined into a larger multi-staged project depending on the availability of funding.

The source protection project is the same as was proposed in the 1999 Master Plan prepared by Fay, Spofford & Thorndike. It entails removal of the septic system from 5a Church Street, which is less than 200 feet from the Pine Meadow Well, which violates the Public Health Code. A low pressure force main should be run from the home to the sewer main that is in the former railroad right of way. The Public Health Code also requires a sanitary easement over all areas within 200 of the well. This encompasses six properties around the Pine Meadow Well. These source protection projects can be addressed separately from the distribution projects.

All dollar amounts are in 2005 dollars.

Phase I Distribution Improvements

Item	Description	Estimated Cost
1.	Install 600' 12" main on Main Street (SR44), from SR 219 north to Bridge Street (improves fire flow near Town Hall and replaces old 6" and 8" mains).	$ 120,000
2.	Install 300' 8" main from Bridge Street up Steele Road, then 700' 8" along Church Street, looped back to Main Street, Total of 1000' 8" main to be installed. (further improves fire flows and replaces old 4" and 6")	115,000
3.	Install 1400' 8" main from Black Bridge Road along Ten Street and Wickett out to Main Street (SR44). (improves fire flows near factory, replaces old 4" and 6")	160,000
4.	Install 2000' 8" main from termination of main in #3 above south along SR44, tie into 10" main at Pine Meadow just south of old railroad ROW to loop mains. (further improves fire flows, loops mains for water quality replaces old 4" and 6")	320,000
5.	Install 1000' 8" main along Holcomb Hill Road from Greenwoods Road to Loomis Heights (improves fire flows to Holcomb Hill Rd., Prospect St., and Loomis Heights, Replaces old 4")	115,000
Total Phase I Distribution Improvements		**$ 1,030,000**

Phase I Source Protection Improvements

Item	Description	Estimated Cost
1.	Secure easement through the property of #11 Church Street Pine Meadow, and install 500 feet of 8" force main and grinder pump at #5a Church Street Pine Meadow (eliminates septic system within 200' of Pine Meadow Well)	$ 75,000
2.	Secure sanitary easements with property owners within 200' of Pine Meadow Well. (provides additional sanitary protection)	125,000
Total Phase I Source Protection Improvements		**$ 200,000**

Phase II Distribution Improvements

(These projects may be completed in any order, there is no priority sequence, they all involve replacement of old undersized, unlined cast iron mains, which will improve fire flows and maintain water quality throughout the system)

Item	Description	Estimated Cost
1.	Replace 900' of 4" main on Brook Street from Steele Road to SR219 to Main Street with 8" main.	$ 110,000
2.	Replace 1800' 4" main on High Street from Steele Road to Main Street and 200' on Main Street to tie in at SR219 (Total of 2000' 8" main to be installed)	240,000
3.	Replace 1500' of 6" main on Wickett Street, from Black Bridge Road to Main Street, with 8" main.	175,000
4.	Replace 1200' of 6" main on Church Street Pine Meadow, with 8" main.	140,000
5.	Replace 1100' of 4" main on Prospect Street from SR219 to Holcomb Hill Road, with 8" main.	125,000
6.	Replace 3000' of 6" main on Cottage Street, with 8" main.	345,000
7.	Replace 2300' of 4" and 6" on Main Street (SR44), north of Bridge Street, with 8" main.	345,000
8.	Replace 300' of 4" main north of Bridge Street, paralleling the river, with 8" main.	20,000
Total Phase II Distribution Improvements		**$ 1,500,000**

Phase III Distribution Improvements

(These projects entail cleaning and lining the 8" main in Main Street (SR44), which when completed, allows for parallel movement of water on each side of the Farmington River. The ability to have improved flows in these sections of main becomes important if one of the river crossings is out of service, it does not, however require the expense of complete replacement.)

Item	Description	Estimated Cost
1.	Clean and line 1600' of 8" main on Main Street (SR44), from High Street to Wickett Street.	$ 100,000
2.	Clean and line 1300' of 8" main on Main Street (SR44), from Wickett Street south to Church Street Pine Meadow.	90,000
3.	Clean and line 700' of 8" main on Main Street (SR44), from Church Street Pine Meadow, south to Wickett Street.	50,000
Total Phase III Distribution Improvements		**$ 240,000**

APPENDIX O

Priority Service List

Certificate of Response Plan Availability for Sabotage and Similar Attacks

Planning Guidance for Emergency Contingency Plans

Guidance Document Tables

New Hartford Water Company

Priority Service List

Name	Address	Telephone
New Hartford Town Hall	530 Main Street	860-379-3389
New Hartford Town Garage	9 Greenwoods Road	860-379-0351
New Hartford Elementary School	40 Wickett Street	860-379-0713
New Hartford Firehouse Station 1	Greenwoods Road	860-379-4936
Pine Meadow Firehouse	Main Street	860-379-8014
Giant Steps Day Care	425 Main Street	860-738-1270

CERTIFICATION OF RESPONSE PLAN AVAILABILITY FOR SABOTAGE AND SIMILAR ATTACKS

I hereby certify that the **Town of New Hartford** has developed a plan to respond to sabotage and other similar types of attacks on its water supply system.

William F. Baxter

Signature of Company Officer

William F. Baxter, First Selectman

WATER USE RESTRICTIONS IN EFFECT

Municipality	Ordinances	Restrictions

NOT APPLICABLE

IMPLEMENTATION OF EMERGENCY CONTINGENCY PLAN

Needs

	Actions	Who	When	Cost	Results/Remarks
A. Vulnerability assessment					
B. Notification and Communication					
C. Priority of Responses					
D. Inventory of Equipment, Supplies, and Personnel					
E. Identification of Emergency Sources					
F. Mitigation Situations					
G. Training Program					
H. Trigger Levels and Responses					
I. Recovery Stages					

PRIORITY SERVICE LIST*

Individuals/organizations located at the following service connections are critically dependent upon an uninterrupted supply of water.. In the event of an emergency affecting their primary source, the following aaction must be taken:

Notify the customer immediately. Verify that the ssecond source, if any, is functioning.
Take the indicated emergency action, if required.

Name Address Telephone Number	Reason for Requesting Priority Service	Alternative Source Available	Emergency Action(s) To Be Taken	Estimate of Quantity Needed (GPD)
1.		☐ Yes ☐ No		
2.		☐ Yes ☐ No		
3.		☐ Yes ☐ No		
4.		☐ Yes ☐ No		
5.		☐ Yes ☐ No		

Approved: _____ Date: _____

* To be completed and used by water system personnel and included in plan.

** Use additional copies of this page if there are more than five individuals/organizations on your priority service list.

DISASTER PROBABILTY AND SEVERITY

SECTION 1	SECTION 2		
Types of Disasters	Probability	Severity	Information Source
Natural			
☐ Earthquake			
☐ Severe Wind Storm			
☐ Flooding			
☐ Forest or Brush Fire			
☐ Volcanic Eruption			
☐ Ice Storm			
☐ Drought			
☐ Other_____			
☐ Other_____			
☐ Other_____			
☐ Other_____			
Man-Made			
☐ Spills			
☐ Riot or Civil Disorder			
☐ Industrial Discharge			
☐ Nuclear Warfare			
☐ Bomb Blast			
☐ Other_____			
☐ Other_____			
☐ Other_____			
☐ Other_____			

DISASTER EFFECTS

Possible Affected System Components / Disaster Type								

VULNERABILITY ANALYSIS

Facility _____

Failure Description _____

1. Failure Detection

Is failure detectable by:

a) Telemetery System? ☐ Yes ☐ No

b) Routine Inspection? ☐ Yes ☐ No

c) Service Complaint? ☐ Yes ☐ No

2. System Impact

a) Is facility a source? ☐ Yes ☐ No

b) Does facility have an altemate operating mode? ☐ Yes ☐ No

c) If so, is altemate facility a full replacement? ☐ Yes ☐ No

d) Does failure cause:

i. Loss of service? ☐ Yes ☐ No

ii. Loss of fire protection? ☐ Yes ☐ No

iii. Low service pressure? ☐ Yes ☐ No

iv. Other effects to system? ☐ Yes ☐ No

Describe: _____

_____

v. Damage of property? ☐ Yes ☐ No

Describe: _____

e) Does failure cause loss of storage capacity? ☐ Yes ☐ No

f) Does failure degrade water quality? ☐ Yes ☐ No

g) Are other system facilities affacted? ☐ Yes ☐ No

List _____

_____

VULNERABILITY ANALYSIS

3. Facility Vulnerability

a) Is routine inspection and maintenance required? ☐ Yes ☐ No

Frequency of Inspection _____

Frequency of Maintenance _____

b) Does facility require electric power? ☐ Yes ☐ No

Failure History _____

c) Auxiliary power available? ☐ Yes ☐ No

d) Is facility protected against vandalism? ☐ Yes ☐ No

Describe _____

e) Is facility protected against vehicle accident? ☐ Yes ☐ No

f) Does this facility require special protection from:

i. Flood ☐ Yes ☐ No

ii. High wind ☐ Yes ☐ No

iii. Cold weather ☐ Yes ☐ No

iv. Hot weather ☐ Yes ☐ No

v. Fire ☐ Yes ☐ No

vi. Other ☐ Yes ☐ No

g) Under which disaster conditions listed on Worksheet 4 *(Disaster Probability and Severity)* could this facility potentially fail? _____

h) Does normal operation depend upon chemicals ☐ Yes ☐ No

If yes, list _____

If yes, list means of transportation _____

_____

_____

i) Is the facility susceptible o other impacts?

i. Debris in water ☐ Yes ☐ No

ii. Low pressure ☐ Yes ☐ No

iii. High pressure ☐ Yes ☐ No

iv. Other _____

j) Is facility dependent on other system facilities? ☐ Yes ☐ No

List _____

_____

_____

4. Facility - Supervisory Control Dependency

a) Is facility dependent on telemetry for

i. Control ☐ Yes ☐ No

ii. Status reporting ☐ Yes ☐ No

iii. Data logging ☐ Yes ☐ No

iv. Other _____

b) When control fails, does component

i. Stop? ☐ Yes ☐ No

ii Remain in last command position? ☐ Yes ☐ No

iii. Revert to local control? ☐ Yes ☐ No

5. Personnel

a) Can normal repair be undertaken by:

i. All personnel? ☐ Yes ☐ No

ii. A special few? ☐ Yes ☐ No

iii. One? ☐ Yes ☐ No

iv. Outside Construction? ☐ Yes ☐ No

VULNERABILITY ANALYSIS

Names of construction firms _____

6. Remarks

VULNERABILIT NALYSIS - SPILLS

	Yes	No	Contact	Possible	Impacts	Sensitive System Areas	Material Characterisitics				
							Nature	Name	Formula	Volume Involved	Toxic Level
A. 1. Major highways above intake											
2. Map showing major highways											
3. Topographic map showing drainage											
4. List of all carriers											
5. List of major hazardous materials											
6. Phone numbers for all major carriers											
B. 1. County roads above intake											
2. Map showing location											
3. Map showing topography											
4. List of carriers											
5. List of hazardous materials											
6. Phone numbers for all carriers											
C 1. Pipe lines crossing watershed											
2. Map showing location											
3. Map showing topography											
4. List of hazardous materials											
5. Phone numbers for contact											
D. 1. Railroads crossing watershed											
2. Map showing location											
3. Map showing topography											
4. List of railroad companies											
5. Location of clean-up crews											
6. Hazardous materials list											

VULNERABILITY ANALYSIS - SPILLS

	Yes	No	Contact	Possible	Impacts	Sensitive System Areas	Material Characterisitics: Nature	Name	Formula	Volume Involved	Toxic Level
E. 1. Waterborne carriers in watershed											
2. Map showing route											
3. List of hazardous materials											
4. List of contact persons											
5. List of clean-up crews											
6. Fixed storage in watershed											
7. Map showing location											
8. Topographic map											
9. List of hazardous materials											
10. Contact list											

VULNERABILITY ANALYSIS - CHLORINATION

Normal Operation

Chlorination source: Hypochlorite (liquid) _____ 1 Ton Cylinders _____
100 lb. Cylinders _____ 150 lb. Cylinders _____

System Feed: Liquid _____ Gas _____

Feeders: 1 Location _____ Make _____ Model _____
2 Location _____ Make _____ Model _____

Dosage: _____ ppm

Consumption: _____ lbs/day

Normal stock of chlorine: _____ Cylinders
_____ 1 Ton Cylinders
_____ Gallons Hypochlorite

Supplies: _____
_____
_____

Emergency Need Call: _____
Phone: _____

Other possible sources of supply in emergency: _____
_____
_____
_____

Emergency Operation

Emergency repair kit located at: _____
_____
_____
Phone: _____

Emergency chlorination equipment at: _____
_____
_____
Phone: _____
Type: _____

Emergency Type: _____

Effect: _____

Action: _____

Areas affected by cylinder of container leakage:
1 _____
2 _____
3 _____

MOST VULNERABLE FACILITIES

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____

DRAWING NO. 1

Distribution Map of the New Hartford System

BARKHAMSTED
NEW HARTFORD

NEW HARTFORD

GREENWOODS INDUSTRIAL PARK
TANK #2
CAPACITY: 0.175 MG
OVERFLOW EL: 715.0 USGS

GREENWOODS INDUSTRIAL PARK
TANK #1
CAPACITY: 0.49 MG
OVERFLOW EL: 715.0 USGS

GREENWOODS INDUSTRIAL PARK

LAKE MC DONOUGH

NEW HARTFORD
CANTON

ROUTE 219 PRV

BLACK BRIDGE WELL & TREATMENT FACILITY

ROUTE 219 BOOSTER STATION (EMERGENCY)

BARKHAMSTED AQUEDUCT SUPPLY

STEELE ROAD IN-LINE BOOSTER

PINE MEADOW WELL

SEWER PLANT

RIVER RUN CONDOS

US ROUTE 44

STATE ROUTE 219

FARMINGTON RIVER

LEGEND

- GATE VALVE
- CLOSED GATE VALVE
- BLOW-OFF
- REDUCER
- 99 AB GATEBOOK NUMBER
- PUBLIC FIRE HYDRANT
- PRIVATE FIRE HYDRANT
- CWC FIRE HYDRANT
- TANK
- CAP AND PLUG
- PUMP STATION AND PRV'S
- WELL
- COMPANY OWNED WATERMAIN
- NON-COMPANY OWNED WATERMAIN

THE CONNECTICUT WATER COMPANY
DISTRIBUTION MAP

NAUGATUCK REGION – NEW HARTFORD SYSTEM

NORTH

ConnecticutWater

93 WEST MAIN STREET
CLINTON, CT 06413-1600

0 400 800
SCALE: 1"=400'

Updated To: AUGUST 2005
Date Last Revised: 10/25/05
Revised By: LLO
Checked By:

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