CONNECTICUT VALLEY HOSPITAL
MIDDLETOWN, CONNECTICUT

CONNECTICUT ENVIRONMENTAL POLICY ACT
ENVIRONMENTAL IMPACT EVALUATION

DRAFT
November 1997

INFRASTRUCTURE CONTRACT NO. BI-2B-1005-R, TASK NO. 5
DPW PROJECT NO. BI-I-489

SPONSOR AGENCY:
State of Connecticut Department of Mental Health and Addiction Services

PARTICIPATING AGENCY:
State of Connecticut Department of Public Works

PREPARED BY:
Frederic R. Harris, Inc.

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Connecticut Valley Hospital
Environmental Impact Evaluation

REVISED DATE OF PUBLIC HEARING

The public hearing regarding the Environmental Impact Evaluation for certain projects at the Connecticut Valley Hospital in Middletown, Connecticut (State Department of Public Works Project Number BI-I-489) has been rescheduled to:

Wednesday, December 17, 1997, 7:00 P.M.
Common Council Chambers, Municipal Building, 245 deKoven Drive, Middletown

The hearing will be held in accordance with Chapter 439 of the Connecticut General Statutes as revised and the Connecticut Environmental Policy Act. All persons interested in this matter are welcome to attend. Deaf or hearing impaired persons wishing to attend this public hearing and requiring an interpreter may make arrangements by calling (860) 262-5300.

A copy of the Draft Environmental Impact Evaluation is available for public inspection at each of the following locations: (1) Office of the City Clerk, Municipal Building, 245 deKoven Drive, Middletown, Connecticut; (2) The Russell Library; 123 Broad Street, Middletown, Connecticut; and (3) Engineering Services, Dutton Building, 1st floor, corner of Silver Street and Holmes Drive, Connecticut Valley Hospital, Middletown, Connecticut.

Written comments in place of, or in addition to, oral comments made at the hearing concerning the Environmental Impact Evaluation are invited. Written comments must be submitted no later than December 28, 1997, addressed to:

Mr. Michael Lucas III, Chief of Engineering Services 2
State of Connecticut
Department of Mental Health and Addiction Services
P.O. Box 351
Middletown, CT 06457
(860) 262-5300; fax (860) 262-5307

LIST OF ABBREVIATIONS

Abbreviation	Description
lf	Lineal feet
LOS	Level of Service
mg	Million gallons
mgd	Million gallons per day
MSW	Municipal solid waste
MW	Megawatts
NAC	Noise Abatement Criteria
NAAQS	National Ambient Air Quality Standards
NGVD	National Geodetic Vertical Datum
No.	Number
NO_2	Nitrogen dioxide
NO_X	Oxides of Nitrogen
O_3	Ozone
OPM	State of Connecticut Office of Policy and Management
OSHA	Occupational Safety and Health Administration
Pb	Lead
PILOT	Payments in lieu of taxes
PM_{10}	Particulate matter
ppm	Parts per million
PSHP	Priority State Hospital Project
psi	Pounds per square inch
psig	Pounds per square inch gas
RCP	Reinforced concrete pipe
RCRA	Resource Conservation and Recovery Act of 1976 (42 USC 6901 et sequens)
RCSA	Regulations of Connecticut State Agencies
R.O.W.	Right-of-way
s.f.	Square feet
SHPO	State Historic Preservation Officer
SNET	Southern New England Telecommunications Company
SO_2	Sulfur dioxides
sp.	Species (singular)
spp.	Species (plural)
STC	State Traffic Commission
TPH	Total petroleum hydrocarbons
USDA	United States Department of Agriculture
USGS	United States Geological Survey
UST	Underground Storage Tank
VOC	Volatile Organic Compound
VPH	Vehicles per hour
WQS	Water Quality Standards

Executive Summary

Project Name	Connecticut Valley Hospital, Middletown, Connecticut
Project Numbers	DMHAS #4403-489, DPW #BI-I-489
Contract Number	BI-2B-1005R (Task 5)
Date	November, 1997
Sponsoring Agency	State of Connecticut Department of Mental Health and Addiction Services
Participating Agency	State of Connecticut Department of Public Works
Preparer	Frederic R. Harris, Inc.

Project Description

This document addresses state actions associated with the transfer of programs from the former Fairfield Hills Hospital and former Norwich Hospital to consolidate with those at Connecticut Valley Hospital (CVH) in Middletown, Connecticut. From July 1, 1995 to November 15, 1996 CVH staff increased from 949 to 1336, and inpatients from 328 to 472 (of which approximately 125 patients were transferred from the other hospitals). Capital projects associated with the consolidation program, in addition to certain other projects unrelated to consolidation, are addressed in this Environmental Impact Evaluation (EIE) as listed in Table 1 (Page 1-12).

Building renovation projects associated with the consolidation program are at various levels of completion. Certain consolidation-related renovation projects are presently on hold pending completion of the Connecticut Environmental Policy Act (CEPA) environmental assessment process (in accordance with a temporary injunction issued by the State Superior Court on August 9, 1996).

Beyond building renovations and improvements, several consolidation-related projects are proposed on the CVH grounds. An outdoor recreational complex near Merritt Hall (Project No. BI-I-475) is proposed to feature two basketball courts, two tennis courts, and two sand volleyball courts. Other site work includes a new telecommunications system and communications network, campus lighting improvements, and utility analysis, testing and repairs.

The single largest proposed site development project is an internal roadway and parking system for the campus area south of Silver Street. The roadway and parking concept plan is contingent upon certain building demolitions. Other buildings are proposed to be demolished for safety and campus planning purposes. A listing of these buildings is provided in Table 2 (Page 1-13).

Statement of Purpose & Need

The State Legislature, with Public Act 95-257, specifically ordered the Commissioner of the Department of Mental Health and Addiction Services (DMHAS) to develop and implement a plan for the closure of the state-operated programs at Fairfield Hills Hospital and at Norwich Hospital and the consolidation of those programs at CVH. Therefore, DMHAS's purpose in consolidating was to comply with the law. Accordingly psychiatric, addiction, and forensic inpatient programs were transferred from Fairfield Hills and Norwich to CVH.

A number of building renovations were necessary to accommodate the impact of the patients and staff transferred from the other state hospitals under the consolidation program. The renovations of patient-occupied buildings address housing and treatment needs and accommodate specific programs. Other renovations meet the needs of administrative functions and patient support services. Still other renovations meet fire safety, public and patient safety, and Americans with Disabilities Act (ADA) requirements, or basic maintenance issues.

The proposed outdoor recreational complex near Merritt Hall will allow patients to enjoy the health benefits that physical exercise can offer. At present, no outdoor athletic facilities exist on the North Campus.

The proposed roadway and parking project will close Holmes Drive to through-traffic, increasing the safety of CVH patients, some of whom are hearing or sight impaired or have other disabilities. The new roadway system would also delineate pedestrian safe zones and allow for better monitoring of campus access. The project would address several functional deficiencies in the existing roadway and parking system.

Background

Three State hospitals once comprised the entire State system of long-term inpatient mental health care: Fairfield Hills Hospital (in Newtown), Norwich Hospital (in Norwich), and CVH. Over the years, patient relocations from those hospitals into community settings dramatically decreased inpatient populations. It was proposed to close two state hospitals and consolidate inpatient behavioral health services at the remaining one to reduce duplication and costs to the state and to provide patients with better and more comprehensive mental health and substance abuse treatment.

There were several compelling reasons behind the decision to consolidate services at CVH. The age and condition of the facilities at Norwich ruled out consideration of that campus. Fairfield Hills would have required $14 million to accommodate consolidation at that site and the state would still have been required to bear the costs of operating two campuses, given that Whiting Forensic and Riverview Hospital for Children were located at the campus of CVH. CVH was centrally located, making it the best location for patients and families and the most cost effective for the state in terms of transportation costs. It was therefore determined that CVH was the only

site that offered the opportunity to achieve efficiencies, cost savings and the continued offering of the specialized services already located there.

Closure of two State mental health hospitals was proposed in February 1995 by Governor Rowland. Subsequently, the legislature passed Public Act 95-257 directing the Department of Mental Health and Addiction Services to develop and implement a plan for the closure of Fairfield Hills Hospital and Norwich Hospital and the consolidation of programs with those at CVH.

Alternatives Considered

Public Act 95-257 ordered DMHAS to consolidate its inpatient programs at CVH, leaving DMHAS with no alternative. *Discussion of alternatives herein is limited to those that are legal and technically feasible. Therefore, exploration of any alternatives to consolidation at CVH (including no action) is excluded from this document.*

An alternative campus configuration was considered which would center hospital activity in the South Campus. Shew/Dix/Beers Halls would be renovated as patient living and support areas, while other patient living areas would include Dutcher, Battell, and (New) Woodward Halls. The campus center also would involve new uses - some shared with the community - for Page, Noble, Haviland, and Stanley Halls together with the Cotter (Maintenance) Building, the Chapel, and dwellings on Holmes Drive. The North Campus would be available for non-hospital uses such as a state-operated waterfront park. However, it was unfeasible to provide sufficient bed space in the South Campus within the time frame needed to implement the consolidation plan. Merritt Hall renovations could provide adequate bed space and be performed within an acceptable time frame. South Campus alternative was therefore rejected in favor of the current campus configuration.

Various alternative roadway/parking arrangements for the campus area south of Silver Street were examined during the development of the proposed concept design shown in Figure 4 (Page 1-9). Earlier drafts of the plan are provided in Appendix D. Specific comments on the alternatives are provided in Section 2.

Benefits & Impacts

The state actions under review facilitate DMHAS's compliance with the legislative mandate to implement the consolidation plan. The actions allow the consolidation to be performed in a manner that is efficient, enhances the therapeutic environment of the hospital campus, and improves security and public safety.

Minor impacts to the natural environment will result from the construction of the proposed roadway and parking project and the recreational complex. Prime Farmland Soil (a classification of the Natural Resources Conservation Service) extending over around 10 acres would be disturbed by development, although none is within or abutting area under active cultivation. During the construction period for these projects, construction vehicles and equipment are

expected to cause temporary impacts from air and noise emissions, in addition to minor increased traffic volume. The construction of the proposed roadway/parking project and the athletic complex will displace some individual trees within the proposed work areas, however the great majority of the impacted area will be either on existing paved surface or lawn.

Buildings under consideration for removal are within a site listed in the National Register of Historic Places, and the buildings are individually listed both on the National Register and also the State Register of Historic Places. The removal of buildings and other structures on the main hospital campus would have an adverse effect on an important historic resource. Removals will be performed only where no feasible and prudent alternative can be identified.

Several buildings are outwardly dilapidated and may pose health hazards in terms of fire risk and vermin control. Where no feasible and prudent alternative exists, such public health concerns will be eliminated by building demolition. No alternatives to demolition exist for certain buildings that have been found to be structurally unstable (Old Weeks Hall, Ice House, and Old Pig Slaughter House).

The building demolitions, renovation projects, and site improvements will likely affect the CVH property's assessed value. The actual effect will be known after a revaluation of the CVH property anticipated in 1999. Payments in lieu of taxes (PILOT) to the city will be impacted by this revaluation in the fiscal year 1999-2000.

The proposed roadway and parking project is designed to safeguard CVH patients from vehicular traffic by closing Holmes Drive to through-traffic. In addition, the project is conceived and designed to improve the ability of the CVH police to monitor the campus perimeter and discourage unauthorized boundary infractions, thereby safeguarding both the patients and the public.

Certain renovation projects affect patient and public safety. The electronic security system installed in Dutcher Hall, under Project No. BI-MH-198 provides increased security. Other renovation projects have been designed specifically to meet current fire safety codes, improve patient and public safety, and meet Americans with Disabilities Act (ADA) requirements.

Licences, Permits, Certifications, and Approvals

The following list summarizes the licences, permits, certifications, and approvals which may be required for the completion of this project:

See Page No.

- Registration under General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities (Section 22a-430b CGS as amended by Public Act 91-263) 3-6
- Water Company Land Permit - Change in Use (Public Health Code Regulation Section 25-37d-1 et sequens) 3-6
- Floodplain Management Certification 3-11
- Registration under General Permit to Construct and/or Operate an Emergency Engine (22a-174-3 CGS) 3-28
- Alternative Work Practice approval from the State Department of Public Health (RCSA 19a-332a-11) 3-37
- Asbestos Abatement Notification (Section 19a-332a-3 RCSA) 3-37
- Special Waste Authorization (Section 22a-209-8 RCSA) 3-37
- State Traffic Commission Certificate (Section 14-311 CGS) 3-60

The sponsor agency will also solicit the approval of the State Historic Preservation Officer, Connecticut Historical Commission for the considered building demolitions (see Page 3-82).

Scoping Period

The project review under the CEPA process was initiated with an Early Notification and Scoping process, which was initiated with a Notice of Scoping distributed November 20, 1996. A subsequent inter-agency scoping meeting was held December 3, 1996 at Dutcher Hall, CVH. A separate public meeting was held on the evening of December 17, 1996 at the Common Council Chambers, City of Middletown Municipal Building. A copy of the Notice of Scoping, a report of the inter-agency meeting, a transcript of the public meeting, and written comments received during the scoping process are included in Appendix A.

Comment Period

The CEPA environmental assessment process provides interested parties with an opportunity to provide comments and other pertinent information that would help define environmental impacts, interpret the significance of such impacts, and evaluate alternatives. In order to accept spoken commentary from interested individuals, a public hearing has been scheduled for December ~~16~~ 17, 1997 at 7:00 P.M. in the Common Council Chambers, City of Middletown Municipal Building, 245 Dekoven Drive, Middletown. The sponsoring agency has advertised the public hearing in the Connecticut Law Journal and area newspapers.

Written comments on this document and any other pertinent information may be submitted to the below-listed agency contact by December 28, 1997. The sponsoring agency will review all such materials submitted by that date and will prepare responses to the substantive issues raised. The submitted materials and responses will be attached to a Record of Decision that will be forwarded to the State Office of Policy and Management (OPM), which will review the environmental impact evaluation and make a written determination as to its adequacy (in accordance with Section 22a-1(e), Connecticut General Statutes).

Agency Contact:

Mr. Michael Lucas III, Chief of Engineering Services 2
State of Connecticut
Department of Mental Health and Addiction Services
P.O. Box 351
Middletown, CT 06457
(860) 262-5300; fax (860) 262-5307

Distribution

Copies of this EIE were distributed to the following agency representatives:

Mayor, City of Middletown
Robert Dakers, State of Connecticut Department of Children and Families
Patricia Downs, State Department of Economic and Community Development
Chester Camarata, State Department of Economic and Community Development
Paul Schur, State of Connecticut Department of Public Health
Barbara Waters, State of Connecticut Department of Administrative Services
Edward T. Jones, State of Connecticut Department of Administrative Services
David A. Poirier, Ph.D., Connecticut Historical Commission
John Radacsi, State of Connecticut, Office of Policy and Management
Leonard D'Amico, State of Connecticut, Office of Policy and Management
Joseph Dipple, State Department of Agriculture
Michael Bartlett, U.S. Department of Interior, Fish and Wildlife Service
Karl Wagener, Council on Environmental Quality
Joseph Santaniello, State Traffic Commission
Edgar T. Hurle, State of Connecticut Department of Transportation
William Lawless, United States Army Corp of Engineers
Brian Emerick, State of Connecticut Department of Environmental Protection
Elizabeth Higgins, U. S. Environmental Protection Agency

SECTION 1
INTRODUCTION

This Environmental Impact Evaluation (EIE) presents full discussions of environmental impacts associated with certain state actions at the Connecticut Valley Hospital (CVH) in the City of Middletown, Connecticut. CVH is under the jurisdiction of the State of Connecticut Department of Mental Health and Addiction Services (DMHAS), which is the Sponsoring Agency of this EIE. The consulting firm Frederic R. Harris, Inc. prepared this document under contract to the State of Connecticut Department of Public Works (DPW), a participating agency in cooperation with DMHAS. A majority of the socioeconomic analysis included herein was contributed by the Institute for Health, Health Care Policy, and Aging Research at Rutgers University.

This EIE has been prepared in accordance with the Connecticut Environmental Policy Act (CEPA), which requires that environmental assessments be performed for state actions that might have a significant impact on the state's environmental resources. CEPA is codified in Chapter 439 of the State Statutes entitled "Environmental Protection Department and State Policy." The applicable state regulations are included in the Regulations of Connecticut State Agencies Section 22a-la-1 through 22a-1a-12.

The Connecticut Valley Hospital (CVH) institutional facilities are located at the western end of an approximately 1,021-acre State-owned property under CVH jurisdiction. Figure 1 indicates the location of the site and the hospital. This document focuses on the main hospital campus, which is bounded to the north by River Road (which runs along the bank of the Connecticut River); to the west by Eastern Drive (which parallels State Route 9); and to the south by Bow Lane; and to the east by residential properties, agricultural area, and open fields located west of Silvermine Road. References herein to the "campus" refer to that developed area. Figure 2 provides a campus map showing existing buildings and roadway configurations. Respective campus areas north and south of Silver Street are referenced as North Campus and South Campus.

1.1 Description of Action

This document addresses state actions associated with the transfer of programs from the former Fairfield Hills Hospital and former Norwich Hospital to consolidate with those at CVH. (This document often refers to the program of consolidating patients at CVH as the "consolidation program" or simply "consolidation"). The consolidation program has resulted in a bed capacity increase at CVH from 342 as of July 1995 to 615 beds after completion. From July 1, 1995 to November 15, 1996 CVH staff increased from 949 to 1336, and inpatients from 328 to 472 (of which approximately 125 patients were transferred from the other hospitals). The transfer of patients and staff to CVH has been completed and both Fairfield Hills and Norwich Hospitals have been closed.

A number of capital projects are associated with the consolidation program, and are accordingly addressed by this document. Certain other projects reviewed herein are unrelated to consolidation

but are instead the product of campus planning (an ongoing process which identifies capital projects needed to maintain or improve the hospital's capabilities). All projects addressed in this EIE are listed in Table 1 (Page 1-12). A number of other projects active at CVH, not listed in Table 1, are unrelated to consolidation, are of a type which by definition have no significant impacts, and are not subject to CEPA as determined by DMHAS's comparison of the projects with its adopted Environmental Classification Document.

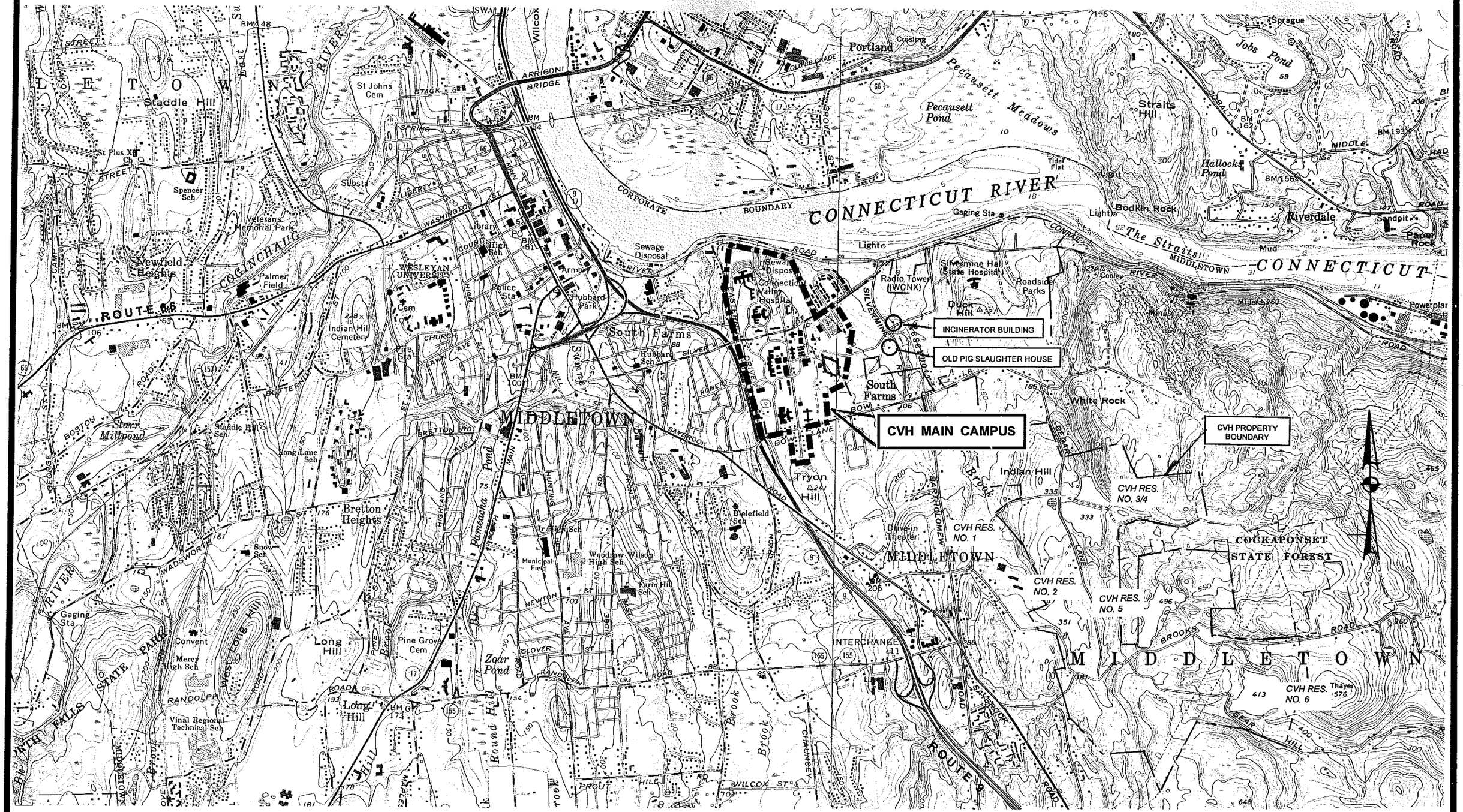
A number of building renovations were necessary to accommodate the impact of the patients and staff transferred from the other state hospitals under the consolidation program. These generally include interior demolition and construction, exterior reconstruction, air conditioning, environmental enhancement, renovation for program requirements, security, elevator repair, roof repairs/reconstruction, and fire and building safety issues. The buildings affected by these projects consist of Merritt Hall, Battell Hall, Dutcher Hall, Woodward Hall, Leak Hall, Cottage No. 26, Haviland Hall, Warehouse, and the Page Building. Figure 2 indicates building locations on the campus.

The renovation projects are at various levels of completion. Merritt Hall renovations are complete. Certain other consolidation-related renovation projects are presently on hold pending completion of the CEPA environmental assessment process (in accordance with a temporary injunction issued by the State Superior Court on August 9, 1996).

Dutcher Hall has received a card-pass security system with camera monitoring and electronically locked doors (Project No. BI-MH-198). The system is connected to an existing CVH Police substation at Battell Hall, from where conditions are continuously monitored by police personnel.

Beyond building renovations and improvements, several consolidation-related projects are proposed on the CVH grounds. An outdoor recreational complex near Merritt Hall (Project No. BI-I-475) is proposed to feature two basketball courts, two tennis courts, and two sand volleyball courts (see site plan, Figure 3). Other site work includes a new telecommunications system and a communications monitoring network.

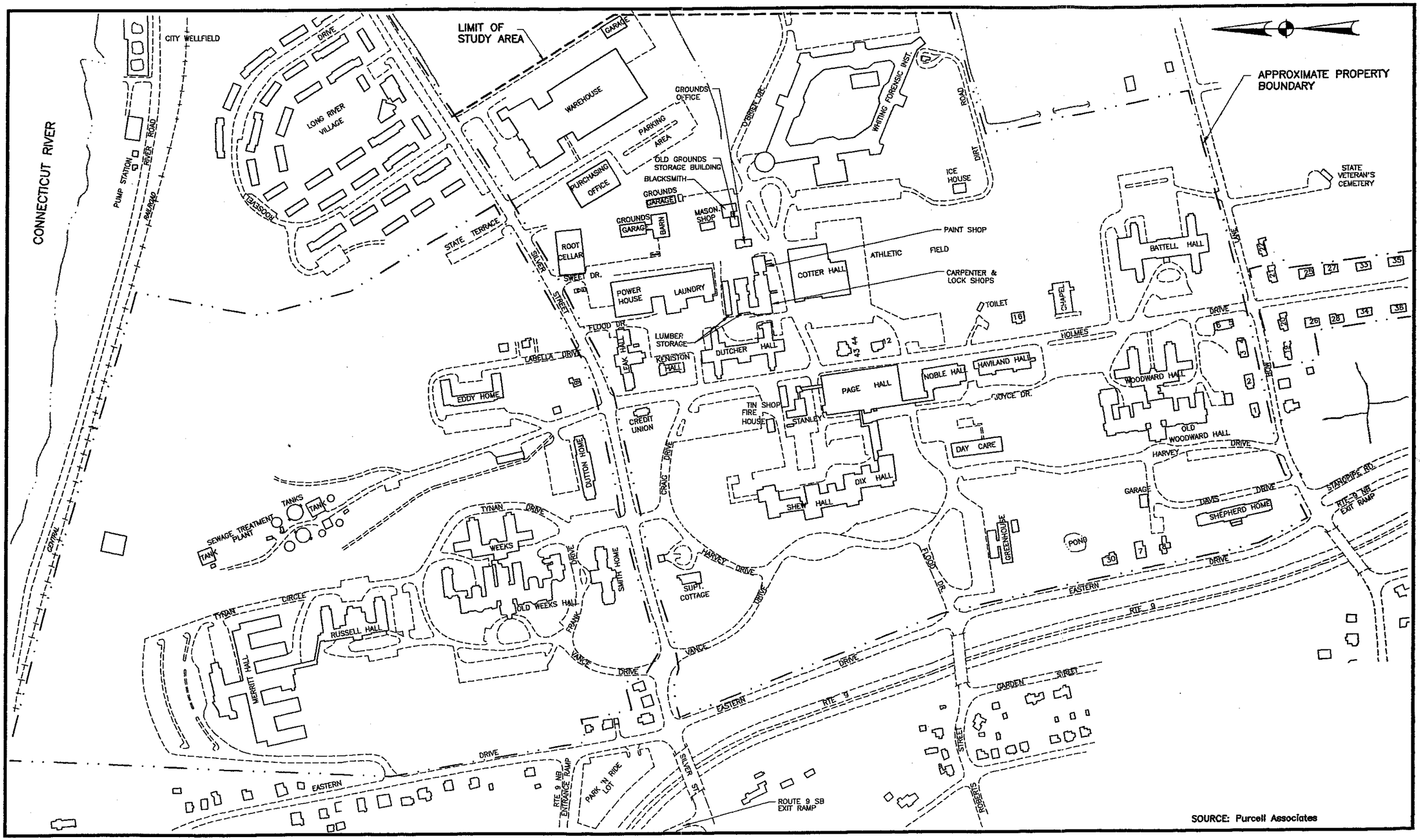
The single largest proposed site development project is the internal roadway and parking system for the campus area south of Silver Street (South Campus). While the roadway/parking project is not required by consolidation, its magnitude and potential for environmental impacts warrants review under the CEPA environmental assessment process and is accordingly discussed herein. The proposed internal roadways would create a loop system which would replace the existing Holmes Drive as the principal access way to the South Campus. Holmes Drive would then be closed to vehicular traffic, creating a pedestrian walkway through the center of the campus. Access to Holmes Drive would remain for public safety and emergency vehicles. As part of the internal roadway design, new and expanded parking areas are proposed to serve projected building needs. Figure 4 provides a schematic design plan of the roadway/parking lot construction and improvement project.



SCALE: 1"=2000'

Figure 1

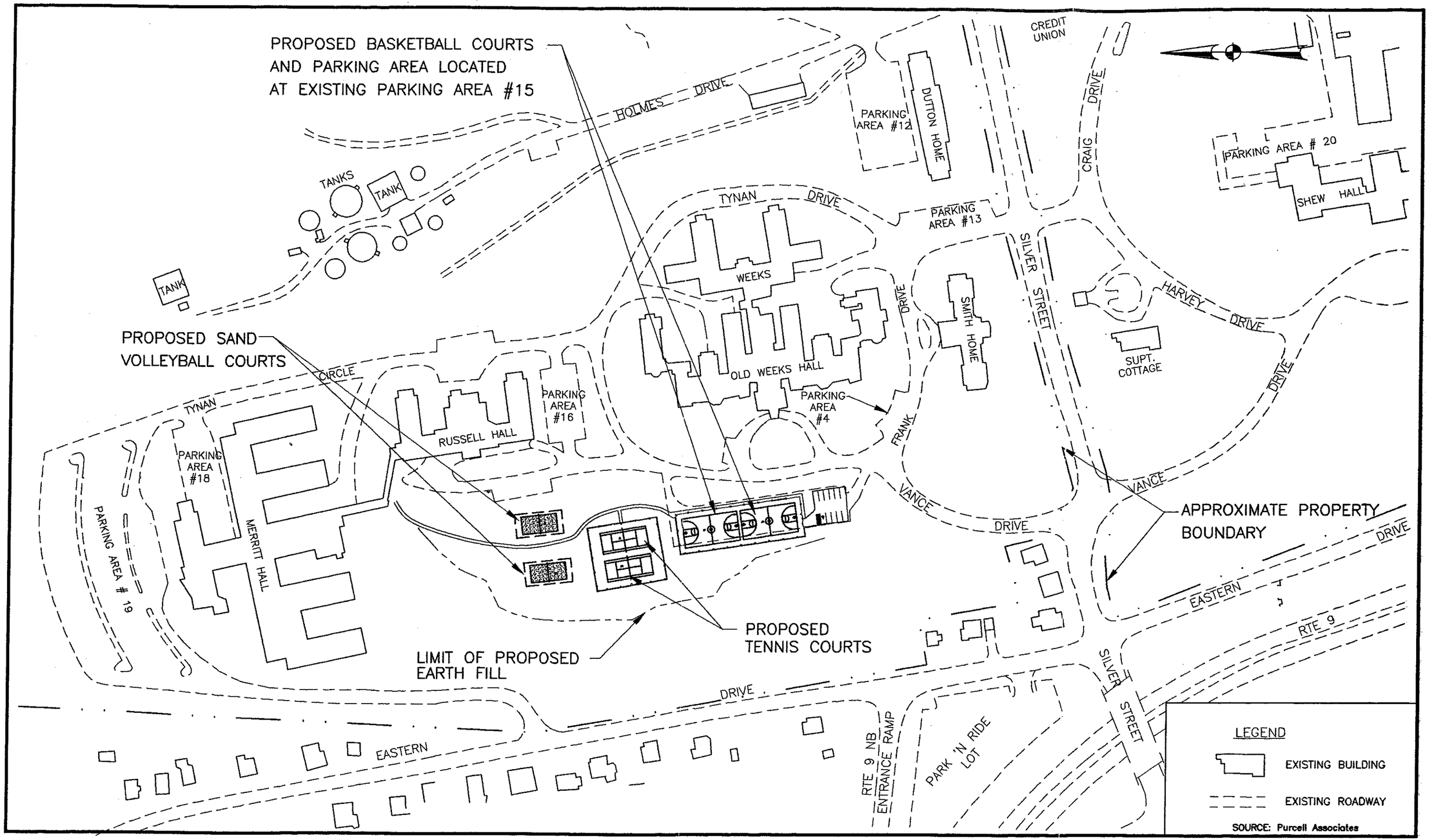
CONNECTICUT VALLEY HOSPITAL, MIDDLETOWN, CONNECTICUT
PROJECT LOCATION



SCALE: 1" = 300'

FIGURE 2

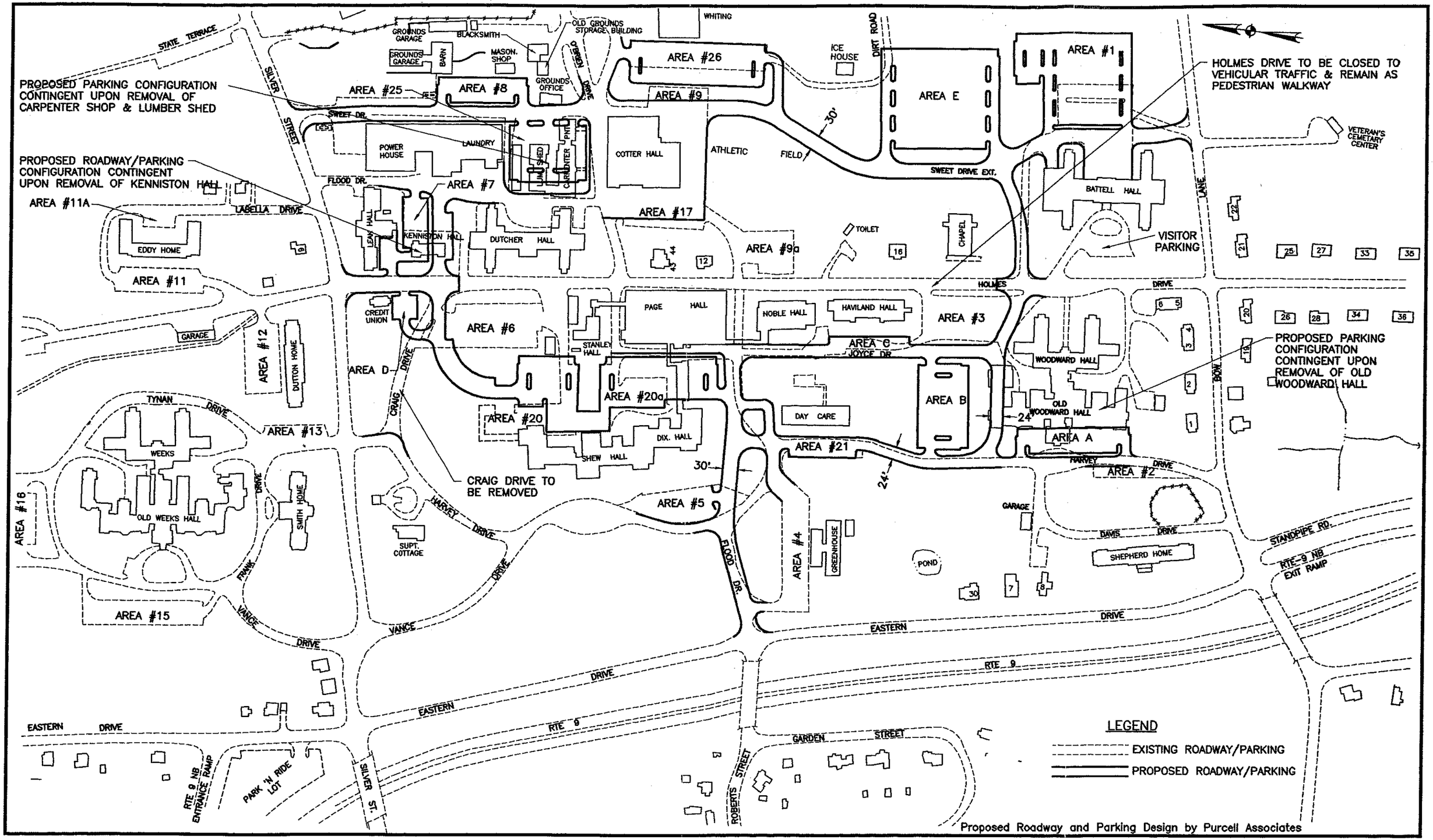
CONNECTICUT VALLEY HOSPITAL, MIDDLETOWN, CONNECTICUT
CAMPUS MAP



SCALE: 1" = 150'

FIGURE 3

CONNECTICUT VALLEY HOSPITAL, MIDDLETOWN, CONNECTICUT
PROPOSED RECREATIONAL FACILITIES



SCALE: 1" = 225'

FIGURE 4

CONNECTICUT VALLEY HOSPITAL, MIDDLETOWN, CONNECTICUT

PROPOSED ROADWAY AND PARKING PLAN

The roadway and parking concept plan is contingent upon certain building demolitions. Other buildings are proposed to be demolished for safety and campus planning purposes. The associated work would include planning, hazardous material remediation, utility relocations, the actual demolitions, and site restorations. A listing of these buildings is provided in Table 2 (Page 1-13). All of the buildings are located on the main CVH campus, except buildings indicated "off campus" are located one block east of the campus on Silvermine Road.

DMHAS had proposed that the existing Laundry Building at CVH be leased to a private firm for laundry service operations. However, that proposal is not considered viable and is no longer under consideration.

The total cost of all of the projects under this CEPA review is estimated to be close to $34 million.

No new building construction or expansions are proposed. No attempt is made herein to speculate about the potential for any unforeseen future growth of CVH facilities. If such development were to be proposed which might have significant environmental impacts, then a separate environmental assessment under CEPA would be required at that time.

This document focuses on actions subsequent to July 1, 1995, when Public Act 95-257 effectively initiated the consolidation program at CVH.

During the public scoping process, DMHAS received many comments expressing concern about possible socioeconomic impacts to the Middletown area from the consolidation of patients at CVH. Most of these issues are not causally connected to the elements of the consolidation plan that produce physical environmental impacts. Therefore, their analysis is beyond the requirements of the Connecticut Environmental Policy Act (CEPA). Nevertheless, DMHAS has elected to conduct in-depth analyses of such issues in response to the expressed concerns of the City and the public. Those analyses appear in Appendix K. Those socioeconomic impacts directly attributable to the physical consolidation projects are discussed in Section 3.17.

While this document addresses the consolidation of patients at CVH, it does not examine issues at the Fairfield Hills and Norwich Hospitals, since DMHAS currently has no jurisdiction over those sites and therefore cannot address reuse issues or alternatives at those sites.

TABLE 1
Summary of Projects Under CEPA Review

Project No.	Project Description	Budget or Estimate	Consolidation Related	Campus Planning
	Renovation Projects			
BI-I-451	Battell, Merritt, & Haviland: design and emergency roof repairs	$500,000	X[1.]	X[2.]
BI-I-459	Battell: provide program space to house patient programs and staff	$250,000	X[1.]	
BI-I-470	Battell: loading dock renovations	$100,000	X[1.]	
BI-I-482	Battell, Woodward: air conditioning design (integrated with Project No. BI-I-455)	$60,000	X[1.]	X[2.]
BI-MH-192	Battell, Haviland, Woodward: purchase materials for renovation	$180,000	X[1.]	
4403485	Cottage 26: ADA renovations, new interior finishes, and electrical upgrades	$18,356	X[1.]	
BI-I-441	Cotter: integrated telecommunications hub for campus	$2,235,000		X
BI-MH-198	Dutcher: installation of security systems	$534,000	X[1.]	X
BI-I-440	Dutcher: interior demolition, finishes, power, lighting, plumbing and safety systems. Relocate administration. Exterior fenced-in area.	$1,075,000	X[1.]	
BI-I-430	Haviland Hall: ADA entrance, elevator, and interior renovations	$200,000	X[1.]	
BI-I-439	Haviland: A/C system, elevator, X-Ray room, food service area, and electrical improvements, misc. interior renovations.	$590,000	X[1.]	
BI-I-471	Haviland: replace roofing, new roofing for elevator and ADA entrance structures, repair exterior trim	$78,000	X[1.]	X[2.]
BI-I-448	Leak: renovations for patient use (funding distributed to other projects)	---	X[1.]	
BI-I-449	Leak: air conditioning design	$55,000	X[1.]	X[2.]
BI-I-333B	Merritt: renovation of building mechanical systems, air conditioning, ADA improvements, emergency lighting and generator, and phone system	$10,357,769	X[1.]	X[2.]
BI-I-418	Merritt: swimming pool renovations: gymnasium refinishing	$55,000	X[1.]	X[2.]
BI-I-447	Merritt: furnishings and misc. materials and equipment. Replacement of sidewalks and exterior building fixtures	$450,000	X[1.]	
BI-I-469	Merritt: duct cleaning	$75,000	X[1.]	
BI-I-462	Page: design renovations	$750,000	X[1.]	
---	Page: perform renovations	$8,200,000	X	
BI-I-460	Power Plant: design for installation of relocated emergency generator and campus utility study	$310,000	X[1.]	
BI-I-427A	Russell: feasibility study of building use	$34,220	X[1.]	
BI-I-481	Warehouse: renovate, provide additional storage, and relocate main service kitchen from Battell Hall	$500,000	X[1.]	X
BI-I-435	Woodward: interior demolitions; new interior finishes, power, lighting, plumbing, safety systems, flat roofing and exterior painting	$1,000,000	X[1.]	
BI-I-442	Industrial Hygienist for construction (environmental) safety monitoring	$55,000	X[1.]	
	Site Development Projects			
BI-I-433	Architectural site planning for hospital consolidation	$158,088	X[1.]	
BI-I-434	Various Buildings: study to determine feasibility of building demolitions and associated utility relocations	$1,600,000		X[2.]
BI-I-437	Contract Administrator: assistance in consolidation planning	$540,000	X[1.]	
BI-I-438	Campus: pre-design study for campus roadway relocation	$21,385	X[1.]	X
BI-I-475	Outdoor recreational complex near Merritt Hall (basketball, tennis, & volleyball courts)	$295,000	X[1.]	
BI-I-478	Campus parking - temporary expansions and alterations	$300,000	X[1.]	X
4403489	Prepare an Environmental Assessment	$310,000	X[1.]	X
---	Roadway and parking construction - south campus	$2,000,000		X
---	Holmes Drive conversion into pedestrian walkway	$400,000		X
---	Grounds Security	$500,000		X
	Projected Total	**$33,786,818**		

Notes: 1. Priority State Hospital Projects (PSHP) contracted under Special Act 95-257
2. In five-year plan

TABLE 2
Buildings under Consideration for Demolition

1. Old Weeks Hall (western half of Weeks)
2. Kenniston Hall
3. Old Woodward Hall (western half of Woodward)
4. Old Tin Shop
5. Old Firehouse
6. Connector Between the Stanley Hall & Page Hall
7. Connector Between Dix Hall & Page Hall
8. Connector Between Page Hall & Noble Halls
9. Smith Home
10. Duplex Cottage #43 & 44
11. Cottage #12
12. Ice House
13. Old Pig Slaughter House & Adjacent Foundation (off campus)
14. Incinerator Building (off campus)
15. Old Wooden Grounds Storage Building
16. Carpenter, Lock, and Paint Shops
17. Lumber Storage
18. Dix Hall Annex

1.2 Purpose, Need and Justification

The State Legislature, with Public Act 95-257, specifically ordered the Commissioner of the Department of Mental Health and Addiction Services to develop and implement a plan for the closure of the state-operated programs at Fairfield Hills Hospital and at Norwich Hospital and the consolidation of those programs at Connecticut Valley Hospital. Therefore, DMHAS's purpose in consolidating was to comply with the law. Accordingly psychiatric, addiction, and forensic inpatient programs were transferred from Fairfield Hills and Norwich to CVH.

To accommodate the needs of the staff and patients arriving at CVH, a number of capital projects were needed (see Table 1, projects indicated as "consolidation related"). Renovations of patient-occupied buildings were needed to address housing and treatment needs and to accommodate specific programs (at Merritt, Battell, Dutcher, Woodward, and Leak Halls and Cottage No. 26). Renovations at Haviland Hall and the Page Building are intended to meet the needs of administrative functions and patient support services. Some of the renovations were designed to meet fire safety, public and patient safety, and Americans with Disabilities Act (ADA) requirements. Certain others address basic maintenance issues.

The former Department of Administrative Services (DAS) Warehouse, located on the eastern edge of the main CVH campus, will be investigated under Project No. BI-I-481 for possible

renovations to accommodate the main CVH service kitchen. The kitchen would be relocated from Battell Hall, where needed program space would be made available. The Warehouse would also provide DMHAS with additional storage space.

On the same theory, a consolidated outdoor recreational complex near Merritt Hall will allow patients to enjoy the health benefits that physical exercise can offer. At present, no outdoor athletic facilities exist on the North Campus (campus area north of Silver Street). Basketball and tennis courts do exist at the extreme south end of campus at Bow Lane, however, those courts are limited and remote from the North Campus.

The sharing and transfer of facilities co-located at the Middletown site is a long-standing policy. Over the years, immediate requirements have often led to the siting of a particular service or facility which has subsequently been relocated to another site in response to changed conditions. Unfortunately, this pattern has also led to the abandonment of some structures, either because the function for which they were exclusively designed has been discontinued or because the structure no longer served the function intended. Some of the structures so abandoned have deteriorated to the point where they have become eyesores or, in some cases, have actually begun to collapse, creating the possibility of injury. To forestall any safety problems, DMHAS has had to erect chain link fencing in some cases to prevent access to these potentially dangerous structures.

The proposal to close Holmes Drive to through-traffic is made out of concern for the safety of CVH patients and the community. Most importantly, the project will facilitate the separation of patients from local vehicular traffic by allowing the closing of Holmes Drive to traffic (other than emergency vehicles). Holmes Drive, a state-owned roadway, has experienced an increasing amount of non-hospital traffic since Exit 12 of Route 9 opened at Bow Lane and commercial development grew on Saybrook Road at the end of Bow Lane. The posted speed limit of 15 mph on Holmes Drive is often disregarded, and vehicles commonly do not decelerate or yield for persons in identified crosswalks. Methods to control traffic with Stop signs and police monitoring have had little effect. As many patients at CVH need to move between buildings along Holmes Drive for their treatments and for recreation, those patients have become imperiled by the traffic increase. The situation is especially hazardous for geriatric, wheelchair-bound patients, patients who are hearing or sight impaired, or those with other disabilities.

The proposed roadway system was conceived to form a perimeter that will enhance the safety of the community by helping agency police monitor the whereabouts of CVH patients. Police patrol will be aided in several ways. Firstly, police will have maximum visibility to those parts of the campus designated for patient use. Secondly, the perimeter roads will clearly delineate a security boundary, providing an additional measure of deterrence against boundary infractions. Thirdly, faster police response will be possible as direct travel routes along the perimeter are available. Currently visibility is often limited, roads do not connect in ways that traverse potential means of egress, and police response may require excessive speed while non-hospital traffic may interfere.

The proposed roadway/parking project would address several existing functional deficiencies in the existing roadway system. Specifically, the existing roadways in some areas lack curbing,

sidewalks and/or grassed shoulders. Existing access into parking and building loading areas is poorly guided and controlled. Roadways are often close to buildings such that pedestrian safety may be impacted. In addition, potential points of conflict between pedestrians and vehicles exist. While certain parking areas presently are operating at or above capacity, the proposed parking scheme would provide adequate parking spaces located closer to the respective buildings. As proposed, the roadway system will accommodate two-way traffic; emergency vehicle routes; create a campus center; direct employees and visitors to parking and exits as appropriate; and create new entrances for the proposed re-use of certain buildings such as Page Hall and Noble Hall.

1.3 Background

For several decades a trend in psychiatry has been to regard community treatment as more clinically-effective for some patients than institutional treatment. That trend has been driven by both clinical considerations and human rights and dignity issues as well as the fiscal realities of the states. The process of relocating patients from hospitals into their homes or other community settings is referred to as "deinstitutionalization." Deinstitutionalization of persons with psychiatric disabilities was accelerated by the Community Mental Health Centers Act of 1963.

A document released in April 1983, "Governor's Blue Ribbon Task Force on Mental Health Policy - Interim Report," made recommendations which provided direction for the State's mental health system. In response to subsequent gubernatorial direction, the former State Department of Mental Health developed a comprehensive service system featuring expanded community services intended to avail patients with a continuum of services so they may reintegrate into the community. The system would be cost-effective while providing care in the least restrictive settings available.

Over the years, deinstitutionalization decreased patient populations at the three State hospitals that once comprised the entire State system of long-term inpatient mental health care: Fairfield Hills Hospital (in Newtown), Norwich Hospital (in Norwich), and CVH. The number of patients in these institutions decreased from a total of over 10,000 in 1960 to approximately 1,500 in 1988, and later to only 600 in 1996. At CVH, the patient census fell steadily from its 1950 peak of roughly 3,500 patients and 700 staff to its 1995 low of 328 patients and 949 staff.

When the proposal was made to close two state hospitals and consolidate inpatient behavioral health services at the remaining one, all three sites were analyzed for their potential to be the sole state hospital campus. There were several compelling reasons behind the decision to consolidate services at CVH. The age and condition of the facilities at Norwich ruled out consideration of that campus. Fairfield Hills would have required $14 million to accommodate consolidation at that site and the state would still have been required to bear the costs of operating two campuses, given that Whiting Forensic and Riverview Hospital for Children were located at the campus of CVH. CVH was centrally located, making it the best location for patients and families and the most cost effective for the state in terms of transportation costs. It was therefore determined that CVH was the only site that offered the opportunity to achieve efficiencies, cost savings and the continued offering of the specialized services already located there.

The goal of the consolidation plan was not only to reduce duplication and costs to the state, but also to provide better and more comprehensive mental health and substance abuse treatment to patients.

Economic benefits include 1) the reduction of 26 administrative positions and $1.4 million; 2) a reduction of 270 campus support positions and $6.9 million for Fiscal Year '96 and 450 support positions and $13.7 million savings for Fiscal Year '97 and; 3) ongoing capital and operating savings associated with the day-to-day operation of large campuses. Programmatic benefits include 1) the ability to develop more diagnostically targeted treatment units; 2) having staff with specific knowledge and expertise together to offer professional opinions for similar patients in the system; 3) the ability to institute cutting-edge treatment and pilot projects because participants are located together; 4) better management of forensic patients and other high risk patients because they are under one clinical entity; 5) the consolidation of all long term patients under one administrative entity.

Closure of two State mental health hospitals was proposed in February 1995 by Governor Rowland. Subsequently, the legislature passed Public Act 95-257 directing the Department of Mental Health and Addiction Services to develop and implement a plan for the closure of mental health and substance abuse programs at Fairfield Hills Hospital and Norwich Hospital and to consolidate their programs with those at CVH. The legislation also joined the State's respective mental health and addiction service functions under a single department (DMHAS). The Whiting Forensic Institute also became a division under the administrative control and supervision of CVH. Therefore, CVH now consists of three divisions (psychiatric, addiction, and forensic).

Public Act 95-257 increased state payments in lieu of taxes (PILOT) to the City of Middletown for property comprising the CVH campus from 20 percent of the taxes that would be paid (if the property were subject to taxation) to 40 percent. The PILOT was raised with the intent to compensate the City for any impacts that may result from the consolidation of programs at CVH. In addition, approximately 139 acres of CVH property was authorized for transfer to the City by Special Act 95-25 and Public Acts 96-249 and 95-127. Of that land, approximately 2.4 acres is targeted by the City for use in the future redevelopment of the Long River Village housing project, which is currently located on Silver Street adjacent to the CVH property. Other properties for transfer are restricted from building construction, including a nine acre parcel south of the main campus that will be used primarily as a soccer field, a 97-acre area near Cedar Lane to be used for passive recreation, and a parcel on the north side of River Road. A full discussion of these property transfers is provided in Appendix K.

To facilitate communication between the City and DMHAS/CVH, Public Act 95-257 created an Advisory Council composed of six mayoral appointees, six members appointed by the DMHAS Commissioner, and chaired by a gubernatorial appointee. The Advisory Council was charged with advising the DMHAS Commissioner on policy concerns including, but not limited to, building use, security, CVH patients and patient discharges.

To expedite the consolidation program, Public Act 95-257 as modified by Public Act 97-94 specifically exempted consolidation projects from compliance with the following statutes:

> 4b-57 & 4b-58, Contracting for design professional services;
> 4b-91, Bidding for public building contracts;
> 19a-154, New or continuing operations requiring (Office of Health Care Access) approval; and
> 19a-155, Requests for approval of capital expenditures (by the Office of Health Care Access).

CVH retained the firm Stecker, LaBau, Arneill, McManus Architects, Inc. (SLAM) to prepare concept site plans illustrating a revised internal roadway system and supplemental parking space for the CVH campus. A building disposition plan was developed designating certain buildings to be removed and identifying buildings to be used by CVH. Their final concept plans, released September 1995, excluded any engineering or feasibility study and no written report was issued.

In furtherance of public policy, DMHAS continued patient placement into the community with the input of patients and their family members. Between late 1995 and late 1996, most patients were moved to community settings from Fairfield Hills and Norwich Hospital, while all remaining inpatients and selected staff were transferred to CVH. Fairfield Hills Hospital closed on December 15, 1995 and Norwich Hospital closed October 10, 1996.

In opposition to consolidation at CVH, the City of Middletown filed a lawsuit on September 7, 1995. The City's lawsuit recounted the effects of State efforts to deinstitutionalize its patients into the community, alleging that State policies had allowed the discharge "of many patients who are unable to function properly in the general population" and that many stay in Middletown without homes or jobs. The lawsuit further contended that former CVH patients often congregate in downtown areas, adversely impacting downtown activity. The allegations expressed concern for community safety, specifically citing the July 1989 fatal stabbing of a 7-year old child by a CVH patient.

In its decision (dated August 9, 1996), the Court linked the various DMHAS actions - building renovations, contemplated road changes, building demolitions, and increased patient and staff population - as "part of a sequence of planned activities proposed to implement consolidation." The court concluded that when such activities "are likely to have environmental and social and economic consequences, then an environmental assessment is called for."

The court issued a temporary injunction for the defendants to cease and desist from engaging in any consolidation activities until DMHAS has made an environmental assessment in accordance with CEPA. Two exceptions were provided: 1) studies permitted by Regulations of Connecticut State Agencies Sections 22a-1a-7(b) and 2) renovation work on Merritt Hall. The Merritt Hall renovations were permitted to continue in view of the high estimated cost of discontinuing the work (around $2 million) and in consideration of patient safety. In clarification provided September 5, 1996, the court allowed the transfer of the remaining patients from Norwich Hospital

and allowed CVH to use all beds in Merritt Hall for patient care. In the Spring 1997, the Court released from the injunction the rehabilitation of the north half of Dutcher Hall, and the construction of an elevator, handicap access and renovation of a radiology unit at Haviland Hall.

In continuation of the design process for future roadway and parking reconstruction, DMHAS retained the engineering firm Purcell Associates to add engineering analysis and design to the earlier study prepared by Stecker, LaBau, Arneill, McManus Architects, Inc. Parking requirements and roadway design criteria where applied to further develop the concept design and to develop new alternatives. Their report was issued in June 1996, Campus Roadway Study, Connecticut Valley Hospital, Middletown, Connecticut, (DPW Project BI-I-438).

SECTION 2
Alternatives Considered

2.1 Alternative Actions or Sites

Public Act 95-257 ordered DMHAS to close its programs at Fairfield Hills Hospital and at Norwich Hospital and to consolidate those programs at CVH, leaving DMHAS with no alternative. *Discussion of alternatives herein is limited to those that are legal and technically feasible. Therefore, exploration of any alternatives to consolidation at CVH (including no action) is excluded from this document.*

2.2 Alternative Design Concepts

Campus Configuration

In 1995, CVH considered a proposal to center hospital activity in the South Campus. Shew/Dix/Beers Halls would be renovated as patient living and support areas. The campus center would also involve new uses, some shared with the community, for Shew, Page, Noble, Haviland, and Stanley Halls together with the Cotter Building (Maintenance), the Chapel, and dwellings on Holmes Drive. Patient living areas would include Dutcher, Battell, (New) Woodward, Beers, and Dix Halls. This concept would incorporate the presently-proposed South Campus roadway project described in Section 1. Portions of Merritt Hall would be occupied as swing space until the South Campus renovations were completed.

After hospital use of Merritt Hall ended, other uses for the North Campus would be sought. Reuse of the North Campus was envisioned as had been suggested in an earlier report, Final Report of the Task Force to Study the Use of Land Facilities, and Security at CVH, 1994. That document saw the North Campus as part of a state-operated park consistent with the City of Middletown's strategy to utilize the Connecticut River waterfront. The Task Force plan also recommended that certain other parcels could be considered for integrated mixed housing.

This alternative concept would eliminate drawbacks of spreading the hospital facility across the North and South Campuses. Such drawbacks include greater difficulty in concentrating campus services, and a poorly defined campus center. However, while the alternative proposal was in many ways desirable, it was unfeasible to provide sufficient bed space in the South Campus within the time frame needed to implement the consolidation plan. Merritt Hall renovations could provide adequate bed space and be performed within an acceptable time frame. South Campus alternative was therefore rejected in favor of the current campus configuration.

Roadway and Parking Project

Various alternative roadway/parking arrangements for the South Campus were examined during the development of the proposed concept design shown in Figure 4 (Page 1-9). Earlier drafts of the plan are provided in Appendix D. Specific comments on the alternatives follow.

Alternative 1 - This plan shows a simple loop roadway configuration modeled after the architectural sketch by Stecker, LaBau, Arneill, McManus Architects, Inc. Holmes Drive's intersections with Silver Street and Bow Lane are maintained. No provisions for additional or revised parking areas are provided. The loop roadway does not account for conflicts with existing constraints including an existing below-grade utility vault, located between Shew Hall and Stanley Hall, and a basement remaining from the now-demolished Hayden Hall. An operational conflict is created with vehicles accessing the CVH fire department at the Cotter Building. Due to these conflicts, this alternative as shown is not feasible, however the plan is provided as an illustration of the original design goal.

Alternative 2 - Alternative 2 proposes to locate the loop roadway to the east of the Cotter Building to avoid the conflict created in Alternative 1. The full loop is made discontinuous to avoid the below-grade vault between Shew and Stanley Halls. Access from Sweet Drive (east of the Power House) feeds traffic into the loop roadway. This alternative severs Harvey Drive to exclude it from the main South Campus access roadway system. Some provisions for new parking space are introduced.

Alternative 3 - An extensive new parking area is added to the general semi-loop roadway system derived from Alternative 2. Harvey Drive near Shepherd Hall is reconnected to the internal system. A baseball field is located at the southeast corner of the site (near Battell Hall), which is counter to the goal of creating a pedestrian core at the South Campus along Holmes Drive.

Alternative 4 - Further adjustments and additions are made to the parking arrangement. The baseball field is relocated adjacent to Holmes Drive so as to enhance the pedestrian core. Nearly identical to the proposed site plan shown in Figure 4, this alternative suggested additional parking south of the Whiting Building which was remote from building entrances and therefore removed for the final revision.

The proposed site plan depicted in Figure 4 is an iteration of Alternative 4.

SECTION 3
Existing Environment and Analysis of Impact

3.1 Water Quality

3.1 a. Existing Setting

Surface waters on the site are limited to stormwater sheet flow, roadway gutter flow, intermittent ditch flow, and seasonal standing water (see discussion of hydrology in Section 3.2). All such surface waters are known or presumed to be uncontaminated (Class A) by the State Department of Environmental Protection (DEP) Bureau of Water Management, according to their Water Quality Classifications Mapping. DEP's water quality management strategies are guided by "designated uses," which for Class A are as follows: potential drinking water supply, fish and wildlife habitat, recreational uses, agricultural use, industrial supply and other legitimate uses. DEP may permit or authorize certain "clean water" discharges or other discharges to Class A waters if the discharges are of short duration, are necessary to remediate surface water or groundwater pollution, and are controlled to a level that protects aquatic life and public health.

Groundwater quality at CVH is presumed suitable for direct human consumption without the need for treatment, based upon the DEP Bureau of Water Management water quality classifications, which designates groundwater through the entire project area as "Class GA." Within areas so designated, the State's goal is to maintain the drinking water quality. The Class GA designation also indicates an assumed potential to construct water supply wells. DEP's "Ground Water Availability in Connecticut" infers that small to moderate amounts of water (1 to 100 gallons per minute) may be yielded to potential individual wells at the State property.

In exception to the Class GA designation at the site, the area surrounding the CVH sewage treatment plant is classified GB, indicating that groundwater is known or presumed to be unsuitable for direct human consumption due to waste discharge or other impacts. Within this area, the State's goal is to prevent further degradation by preventing any additional discharges that would cause irreversible contamination.

Areas of the CVH property that are within the CVH water supply watershed or that fall within the area of influence of the City's public water supply wells have the groundwater classification "GAA." This designation indicates that the water is presumed suitable for direct human consumption without the need for treatment and the State's goal is to maintain this drinking water quality by banning wastewater discharges.

Specific data relating to groundwater quality in the area were investigated with a review of DEP Bureau of Water Management's Leachate and Wastewater Discharge Sources Inventory for the project vicinity. Wastewater discharges in the area consist of those from the CVH sewage treatment plant and the City of Middletown's sewage treatment plant, which respectively discharge secondary treated effluent to the Connecticut River. The City plant is located directly west of the

site. In addition, Middletown Water Company's water treatment facility located at the John S. Roth Wellfield northeast of the site discharges sand filter backwash to the river. The immediate vicinity's single leachate discharge indicated by the DEP mapping occurred at the Jackson Corrugated Container Corporation, which is located northwest of the site on River Road. That industrial facility had in the past discharged printer and ink wastewater to the ground, and contaminated soils have been excavated from the site under state supervision. All of these facilities discharge to the Connecticut River down gradient (i.e., surface water flows away) from the hospital. It is unlikely any groundwater impact that might occur at those facilities would be experienced at the CVH property, given the separating distance and the probability that groundwater flow direction is coincident with the surface flow direction.

Table 3 provides a summary of underground tanks existing on the CVH grounds. Underground storage tanks and attached piping have the potential to leak and release pollutants into the ground and to groundwater. An existing tank, within 5 years of its life expectancy, must be either removed or upgraded to specific regulatory standards for new tanks (reference Regulations of Connecticut State Agencies (RCSA) 22a-449(d)-1(e)). As indicated in the table, the Power House tanks will be replaced in Spring 1998 with a presently-undetermined tank configuration providing capacities for 60,000 gallons No. 6 fuel oil; 10,000 gallons diesel fuel; and 30,000 gallons No. 4 fuel oil (DPW Project No. BI-2B-760-A214). The new underground tanks will have features to prevent spills and overflows and will have leak detection and monitoring systems.

TABLE 3
CVH Underground Storage Tanks

Capacity (gals.)	Contents	Location	Material	Date Installation
4,000	Unleaded Gasoline	Cotter Building	Fiberglass	6/95
2,000	Diesel Fuel	Cotter Building	Fiberglass	6/95
2,000	Diesel Fuel	Battell Hall	Fiberglass	6/95
30,000	No. 2 Fuel Oil	Power House	Steel	7/1/54*
30,000	No. 4 Fuel Oil	Power House	Steel	7/1/54*
30,000	No. 6 Fuel Oil	Power House	Steel	7/1/54*
30,000	No. 6 Fuel Oil	Power House	Steel	7/1/54*
30,000	No. 6 Fuel Oil	Power House	Steel	7/1/54*
30,000	No. 6 Fuel Oil	Power House	Steel	7/1/54*

Source: State Department of Public Works
* Tanks to be replaced in 1998 (Project No. BI-2B-760-A214)

Maintenance of surface water and groundwater quality at CVH is especially important due to the proximity of the City's John S. Roth Wellfield. That facility draws drinking water for Middletown residents from a water-bearing geologic deposit called an aquifer. The aquifer is localized to areas along the Connecticut River east of the main CVH campus. However, aquifers can be impacted from land uses located beyond the aquifer's limits via surface or ground water flow that recharge

its water supply. Stormwater runoff from much of the CVH campus drains to watercourses that flow across the aquifer while in route to the Connecticut River. The portion of the campus actually draining toward the City's water supply is east of a drainage divide running through Eddy Home, Dutcher Hall, Page Hall, Day Care, and Shepherd Home. (A complete description of surface drainage patterns is discussed in Section 3.2). Groundwater from this same area probably also flows toward the aquifer, since both surface and bedrock topography slope toward it.

The area wherein ground or surface waters may contribute to public water supply wells is called an "aquifer protection area" in regulatory terminology. According to preliminary (Level B) mapping, almost all of the CVH complex lies within an aquifer protection area (see map in Appendix E). Final (Level A) mapping is being prepared for submission to DEP by the City's engineering consultant.

Draft State aquifer protection land use regulations are in development (RCSA 22a-354i-1 through 11) which will go into effect after their adoption and after the Level A mapping is completed and approved. A copy of the draft regulations is attached to DEP's response to the Notice of Scoping in Appendix A. After the regulations are in effect, the State DEP will have the authority (under Connecticut General Statutes (CGS) Section 22a-354p-(g)) to regulate activities in aquifer protection areas proposed by a state agency. Regulated activities include (but are not limited to) construction/operation of most underground storage tanks, dry cleaning, fossil fuel power generation, and floor drains or dry wells which discharge to the ground. Activities specifically called unregulated include medical facilities, doctor's offices, medical laboratories, ambulatory patient care facilities, and commercial laundry operations without dry cleaning provided all wastewaters are disposed through a sanitary sewerage system. The regulations will require registration with DEP of existing regulated activities and permitting for any new or expanded regulated activity. A Materials Management Plan for the proper management of hazardous materials may be required for existing regulated activities and must be submitted for permitted activities. Whether the activity is existing or proposed, the draft regulations broadly require that "no industrial process wastewater, cooling water, stormwater or hazardous material . . . shall be discharged to the ground in an aquifer protection area" (22a-354-9(c)). For either existing or proposed regulated activities, DEP may require that a Stormwater Management Plan be prepared and implemented which includes provisions for site cleaning, outside storage, spill response, inspection, record keeping, and employee responsibilities and training.

Existing activities at CVH that will be regulated under the aquifer protection regulations include the vehicle and power equipment maintenance areas and fuel station at the Cotter Building and other such work areas. The use of existing underground storage tanks listed in Table 3 will also be regulated activities. The generation of electrical power that occurs at the Power House will be regulated for fuel oil burning. No language in the draft regulations would indicate that these existing activities cannot continue at their present locations, rather the regulatory program will require best management practices to avoid potential impacts to surface or ground water.

Examination of available record drawings on file with CVH Facilities Maintenance found indications of a dry well located on the north side of Power House, and floor drains shown

discharging to the storm sewer system from the Paint Shop and Noble Hall. These conditions would be regulated under the draft aquifer protection regulations. Four locations on the campus earlier had been identified by Purcell Associates where sanitary waste pipes had been found connected to the existing storm drainage system (Cottage #30, Greenhouse, Rest Room Building at the athletic field, and a sink at the Cotter Building). Each of those conditions is being corrected with connections to the sanitary sewer system under CVH Project No. 4403502.

Until the Level A mapping is prepared and adopted, the current Level B mapping, while having no regulations that reference it, still has statutory and policy implications. Within the Level B area, state actions must be consistent with State policy for water supply protection as provided in Conservation and Development Policies Plan of Connecticut published by the State Office of Policy and Management. A discussion of the State plan is provided in this document under Section 3.15.

Certain Level A or Level B aquifer protection area that is also owned by a water company is called "Class I land." CVH is indeed considered a "water company" under CGS 25-32a entitled "Establishment of Criteria and Performance Standards for Classification of Water Company Lands, and Department of Health Services Review of Disposition and Use of Such Lands." The State Department of Public Health has the authority to permit any land use change within Class I areas.

While not an activity to be regulated, the State presently allows Millane Nurseries, Inc. to practice farming on the State property within the aquifer protection area. Under a 7-year lease agreement with DPW (October 1999 expiration), Millane raises shade trees and pines on approximately 54 acres of the site. The closest cultivated area to the City wellfield is 1,200 feet southwest of the wellfield and north of Eddy Home. Farming practices having the potential to impact groundwater quality include manure management, pesticides storage and use, and fertilizer management. These practices are reportedly performed in accordance with "best management practices" for the protection of the environment as detailed in a Soil Conservation Plan on file with the Middlesex County Soil and Water Conservation District.

Also within the aquifer protection area, an approximately 1/3-acre portion of the State property east of the main CVH campus had been used by CVH as a landfill. Situated at the northeast quadrant of the intersection of Silvermine Road and O'Brien Drive, the landfill is adjacent to Silvermine Brook and its associated wetland, and 1,500 feet southwest of the City's wellfield. The landfill is presently inactive and related issues are independent of the consolidation program or projects reviewed in this document; however a discussion is provided herein in response to concerns expressed during the CEPA scoping process.

While no detailed record of the landfill use is available, it is known that the landfill had accepted a variety of bulky wastes including brush, stumps, furniture, appliances, drums and pails, tires, and both painted and unpainted lumber. In addition, test pits performed under DEP oversight (April 8, 1996) revealed municipal solid waste including metal cans, paper items, and melted plastics. The landfill is known to have once received ash residue from the adjacent Incinerator

Building, which was active between the mid 1950's and the mid 1970's. A test pit found ash residue containing slag, glass fragments, and various metals including food containers and utensils. The City's engineering consultant, Marin Environmental, Inc., identified the landfill during their field reconnaissance for aquifer protection zone mapping. Concerns were brought to the attention of DMHAS, which in turn contacted DEP. Subsequently, DEP advised DMHAS that the landfill has no permits to operate as required by statute and must be closed and its impact on groundwater monitored (See correspondence from Sidney J. Holbrook, Commissioner dated June 13, 1996 in Appendix C). CVH ceased its use of the site, and is proceeding with plans to formally close the landfill with appropriate landscaping, capping with two feet of clean soil, and other mitigative measures as may be necessary to satisfy DEP. The State has bonded $20,000 dedicated to the landfill closure and additional bonding is being sought. A consultant has been selected to perform the closure design.

The potential for leachate transport from the landfill is of special concern since the sandy surficial geology (stratified drift) existing in the area is conducive to such transport (due to voids between the sand grains). In addition, the landfill is probably upgradient of the wellfield in view of existing topography. Moreover, leachate from the landfill has the potential to flow into the Silvermine Brook, which in turn discharges into the Connecticut River around 500 feet east of the wellfield. The proximity of the wellfield's zone of influence to the landfill will remain unknown until the consultant's completion of the Level A Aquifer Protection study.

The City's consultant prepared a hydrogeologic investigation to determine the potential for impact from the landfill upon the City wellfield (Reference 24). Funded by DMHAS, the hydrogeologic investigation consisted of the installation of monitoring wells, ground water sampling, laboratory analysis, monitoring well survey, data analysis, and simulation monitoring. The consultant also performed research and interviews to help determine what materials may exist in the landfill. Groundwater samples were collected and analyzed for leachate indicator parameters, volatile organic compounds (VOC's), total petroleum hydrocarbons (TPH), semi-VOC's, priority pollutant 13 metals, and a radiological scan.

Monitoring results indicate that the landfill has impacted water quality. Subsurface monitoring down gradient of the landfill indicated levels of total dissolved solids, iron, manganese and sodium elevated above drinking water standards. Surface monitoring of the Reservoir Brook downstream of the site revealed manganese concentration exceeding the drinking water standard. In addition, visual indications of leachate contamination in the brook just downstream of the landfill were noted by the City's consultant. The test results indicate no significant levels of hazardous compounds, but rather show indications representative of bulky waste.

3.1 b. Impact Assessment

During the Scoping Period for the CEPA study, concerns were expressed that the proposed building demolitions, roadway and parking construction, or other projects at CVH could impact the water quality at the City's wellfields. As indicated in Section 3.1 a., based upon presently

available information, land uses at the CVH main campus indeed have the potential to impact the wellfield.

While the consolidation program resulted in changes in the intensity of hospital building usage, wastewaters from those buildings enter the sanitary sewer system for disposal in accordance with State law. None of the projects in Table 1 will likely be considered a "regulated activity" according to the soon-to-be-adopted Aquifer Protection Regulations.

Of the projects summarized in Table 1, the only projects affecting significant outdoor site areas are the proposed recreational complex (Project No. BI-I-475) and the proposed roadway and parking project at the south campus (no project number). The State DEP will have permitting authority over both of these site development projects in respect to stormwater discharges. Specifically, since each project will respectively disturb areas exceeding a statutory five-acre threshold, the projects must be registered under DEP's General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities (Section 22a-430b CGS, as amended by Public Act 91-263). Administered by the DEP Bureau of Water Management, Permitting, Enforcement & Remediation Division, the program is intended to assure that projects do not adversely affect runoff water quality. It specifically requires that the applicant certify that a stormwater pollution control plan has been prepared for the site in accordance with the *Connecticut Guidelines for Soil Erosion and Sediment Control* as amended (Connecticut Council on Soil and Water Conservation). The stormwater pollution control plan must address two components of stormwater pollution: 1) pollution caused by soil erosion and sedimentation during and after construction; and 2) stormwater pollution caused by the use of a site after construction is completed. The permit criteria include a goal of eighty percent removal of total suspended solids from the stormwater discharge from the project area. As a measure toward achieving that goal, stormwater from the system would need to be treated for debris/sediment removal prior to discharge to ensure that stormwater runoff does not significantly affect downstream resources. It is anticipated that water quality control structures required under the general permit will ensure that acceptable surface water quality is maintained, allowing for no significant impact to the quality of groundwater recharge. Stormwater pollution control plans required by the DEP permit program typically establish staging areas, supply storage areas, exclusion zones for fuel or oil storage and emergency response procedures. The construction management is normally required to establish site protocols, lines of responsibility for environmental quality during construction. The Plan will address site management controls following construction activities.

Given the extent of the current Level B Aquifer Protection Mapping, any land use change within the CVH main campus (and all Class I land) area must be performed with a Water Company Land Permit issued by the State Department of Public Health (DPH), Water Supplies Section under Public Health Code Regulation Section 25-37d-1 et sequens. The DPH cannot "grant a permit for a change in use of Class I land unless the applicant demonstrates that such change will not have a significant adverse impact upon the present and future purity and adequacy of the public drinking water supply." DPH Water Supplies Section personnel indicated in an interview that permit requirements for the roadway/parking project and the recreational complex projects would include

typical design measures to maintain stormwater runoff quality such as deep-sump catch basins, gross particle separators, etc.

In summary, existing and anticipated regulatory programs and state policies are in place which will assure that proposed projects will employ best management practices for the protection of surface and ground waters. This CEPA document will alert the jurisdictional agencies of the proposed projects and existing issues.

3.2 Hydrology

3.2 a. Existing Setting

Surface Water

The entire Connecticut Valley Hospital facility lies within the Connecticut Main Stem Regional Basin, a regional basin within the major drainage basin of the Connecticut River, which flows eastward beyond the site's northern boundary. Figure 5 provides mapping of the drainage divides on the site as well as indicating the location of existing subsurface drainage facilities. Most of the buildings have roof drains and most of the parking areas and roads have catch basins connected by a subsurface pipe network.

The CVH campus has a predominant ridge running north-south through the site. Merritt Hall, Russell Hall, Old Weeks Hall, Shew Hall, and Woodward Hall have been built along the crest of this ridge. Stormwater runoff from areas west of the ridge drain to the Connecticut River through three respective drainage systems. One such system, serving most of the area west of the ridge between Smith and Shepherd homes, relies on a 10 to 15-inch trunkline flowing north along Eastern Drive (see Watershed 1, Figure 5). That trunkline turns west to cross Eastern Drive just north of the Route 9 entrance ramp before discharging into a channel. The channel flows northward approximately 1,200 feet to a wetland area, which eventually empties into the Connecticut River east of the City of Middletown's sewage treatment plant.

Stormwater from some small areas along Eastern Drive north of Flood Drive drains to join Eastern Drive's curbside gutter flow before being intercepted by catch basins and directed to the Route 9 drainage system. Route 9's system features a 24-inch trunk pipeline that flows northward and then discharges north of Silver Street into the same channel discussed above.

The remaining area west of the predominant ridge (northwest of Smith Home including the area proposed for new recreational facilities) drains westward toward Eastern Drive where it is intercepted by a municipal storm drainage system. The system collects runoff from Eastern Drive and flows north towards the Connecticut River.

An area between the predominant north-south ridge and another ridge at Labella Drive near Eddy Home drains through a natural draw where the facility's sewage treatment plant is located (see

Watershed 2 on Figure 5). This surface flow continues northward crossing beneath River Road and into the Connecticut River. The area of this watershed is around 48 acres.

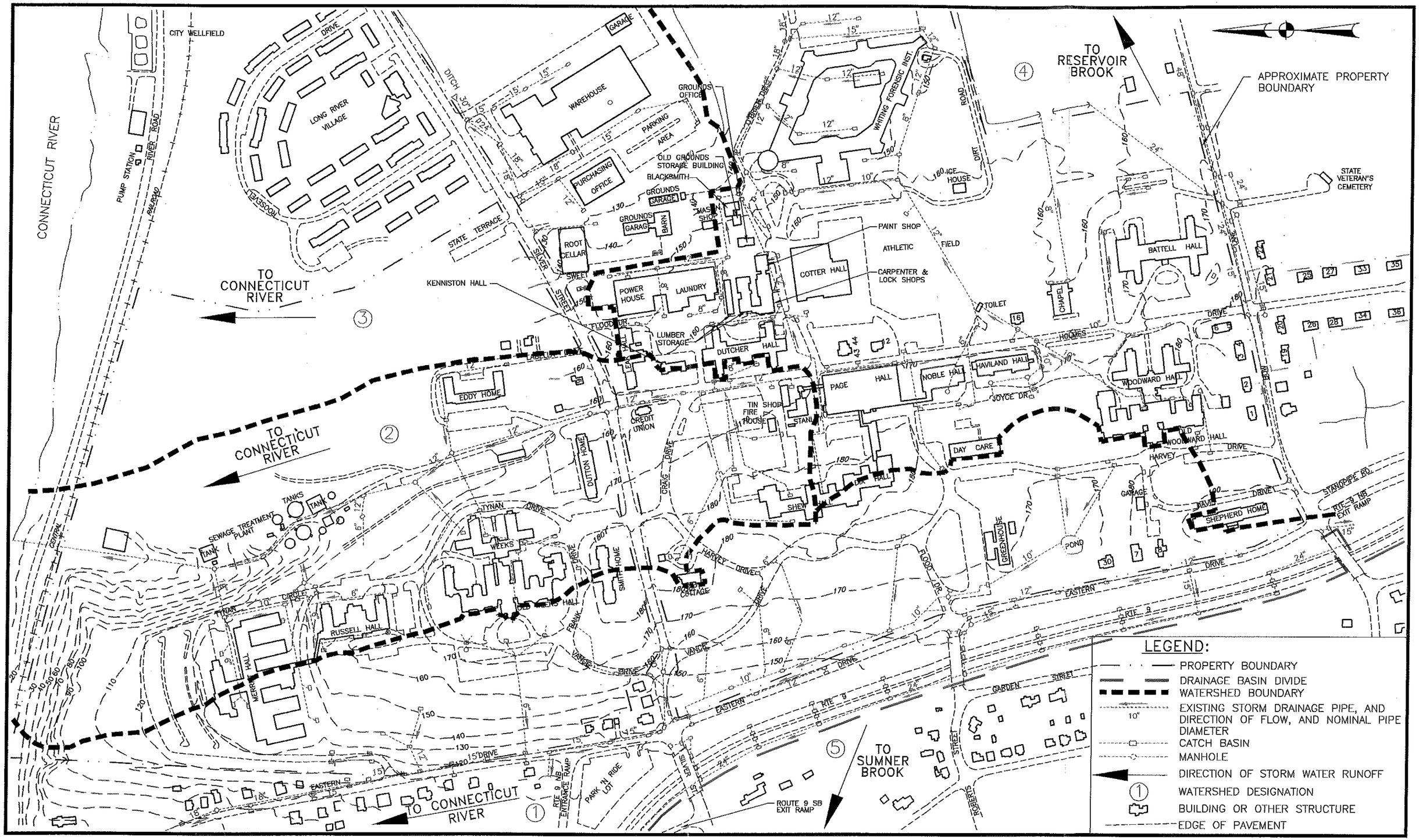
State property east of the Power House in the vicinity of the Warehouse is served by a drainage system which discharges from a 30-inch culvert to a ditch along the south side of Silver Street (see Watershed 3, Figure 5). Stormwater flows northward in the ditch, crosses under Silver Street via an 18-inch and 36-inch double culvert, and continues northward within another ditch for 700 feet to a 36-inch cross culvert under River Road. The system discharges into the Connecticut River approximately 100 feet east of the municipal well field.

Area east of the divide running through Dutcher Hall and the Day Care Building drains to Reservoir Brook (see Watershed 4, Figure 5). Most of this area drains through a closed drainage system to a trunkline on O'Brien Drive, which flows eastward to Reservoir Brook. Portions near Battell Hall drain to an intermittently-flowing ditch existing at the southeast corner of the site. That ditch drains eastward to an unnamed stream, which in turn flows northeastward past the Old Pig Slaughter House, crosses Silvermine Road through a 36-inch culvert, and finally reaches confluence with Reservoir Brook. From that point, Reservoir Brook flows another 1,650 feet to discharge at the Connecticut River approximately 900 feet east of the Middletown Water Company's well field.

It may be apparent to those familiar with the CVH site that the campus facilities, being located upon a high hilltop, is free from flooding potential. This intuitive assessment is confirmed by information provided by the Federal Emergency Management Agency (FEMA) National Flood Insurance Program. FEMA delineates the approximate limits of the 100-year and 500-year flood boundaries for critical surface water bodies within the area. The delineations are referenced by state and federal laws that regulate activities affecting floodplains. FEMA's Insurance Rate Map indicates that the entire CVH complex is outside the 500-year floodplain (Zone X); (Reference 19). This indicates that flooding potential at the campus is minimal. The Connecticut River 500-year flood elevation nearest to the campus is around Elevation 26 feet, while the lowest occupied CVH buildings are much higher: Merritt Hall (Elevation 134±) and the Sewage Treatment Plant Office (Elevation 130±). Buildings close to Reservoir Brook are outside of the flood hazard area and well above the indicated flood elevation of that watercourse. While the 100-year flood elevation of Reservoir Brook is just over Elevation 22, the Old Pig Slaughter House and the Incinerator Building are at Elevations 82± and 51± respectively.

3.2 b. Impact Analysis

The proposed roadway and parking construction project is presently at the conceptual design stage, and no details of any storm drainage alterations have been prepared. However, it is given that drainage alterations made as part of that project will continue to drain through existing storm drainage networks to discharge to the existing watercourses.



SCALE: 1" = 300'

FIGURE 5

CONNECTICUT VALLEY HOSPITAL, MIDDLETOWN, CONNECTICUT
EXISTING STORM DRAINAGE SYSTEM

3.3 Flora/Fauna Habitats

3.3 a. Existing Setting

Based upon field investigation, descriptions of existing flora and fauna within the study area are provided below. An index of species scientific names for given common names is attached as Appendix F.

Flora

Vegetation within the project area is comprised primarily of maintained lawn as well as a diversified arrangement of landscape trees and shrubs. Several areas of naturally occurring vegetation also exist within the project area. The majority of landscape species on the site have been arranged according to an organized planting scheme which corresponds with the location of existing buildings.

In order to simplify the project area for the purpose of vegetative analysis, the project site has been divided into eight planting areas as delineated in Figure 6. Planting Area #1 includes all of the vegetated land within the portion of the site bounded by Tynan Circle/Eastern Drive to the west, Silver Street to the south, Holmes Drive to the east, and the boundary fence north of the Merritt Hall parking lot. Lawn area consisting mainly of Kentucky Bluegrass is the dominant landscape scheme within Planting Area #1. Sugar Maples, Norway Maples, and Eastern Cottonwoods are schematically planted to the east and west of Vance Drive. Several Red Maples and Silver Maples exist on the lawn adjacent to Russell Hall. The area abutting Tynan Circle across from Russell Hall consists mostly of maintained lawn (Kentucky Bluegrass) along with several Eastern Red Cedar and Apple trees. Further south along Silver Street in front of Dutton Hall are several Eastern Red Cedars, London Planes and a Norway Maple. Adjacent to the parking area located on the eastern side of Tynan Circle are several American Yew shrubs.

Planting Area #2 includes all of the vegetated land within the portion of the site bounded by Holmes Drive to the west and the fence line located at the easternmost portion of the project area north of Silver Street. Norway Maples and Silver Maples line the eastern edge of Holmes Drive in the vicinity of Eddy Home. Further north on the east side of Holmes Drive is a stand of Eastern Hemlocks. The sewage treatment plant, located at the north end of Holmes Drive, is surrounded by a stand of Eastern White Pines. Labella Circle borders a maintained lawn that extends eastward to the wooded edge of the study area. Vegetation within this woodline includes Red Maple, Eastern Cottonwood, Multiflora Rose, Staghorn Sumac, Japanese Honeysuckle, and Poison Ivy.

Planting Area #3 includes all of the vegetated land within the portion of the site bounded by Silver Street to the north, Flood Drive to the south, and Holmes Drive to the east. This area is comprised primarily of maintained lawn with a diversity of trees lining the roadways. Sugar Maples are present east of Eastern Drive and north of Flood Drive. Surrounding the Superintendent's Cottage are several Apple and Eastern Hemlock trees. Eastern Red Cedars line

Vance Drive to its east. Along the north side of Beers Hall is a prominent group of Burning Bushes, while prominent nearby trees include Horse Chestnut, Flowering Dogwood, Spruce, Black Birch, and Maple. Lining the north edge of Harvey Drive in this immediate area are Ash, Arborvitae, one Copper Beech, and several Basswood. On the west side of Dix Hall, several Cottonwood, London Plane, and Basswood trees line Vance Drive. A number of Flowering Dogwood, Green Ash, and Sugar Maple trees are located between Shew/Dix and Page Halls.

Planting Area #4 includes all of the vegetated land within the portion of the site bounded by Silver Street to the north, Flood Drive to the south, Holmes Drive to the west and Sweet Drive to the east. This area is sparsely vegetated except for maintained lawn and a disturbed area to the west of Kenniston Hall. The disturbed area is comprised of late successional species including Norway Maple, Eastern Red Cedar, Tree-of-Heaven, Bittersweet Nightshade and Queen Anne's Lace. A large Walnut tree and a Black Birch tree are present on the east side of Dutcher Hall. Several Ailanthus trees are located in front (west) of Kenniston Hall.

Planting Area #5 is bounded by Silver Street to the north, Dirt Road to the south, Sweet Drive to the west, and eastern limit of the study area. This area is also sparsely vegetated except for maintained lawn and a row of London Plane trees located between Sweet Drive and the parking lot west of the Whiting Building. Another row of London Plane trees is located on the south side of the Whiting Building. North of O'Brien Drive is the Grounds Office and adjacent maintenance buildings, which are surrounded by asphalt surfaces. Across from the Blacksmith Shop and north of O'Brien Drive is a disturbed patch vegetated with Queen Anne's Lace, Foxtail, Foxgrape, Eastern Red Cedar, Eastern White Pine, Aster, and Common Burdock.

Planting Area #6 is bounded by Dirt Road to the North, Bow Lane to the south, and Holmes Drive to the west. This area is a large open space comprised primarily of maintained lawn. Vegetation surrounding the Chapel includes Eastern Red Cedar, Sugar Maple, Norway Maple, London Plane and a large Eastern Cottonwood. Battell Hall is surrounded by Sugar Maples and Norway Maples. A hedgerow of Common Privet and several Sugar Maples are present north of Bow Lane and east of Battell Hall. The banks of the drainage ditch present from Bow Lane to the eastern edge of the property south of the Whiting Building consists of Northern Red Oak, Eastern Red Cedar, Multiflora Rose, Red Osier Dogwood, Goldenrod spp., American Bittersweet, Bittersweet Nightshade, Japanese Honeysuckle, Norway Maple, and Virginia Creeper.

Planting Area #7 is bounded by Flood Drive to the north, Bow Lane to the south, Holmes Drive to the east, and Eastern Drive to the west. A depression within this area is a former pond and presently is vegetated with hydrophytic (wetland) species. Section 3.5 provides a discussion of wetland plant species. The area surrounding the former pond is maintained lawn with a few Norway Maples and willow oaks. Vegetation growing in a former garden located south of the greenhouses includes an enormous European Beech as well as a number of early successional species. These species include Inkberry, Pokeweed, Foxtail sp., Burning Bush, American Yew, Bittersweet Nightshade, Tree-of-Heaven, Goldenrod spp., Tuliptree saplings, Multiflora Rose, Foxgrape, White Mulberry, Japanese Red Maple, Common Privet, Common Dandelion, and Queen Anne's Lace. Other vegetation within Planting Area #7 includes a row of Norway Spruce

trees located between Davis Drive and Harvey Drive and several Norway Maples and Sugar Maples which line the east side of Harvey Drive in the vicinity of Old Woodward Hall. East of the Day Care Center and west of Joyce Drive are several London Planes, Norway Maples, and a stand of Eastern White Pines. A row of Crabapple trees and Sugar Maples line the western edge of parking area between Haviland and Woodward Halls (Parking Area #3). Norway Maples and an Apple tree are located west of Holmes Drive in the vicinity of Woodward Hall.

Planting Area #8 is bounded by Bow Lane to the north and extends to the eastern and western limits of the project area on both sides of Holmes Drive. Between the cottages on Holmes Drive are Norway Maples and London Plane trees. A row of Norway Maples and Sugar Maples are present south of the portion of Bow Lane to the east of Holmes Drive. South of the Maples is a row of London Plane trees. South of the cul-de-sac at the south end of Holmes Drive is a maintained field. Early successional species including Common Dandelion, Queen Anne's Lace and various grass species, including Kentucky Bluegrass are dominant. The field is bounded by a cemetery to the east, and a wooded area which is located outside of the project area to the west.

A wooded area which abuts the site to the north consists mostly of upland vegetation including Northern Red Oak, Eastern Cottonwood, Flowering Dogwood, Foxgrape, Aster sp., and Winged Sumac. This wooded area is located on a north-facing slope that descends downward to the Connecticut River which is approximately 400 feet north of the study area.

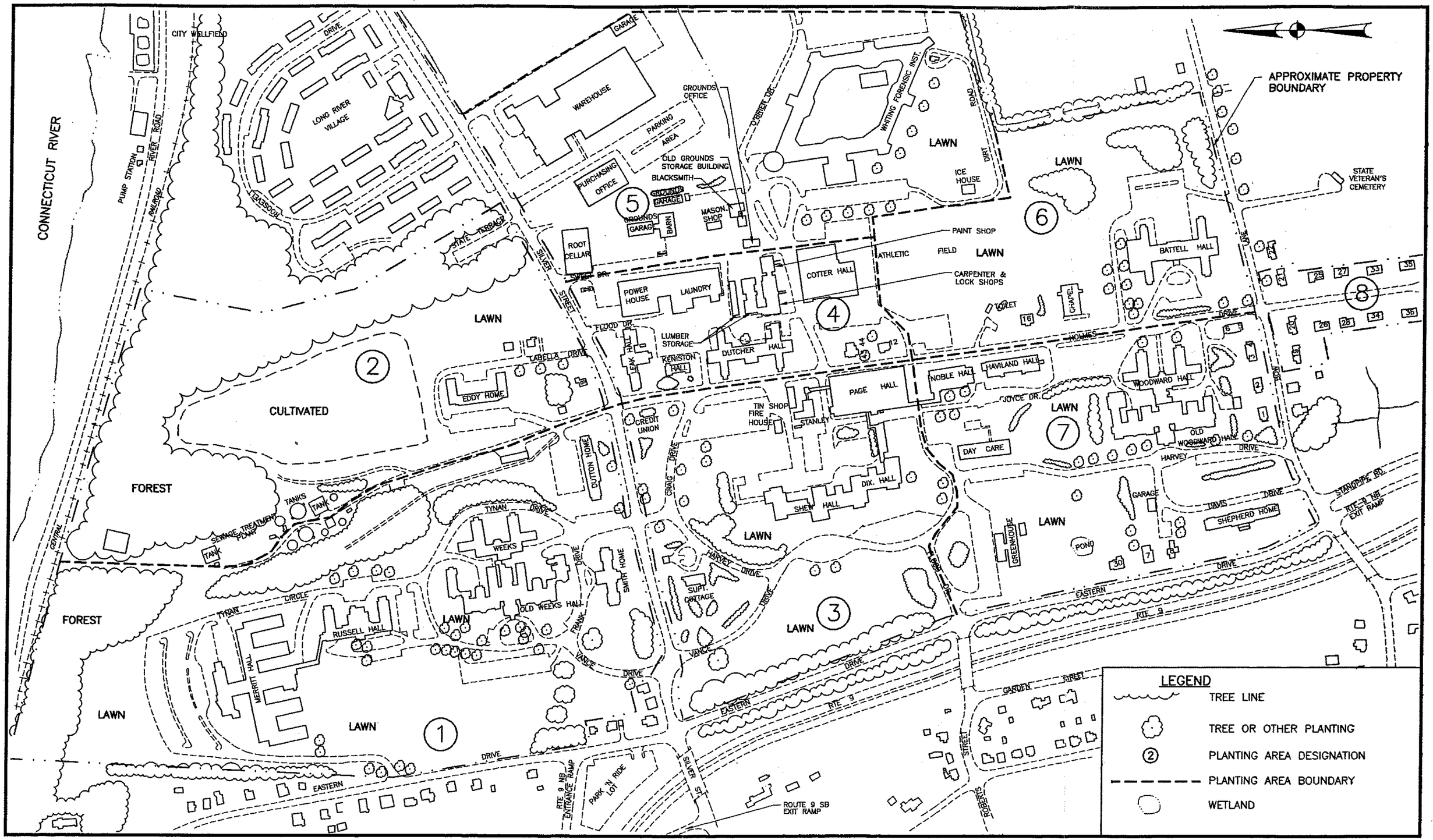
South of the Silver Street and Eastern Drive intersection, Eastern Drive is separated from Route 9 by a vegetated embankment which slopes downward from Eastern Drive to Route 9.

In fall 1996, CVH began a tree replanting program for 1) replacing trees that have died and have been removed, and 2) placing new plantings which delineate and enhance campus use patterns. In continuation of the replacement process, at least twenty large-growing trees have been planted in fall 1997. In spring 1997, thirty memorial plantings had been placed on the campus, each with a newly planted tree or shrubbery grouping. The hospital now also honors staff members who pass away during their employment with a tree memorial.

Fauna

The project area is located within a relatively urbanized section of Middletown and is fully developed with the majority of vegetation consisting of maintained lawn interspersed with landscaped trees. Wildlife within the project area would most likely use the early successional stage development areas (maintained lawn) as well as the various disturbed areas located on the site.

Wildlife observed on the site were present in an open field located between the Chapel and the Ice House. Species observed at this location included European Starlings, Herring Gulls, and Canada Geese. Other species observed on the site included an occasional House Sparrow, Mourning Dove, American Crow, and several Gray Squirrels.



SCALE: 1" = 300'

FIGURE 6

CONNECTICUT VALLEY HOSPITAL, MIDDLETOWN, CONNECTICUT
VEGETATION

Access to the site is limited, but mammals that may access the site include Whitetail Deer, Raccoon, Eastern Chipmunk, Opossum, Striped Skunk, Eastern Cottontail, and Deer Mouse.

Under the Federal Endangered Species Act, designation of a species as threatened or endangered requires that any practices that harm the species must be eliminated or altered so that it no longer menaces the creature's long-term survival. Correspondences respectively received from the U.S. Department of the Interior Fish and Wildlife Service (dated December 24, 1996) and the DEP Natural Resources Center (dated July 14, 1997) indicate that no endangered species, threatened species, or species of special concern are known to be found within the limits of the main CVH campus except occasional Bald Eagles, which may winter along the Connecticut River corridor. Based upon this correspondences and field investigation, no state-listed or federally-listed species are known to inhabit or visit the project area.

3.3 b. Impact Analysis

Flora

Based upon the conceptual site plan of the proposed roadway and parking project, trees and shrubs in proximity to the buildings will not be impacted, although a number of individual trees within the proposed roadway corridor and in proposed and expanded parking areas will be displaced. Presently, none of these trees are densely clustered. Locations where prominent trees will be impacted generally consist the following:

- Proposed Parking Area B will impact a Silver Maple and at least one Sugar Maple.
- The extension of Joyce Drive near existing Parking Area #3 will impact a row of Crabapples and a two Sugar Maples.
- The realignment of Flood Drive near Dix Hall will impact a prominent Basswood and several Sugar Maples.
- Proposed Parking Area #20 between Dix and Page Halls will impact a number of Flowering Dogwoods, Sugar Maples, Green Ash, and Black Birch.
- The proposed roadway segment between Shew Hall and the Credit Union will impact a pair of Norway Maples.
- The proposed widening of Parking Area #26 near the Whiting Building will impact a row of approximately five London Planes.
- Proposed Area E, located east of the Chapel, will impact a row of Flowering Dogwoods in addition to individual Green Ash, Norway Maple, and Red Maple trees.
- Expanded Parking Area #1, located east of Battell Hall, will impact an American Elm, approximately five Norway Maples, and four London Planes.

The tree replanting program discussed in Section 3.3 a. above has targeted areas outside of the proposed roadway and parking footprint. The intent of the program is to maintain a park-like setting at the campus through changes that take place on the site.

The great majority of the newly-paved area under the roadway and parking project will be constructed on existing lawned areas, causing a loss of approximately 4.2 acres of lawned area (based upon the schematic design plan depicted in Figure 4).

The other proposed project that will disturb significant site area, the recreational complex, will impact lawned area and existing parking area (Area #15). Very few individual trees would be impacted. Based on the design plan (see Figure 3), approximately one acre of lawned area would be lost to that project.

Fauna

As a result of the roadway and parking project, impacts to wildlife using the site will be negligible. The majority of wildlife observed utilizing the site were avian species that are tolerant of human activities. Avian species and animals using the site for feeding or nesting purposes may be displaced temporarily during site construction activities, but would be expected to return upon completion of the proposed construction. Such species will lose the opportunity to use impacted lawned areas, and therefore a few individuals may be lost. However, the roadway/parking project and the recreational complex will leave remaining extensive lawned areas suitable for use by avian species and other fauna. No significant adverse impact is anticipated from the combined site development projects.

3.4 Geology and Soils

3.4 a. Existing Setting

Descriptions of bedrock and surficial deposits provided herein are based upon mapping by the United States Geological Survey (USGS) and the United States Department of Agriculture (USDA) Natural Resources Conservation Service (formerly Soil Conservation Service).

Bedrock

Bedrock in the project vicinity is sedimentary - some of the most recently formed bedrock in the State (around 180 million years old, Jurassic). The bedrock, Portland arkose, is a arkosic siltstone, sandstone, or conglomerate. Arkose, commonly known as "brownstone," has been quarried for use as building stone. However the Portland arkose is highly varied and can range in color from reddish-brown to gray or green.

On the hospital grounds, the depth from the surface to bedrock is typically 20 feet, increasing to around 25 to 30 feet at the north end of the campus. No rock outcrops were observed in the field. The USGS "Contour Map of the Bedrock Surface" for the area shows that bedrock forms a north-south ridge roughly corresponding with the soil surface topography, which also features a predominant north-south ridge. The bedrock contours also reflect the topographic draw where the CVH sewer plant is located.

Surficial Material

The surficial material overlying the bedrock on the site is known to be till (a glacial deposit of non-sorted rock particles and fragments that widely range in size from clay to boulders). The material was observed to have a reddish-brown color within construction excavations on and near the campus. The till layer extends from bedrock to the soil layer - a thickness of around 20 to 30 feet.

Just east of the hospital complex and Long River Village, extending north from Bow Lane to the Connecticut River, the surficial material is sand. The deposit centers around Reservoir Brook. The old CVH facilities at the intersection of O'Brien Drive and Silvermine Road are located upon this sand deposit. (The facilities include the Old Pig Slaughter House and adjacent foundation, CVH cemetery, Incinerator Building, and closed landfill).

Soils

A total of six soil types were identified on the site by the Natural Resources Conservation Service, "Soil Survey, Middlesex County, Connecticut." Soil units were plotted on Figure 7 based upon the mapping provided in the Soil Survey. Table 4 provides the names and descriptions of the soils present.

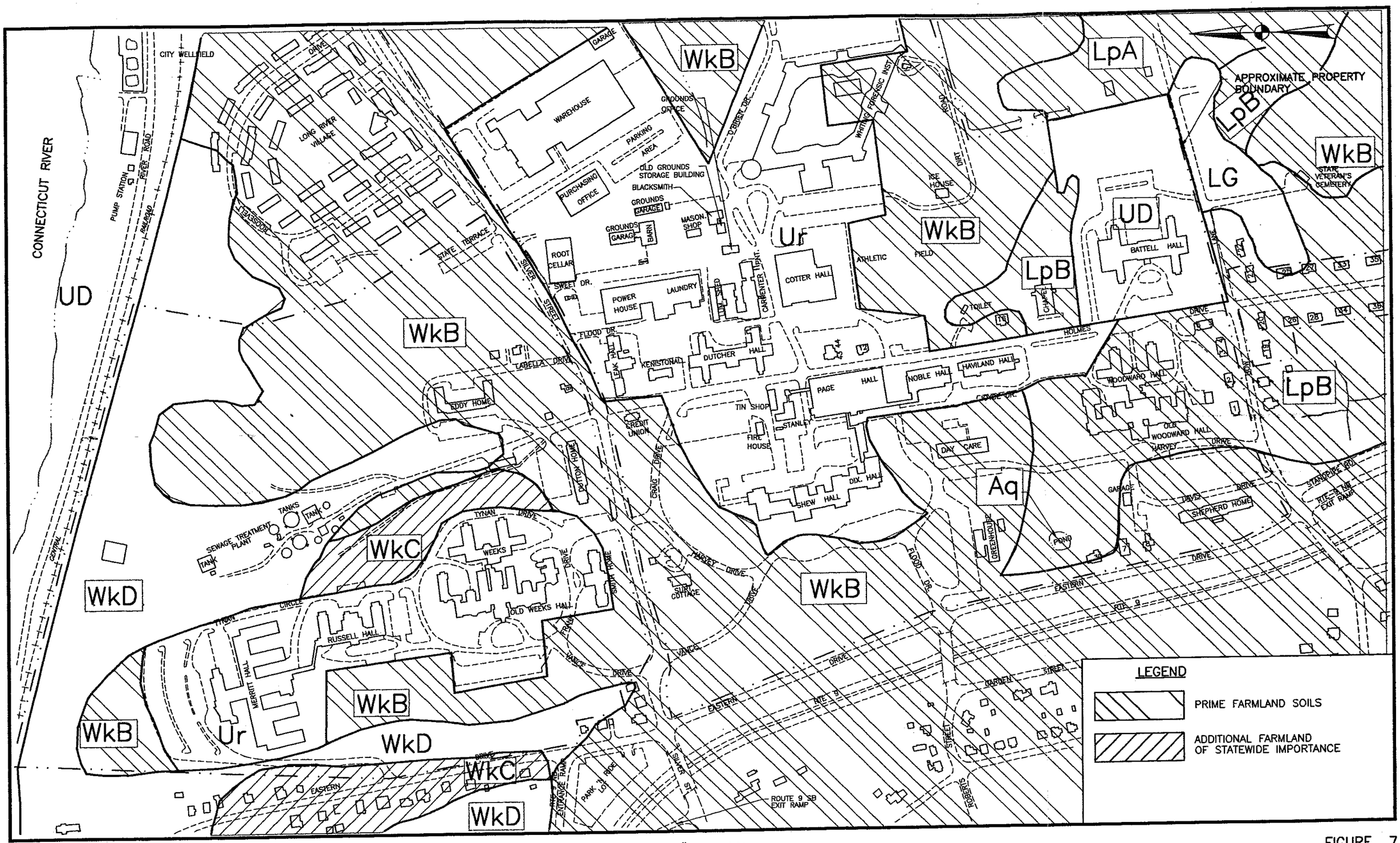
Figure 7 also indicates land disturbances recorded by the Survey, where filling, excavating and/or grading have significantly impacted the natural soils. Udorthents, smoothed (UD) is a well to moderately drained disturbed soil that has had two feet or more of its original soil surface excavated or filled. Urban Land (Ur) is defined as areas where the surface soil and subsoil have been stripped, where fill material exists, and where urban structures (pavement, buildings, etc.) cover more than 85 percent of the surface.

Most of the soils at the CVH campus are mildly sloping Wethersfield loams, which are deep, moderately-to-well-drained reddish colored soils.

The USDA Natural Resources Conservation Service mapping indicates that almost all of the soils at the CVH hospital complex beyond the disturbed areas are classified as important farmland under their criteria. Both Table 4 and Figure 7 indicate the soil units in the project area that are classified as "Prime Farmland." Prime Farmland can be described as non-urbanized land that has the best combination of physical and chemical properties for producing food, fiber, forage, and oilseed crops. These properties include a favorable temperature and growing season, acceptable acidity/alkalinity (*p*H) and salt content, few rocks, and low erodibility, adequate permeability to water and air, and an adequate moisture supply without either saturation for long periods or inundation during the growing season.

TABLE 4
Soil Descriptions

Map Symbol	Soil Name	State Inland Wetland	Prime Farmland	Additional Farmland of Statewide Importance	Drainage	Depth to Water Table	Permeability		Surface Runoff	Available Water
							Subsurface & Subsoil	Substratum		
Aq	Aquents	√			poorly to very poorly	seasonally at or near surface	moderate	moderate	slow	high
LG	Leicester, Ridgebury, and Whitman extremely stony fine sandy loams	√			poorly to very poorly	seasonally at or near surface	moderate to mod. rapid	slow to very slow	slow to very slow	moderate
LpA	Ludlow silt loam, 0 to 3 percent slopes		√		moderately well	1.5' to 3.5'	moderate	slow to very slow	slow	moderate
LpB	Ludlow silt loam, 3 to 8 percent slopes		√		moderately well	1.5' to 3.5'	moderate	slow to very slow	medium	moderate
WkB	Wethersfield loam, 3 to 8 percent slopes		√		well	>6'	moderate	slow to very slow	medium	moderate
WkC	Wethersfield loam, 8 to 15 percent slopes			√	well	>6'	moderate	slow to very slow	rapid	moderate
WkD	Wethersfield loam, 15 to 25 percent slopes				well	>6'	moderate	slow to very slow	rapid	moderate



SCALE: 1" = 300'

FIGURE 7

CONNECTICUT VALLEY HOSPITAL, MIDDLETOWN, CONNECTICUT
SOILS MAP

Section 3.16 (see Page 3-90). Farmland preservation is especially important where unfragmented parcels can be preserved; however, the CVH campus is already fragmented by existing facilities.

3.5 Wetlands

3.5 a. Existing Setting

A field investigation of the study area was made to determine the presence and nature of any existing wetland areas. Possible wetland areas were first identified by the presence of indicator wetland vegetation or signs of inundation, and wetland limits were then confirmed with soil inspection. The soil inspection, performed by Soil Science and Environmental Services, Inc. in June 1997, included the examination of vegetation and any physical indicators of inundation and soil saturation. Test holes were excavated with a spade and hand auger as required to identify soil types.

The field inspection was performed to delineate both State and Federal regulated wetlands, which are each defined differently. The State defines inland (non-tidal) wetlands strictly by its soil type: those which are designated by the USDA Natural Resources Conservation Service as "poorly drained, very poorly drained, alluvial, or floodplain" (CGS Sections 22a-36 through 22a-45). In contrast, the Federal Government identifies wetlands with a three-parameter approach of hydrology, hydrophytic (wetland) vegetation, and soils. The Federal definition of wetlands is "those areas that are inundated or saturated by surface or ground water at a frequency and duration to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (U.S. Army Corps of Engineers Wetlands Delineation Manual, 1987).

Two areas on the CVH campus were investigated, only one of which was found to fall within either State or Federal wetland criteria. That wetland conformed with both criteria, and both the Federal and State wetland limits are coincident. It is easily recognized in the field as a small depressional area located south of the Greenhouse near Eastern Drive (see Figure 6 for the location and Appendix G for a site plan). After the wetland limits were identified and flagged, the limits were surveyed by O'Brien Associates, Inc.

The wetland, approximately 60 feet by 75 feet in size, is depressed around two feet lower in elevation than the surrounding grass lawn. Historic illustrations depict the site as an ornamental pond. However during the June investigation, the area was dry and the vegetation had recently been mowed. The inlet of a 12-inch red tile drainage pipe, visible at the northern edge of the depression, is shown on record drawings as draining northward past the Greenhouse and merging with a storm drainage system. It may be surmised that a control at the pipe inlet may have once existed but has been removed. At the opposite (south) corner of the depression, a 6 inch red tile outleting pipe was field identified. Several locations within the depression were observed to be inundated with approximately 1 to 2 inches of standing water during a October, 1996 site visit. Such inundation is likely common during the wettest periods of the year and also following periods of heavy precipitation. There is prolonged soil saturation during the wetter months.

A mix of hydrophytic herbaceous plants are present in the depression, including spike rush, sedges and smart weed. A stony fill material found in the subsoils of the wetland likely indicates that there was once a deeper pond present in the area. The soil within the depression, Aquents (Aq), is a poorly to very poorly drained disturbed wetland soil where two or more feet of the original soil surface has been filled over or excavated. Aquents are characterized by a seasonal to prolonged high ground water table and either support or are capable of supporting wetland vegetation.

A second site that was investigated, a drainage ditch located east of Battell Hall, exhibited indicator plant species but failed to satisfy either Federal or State wetland criteria. See Figure 6 for the ditch location. The ditch is intermittent but has water flowing beyond storm events. Since it also has a defined permanent channel and bank and supports hydrophytic vegetation, it satisfies the definition of "watercourse" in CGS 22a-38 (16). The site is therefore subject to regulation under the inland wetlands and watercourses statutes. The ditch is narrow with very steep side slopes cut three to eight feet deep into the surrounding soil surface. The upstream end of the ditch is to the south near Bow Lane, where an 18-inch reinforced concrete pipe was observed slowly discharging storm water into the drainage ditch. Other storm drainage pipes also discharge into the ditch from areas to the west including the Chapel and the Battell Hall parking area. The intermittent stream follows the ditch first in a northerly direction, then turning eastward.

A third site was investigated at a site east of the hospital complex at the northeast quadrant of the Silvermine Road/O'Brien Drive intersection, where the Incinerator Building and closed landfill exist. Figure 21 (Page 3-81) shows a site plan of the area, while additional data is provided in Appendix G. The landfill has extremely steep side slopes which slope toward the western side of a wetland area along the west bank of Reservoir Brook. The wetland limits were delineated and surveyed, and the boundaries for the Federal and State wetlands were found to be the same. A mix of very dense wooded swamp, wet meadow and marsh plant communities are found within the wetland at this location. The wetland derives its hydrology from Reservoir Brook and from groundwater seepage that passes into the wetland from the adjoining hillsides.

The wetland soil found along the majority of the toe of the landfill slope is Rumney fine sandy loam (Ru), which is a poorly drained, moderately coarse over coarse textured, friable over loose alluvial soil developed on floodplains. In 1979, the soil was reclassified in Connecticut to the Rippowam fine sandy loam. At the northern-most limit of the landfill, where the landfill slope turns away from the stream bed, the soil type is Walpole sandy loam (Wd), a poorly drained moderately coarse over coarse textured, friable over loose glacial fluvial (outwash) soil.

For each of the three sites investigated by the soils scientist, Federal Data Plot transects documenting the vegetation, soil features, and indicators of wetland hydrology are provided in Appendix G.

3.5 b. Impact Analysis

No construction activities are proposed within or directly adjacent to the limits of any known wetland area or watercourse except as required for proper closure of the landfill at Silvermine Road. At that location, while the placement of fill within the wetland area is not anticipated, construction impacts associated with regrading might be necessary depending upon the final closure design. Possible permitting issues in regard to any such wetland impacts will be coordinated with DEP during their review of the landfill closure plan. The landfill's existence and the need for its closure are unrelated to the consolidation program at CVH.

Parking area expansions are proposed in proximity and up-gradient from the drainage ditch east of Battell Hall, and those expansions are upgradient with respect to surface water flow from that ditch. The ditch will be protected from sedimentation or other impact during the construction period.

The existing wetland area near the Greenhouse will not be disturbed by the site development projects. The proposed roadway/parking project, based upon its schematic design, will not be closer than approximately 210 feet from the wetland. Moreover, best management practices will be employed during site construction activities to avoid impacting wetland area or watercourses. Such measures will include sedimentation control fencing and proper delineation and containment of construction staging areas.

In summary, no impact to inland wetland areas or watercourses is associated with any of the state actions under CEPA review, and no wetland/watercourse permit is required.

3.6 Air Quality

3.6 a. Existing Setting

In summer 1996, an equipment malfunction occurred at the CVH Power House which caused the stack to discharge a black plume which resulted in the activation of the City South Fire District. During the public and inter-agency scoping meetings for the CEPA environmental assessment, concerns were expressed about that incident and the enforcement status of the facility. The discharge from the Power Plant stack is largely independent of CVH population changes associated with consolidation, since the boilers operate most of the year to heat buildings through the CVH central steam heating system. Nonetheless, a discussion of the Power Plant stack emissions is provided herein in response to the expressed concerns.

An inquiry to DEP revealed that three Notices of Violation for opacity are on record for the Power House. In this regard, DEP's correspondence dated June 26, 1997, provided in Appendix H, states the following:

> In referencing the Notices of Violation ("NOV") Log Sheet, the CVH Power House has been issued 3 NOV's for opacity violations. The years in which these NOVs

occurred are 1980, 1987, and 1992. The violations occurring in the years 1987 and 1992 are marked 'Status Code 9' meaning the source is in compliance. There is no further information on the 1980 NOV.

DEP determines an opacity violation by visually examining the stack discharge in the field. Other episodes of opaque stack discharge have purportedly occurred, such as during summer 1996, when DEP arrived after the discharge had been corrected. CVH maintenance personnel indicated that the summer 1996 problem was due to an equipment malfunction.

At present, the oil-fired steam boilers at the Power House are maintained in compliance with nitrogen oxide (NO_x) regulatory requirements through DMHAS's annual acquisition of NO_x emission reduction credits. (See DEP Consent Order #8101 dated July 1996 included in Appendix H). The emission reduction credit market allows a source that reduces its emissions below legal requirements to sell those "excess" reductions to other sources. For DMHAS, the credit trading allows regulatory requirements to be met until facility improvements are made.

Regulatory requirements for opacity and NO_x discharges will be met by a proposed $2 million Power Plant upgrade (DPW Project Number BI-2B-916F). The project generally consists of replacing the existing burners with low-NO_x multi-fuel burners, switching to natural gas primary fuel, installing control systems, and upgrading plant instrumentation. The resulting plant will be fully automated to continuously operate at its performance peak. At present, all (four) new burners have been purchased, and the first burner will be installed on a boiler for its operation in May 1998, when DEP will be invited to witness stack testing of that boiler. After May 1998, CVH will fire other boilers only after they are retrofitted. Full completion of the project is anticipated by October 1998. A detailed summary of the project's scope is provided in Appendix H.

Regulations adopted in 1995 allow the State DEP to manage all aspects of a State facility's air pollution emissions and applicable requirements within a single comprehensive permit program. Mandated by the Title V of the federal Clean Air Act of 1990, the Title V Operating Permit program is administered through RCSA Section 22a-174-33. A facility having emissions or potential emissions that exceed certain regulatory thresholds is classified as a Title V major source requiring an operating permit. CVH is a Title V major source of NO_x emissions. At present, DMHAS has contracted with a consultant under Project No. 4403493 to 1) complete a Title V permit application, 2) prepare other emission permit applications as necessary, 3) develop monitoring and record keeping strategies to maintain compliance with Title V, and 4) conduct a training seminar for CVH personnel to explain record keeping requirements and other responsibilities of Title V.

3.6 b. Impact Analysis

Of the building rehabilitation projects discussed in this document (see listing of projects in Table 1, Page 1-12), the only projects having air quality effects are those which install emergency generators. At Merritt Hall an emergency generator was installed under Project Number

BI-I-333B. The generator is registered under DEP's General Permit to Construct and/or Operate an Emergency Engine. The unit is a Kohler Model 200R0ZD burning Number 2 fuel oil at a maximum rated capacity of 1.93 mmbtu/hr with an estimated annual operation of 100 hours.

A 1500-kW diesel generator (Caterpillar Model 3516TA) will be installed in the Power House under Project No. BI-I-460. The unit will serve as an emergency generator, providing rapid start-up in the event of a power failure. DMHAS will also investigate the feasibility of using the generator as auxiliary power during peak electrical demand (peak shaving); however, such use would require DEP approval.

The net effect of the emergency generator installations and the proposed Power Plant upgrade will be a campus-wide improvement under the Title V program. The Power Plant project, required to stay abreast of air quality regulation, has no bearing on the consolidation program. The project consists of mitigative measures to improve ambient air quality, and no significant adverse environmental impacts are associated with it.

Motor vehicle emissions that might be associated with the proposed roadway and parking project were examined. Projected conditions were viewed with respect to Federal EPA-established National Ambient Air Quality Standards (NAAQS) which stipulate maximum allowable concentrations of selected major air pollutants. Appendix H provides descriptions of the pollutants and respective NAAQS. The State DEP annually compiles air pollution field data and prepares "implementation plans" for given Air Quality Control Regions and promulgates regulations as required to attain or maintain Federally-established air quality standards. Currently, the Middletown region is in attainment of all NAAQS except the ozone standard. The regional Ozone non-attainment status is "serious" - a milder designation than "severe," which in Connecticut is solely assigned to Fairfield County. While a new, more stringent Federal Ozone standard has recently been promulgated, ozone is being addressed on a state-wide basis with various measures including the state requirement for California Low Emission Vehicle cars, which will appear in model year 1998. Impacts from CVH traffic to ozone concentrations are indeterminate, but are not considered significant in respect with the mezzo-scale emissions effecting ozone levels and in respect with state-wide remedial measures.

The assessment of motor vehicle emissions involved a review of the traffic and roadway data presented in the traffic section discussed in this document in Section 3.11. The traffic section results indicate that most intersections in the vicinity of the campus currently operate at acceptable levels of service during peak traffic periods. Under design year Build and No Build conditions, levels of service at these intersections will be maintained at acceptable levels. As a consequence, traffic delays and queuing will be minimized and no air quality impact or violation of the National Ambient Air Quality Standards (NAAQS) is anticipated.

The traffic section determined that one intersection, Silver Street and Eastern Drive, will experience a reduction in level of service under Build conditions on the northbound approach to the STOP controlled intersection during the PM peak period. As described in the traffic section, the proposed improvements will result in the redistribution of traffic at some locations, including

this intersection. In terms of air quality, the change in level of service under the Build condition at the northbound left turn approach is not expected to cause emissions build-up such that an air quality impact would occur.

A preliminary comparison of Existing, No Build, and Build conditions was made using the U.S. Environmental Protection Agency's Carbon Monoxide (CO) Hot Spot Guidelines screening process (U.S. Environmental Protection Agency, 1978). This screening process focuses on CO as an indicator of the relative contribution of traffic emissions constituents and is a useful tool for determining the need for further air quality analysis. The results of the screening process indicate that traffic emissions at the Silver Street/Eastern Drive intersection under Build conditions will be slightly greater during the peak period than Existing and No Build conditions; however, the emissions will be well below the NAAQS and no violation that would constitute an air quality impact is anticipated (see computations in Appendix H).

Levels of service on other intersection approaches will be unchanged under Existing, No Build, and Build conditions. Maintenance of existing levels of service in the Build condition at the other approaches will ensure no impact with respect to air quality. Given these expectations, detailed analysis of emissions concentrations was determined to be unwarranted.

The traffic volumes through intersections surrounding the site were smaller immediately prior to the beginning of the consolidation program, and the majority of increased traffic generation from consolidation has already been experienced. However, based upon field-counted traffic volumes, the existing conditions produce vehicular CO emissions that are well below the NAAQS (as discussed above). Therefore, the consolidation program has not resulted in a significant air quality impact. Moreover, the planned hiring of CVH staff to meet the projected patient census will only increase the total staff by 3 percent (1,339 employees in June, 1997 when the traffic counts were taken, versus 1,378 planned). That increase will not have a measurable affect upon traffic conditions or traffic-related air quality.

3.7 Ambient Noise Levels

3.7 a. Existing Setting

The noise environment of the project site and vicinity is dominated by vehicular traffic noise from Route 9, Silver Street, and other roadways. On site, vehicular backup alarms are occasionally emitted. In addition to vehicular traffic, normal operational on-site sound sources include ground-mounted HVAC units (such as exists near the northeast corner of Battell Hall); children's voices at the Day Care facility, and a lawn mower in operation.

Existing land uses that may experience noise levels in the vicinity include the facilities of CVH and single family residences, the latter being located on Eastern Drive north of Silver Street and on Bow Lane.

3.7 b. Impact Analysis

The proposed roadway and parking project was assessed for possible impacts due to traffic-related noise. The assessment involved a review of the peak period traffic and roadway data presented in the traffic section of this document (Section 3.11, beginning on Page 3-51). The traffic study projected that certain roadway intersections may experience increased Build traffic volumes of around 15 to 20 percent over No Build volumes.

In evaluating the potential for traffic noise impact and the need for detailed analysis, the following general rules were applied. Typically, a 100 percent increase in hourly traffic volume raises the pre-existing noise level by approximately 3 decibels (dBA) (Reference 20). A 2 to 3 dBA increment is the minimum change in noise level that is detectable by the normal human ear (American Association of State Highway and Transportation Officials (AASHTO), 1974). Applying these general rules, the changes in traffic volumes at area intersections between Existing, No Build, and Build conditions consequent to the project will not exceed approximately 35 percent as represented in the Traffic study. As this value is well below the general rule of 100 percent, the change in traffic noise level is expected to be imperceptible. Thus, a detailed noise analysis is not warranted.

Construction activities will temporarily alter local noise levels due to the operation of construction and paving equipment, and delivery vehicles. Generally, the construction sites are remote from residential receptors such that the effect of temporary construction noise will be minimized. The conduct of construction activities during normal business hours will restrict the duration of construction noise to daytime hours. Travel routes for equipment and deliveries will be established as part of the construction plan. Restriction of construction vehicle movements will limit the area of noise influence. The effect of construction activities on ambient noise levels will be minimized in accordance with the construction contract specifications, which will incorporate in full Section 1.10 "Environmental Compliance," the State of Connecticut Department of Transportation *Standard Specifications for Roads, Bridges and Incidental Construction* (Form 814A), 1995. Specifically, the specifications will direct the Contractor to take measures to control the noise intensity caused by his operations as necessary to limit the maximum noise level at the nearest residence to 90 dBA.

No significant increase in ambient noise levels is anticipated from completed projects, programs, or other proposed state actions at CVH.

3.8 Municipal Solid Waste

3.8 a. Existing Setting

The United States generates more municipal solid waste per capita than any other nation. A significant trend is that in the last twenty years, domestic recycling rates have risen to nearly 24 percent. Recycling opponents have argued that recycling is more expensive than land filling. Proponents counter that while all solid waste cannot be recycled, much recycling is cost-effective

when considering long-term solid waste management costs including impacts to natural resources. However, recycling is part of State policy. Special Act 93-423 sets a minimum goal of 40 percent reduction of the "municipal solid waste" stream through the promotion of source reduction and recycling. Municipal solid waste is defined as "residential, commercial and industrial waste, excluding solid waste consisting of significant quantities of hazardous waste, land clearing debris, demolition debris, biomedical waste, sewage sludge and scrap metal." The State last compiled statistics on achieved recycling rates for the fiscal year 1994-1995, when the State recycled 23 percent of its municipal solid waste.

At CVH, white paper and computer paper is collected for recycling under contract by All Waste Inc. of Newington, Connecticut and Sanitary Services Corporation of Manchester, Connecticut. The contractor provides and is responsible for exterior storage containers. The CVH advises employees of the need to recycle.

Removal of municipal solid waste from CVH is contracted to D.P.L. Refuse Service, Inc. of Woodbridge, Connecticut. Dumpsters provided by the vendor are located near the existing buildings for temporary storage of municipal solid waste and recyclables. Recyclable materials are separated on-site and deposited into color-coded dumpsters for newspaper/magazines, bottles, and cardboard.

At present, the land clearing debris and other bulky wastes are temporarily stockpiled on-site before being transported for disposal at a facility licensed to handle bulky waste.

3.8 b. Impact Analysis

Rubbish removal is mostly paid on a monthly basis, and a record of quantities is unavailable. However, it is assumed that removal quantities have increased since the consolidation program began in July 1995. No adverse environmental affects have resulted from any such increase in municipal solid waste generation. Further, no changes are anticipated in the manner in which municipal solid waste is handled at CVH. The contracts for vendor removal of white paper and rubbish expire respectively in August 1999 and April 2001.

3.9 Pesticides, Toxics, or Hazardous Material

3.9 a. Existing Setting

The firm Clough, Harbour & Associates LLP conducted a Hazardous Material Assessment to evaluate the potential for hazardous materials on-site and within buildings considered for demolition (Reference 5). Their work included a Phase I Environmental Site Assessment for the entire CVH main campus performed in accordance with the DEP Transfer Act Site Assessment Guidance Document, 1991. The Phase I study of the grounds found the remains of an old coal storage area located near the existing CVH wastewater treatment plant. An adjacent area was once used as an ash dump, according to a historic map. No indications of coal ash were observed and vegetation was growing normally, although surficial staining was found.

For structures considered for demolition, Clough, Harbour & Associates LLP conducted Phase II investigations including surveys for both asbestos-containing materials and lead-based paint. All of the buildings presently considered for demolition were investigated except Dix Hall Annex, which will be inspected prior to demolition. For each structure studied, locations of possible contamination were identified with review of record building plans, previous studies, and inspection of visible and accessible surfaces. Record data was gathered from reports generated by Versar Risk Management, Inc. in 1986 during their facility-wide inspection for asbestos-containing materials.

Asbestos

Asbestos, a strong fiber with superior thermal properties and flame resistance, is found in a wide variety of products. Some products that commonly contain asbestos include pipe and duct insulation, furnaces and other furnace door gaskets, building insulation, wall and ceiling panels, roofing materials, floor tiles, carpet underlays, electrical wires, textured paints, patching compounds, and cements.

When inhaled or ingested, asbestos fibers are known to become embedded in the tissues of the respiratory or digestive systems. Years of exposure to airborne asbestos can cause disabling or fatal disease. Some uses of asbestos have been banned: the spraying of asbestos-containing materials (1973); certain pipe coverings (1975); certain patching compounds and artificial fireplace logs (1977); sprayed-on asbestos decorations (1978); and asbestos-containing hair dryers (1979). The production of all asbestos-containing materials for home construction and use was banned over seven years beginning in 1990. Asbestos is considered special waste under State regulation.

During the field inspection of buildings and structures considered for demolition, representative bulk samples of materials suspected of containing asbestos were collected, including both friable and non-friable materials. Asbestos concentrations within the bulk samples were estimated by laboratory analysis using the EPA Polarized Light Microscopy and, as needed, Transmission Electron Microscopy. Asbestos-containing materials were associated with all of the buildings studied except the Ice House, Old Grounds Storage Building, and the Lock and Paint Shops. Most of the material surveyed was broken or delaminated, however none was found in occupied interior areas. Additional asbestos-containing material exists on the central steam pipe loop. Table 5 provides a summary of the findings.

For asbestos removal at DMHAS facilities, DMHAS calls upon DPW's Asbestos Management Section, which coordinates a federally-funded asbestos removal program. DPW can rapidly mobilize an on-call licenced asbestos contractor to handle either emergency or non-emergency asbestos removals.

Lead

Lead was typically used as a constituent of paint prior to 1978. Presently leaded paint is banned, and concentrations of lead in dry paint exceeding 0.5 percent by dry weight are regulatorally

defined as toxic. The referenced consultant conducted an investigative survey of lead concentrations of various surfaces on buildings considered for demolition. Lead-based paints were associated with all of the buildings surveyed except the Old Pig Slaughter House, Incinerator Building, Ice House, Lumber Storage Building, and Paint Shop. The surveyed paint was in fair to poor condition (chipped, flaking, or delaminated). No lead-based paint was found in occupied interior area except for Cottage #43/44, where lead-based painted radiators in fair condition were identified. A summary of the findings is provided in Table 6.

TABLE 5
Asbestos-Containing Materials in Structures Considered for Demolition

Location	Thermal System Insulation (lf)	Floor Tile (sf)	Mastic (sf)	Fire Door Insulation (sf)	Transite (sf)	Breaching Material (sf)
Old Weeks	10,700	6,600	8,600	---	---	---
Smith Hall	3,000	---	---	200	---	---
Old Woodward Hall	19,500	2,700	2,700	---	---	---
Kenniston Hall	380	3,000	3,000	---	12	---
Old Firehouse	75	---	---	---	---	---
Cottages 43/44 & 12	200	---	---	---	---	---
Pig Slaughter House	---	---	---	---	---	15
Incinerator Building	---	---	---	---	3,200	10
Old Tin Shop	---	---	---	---	20	---
Carpenter Shop	---	400	---	---	---	---
Overhead Connectors at Dix, Noble, Page, Stanley	---	---	---	---	3,200	---
Dix Hall Annex	165	*	*	*	*	*

Source: All data provided by Clough, Harbour & Associates, LLP (Reference 12), except Dix Hall Annex data provided by Versar Risk Management, Inc.(Reference 44).
* Dix Hall Annex was inspected only for pipe insulation. Full inspection to be performed at a future date.

TABLE 6 Lead-Based Paint in Structures Considered for Demolition	
Location	Lead Paint (sf)
Old Weeks	26,750
Smith Hall	46,160
Old Woodward Hall	132,460
Kenniston Hall	11,880
Old Firehouse	1,920
Cottages 43/44 & 12	1,075
Pig Slaughter House	---
Incinerator Building	---
Old Tin Shop	2,000
Carpenter Shop	300
Overhead Connectors at Dix, Noble, Page, Stanley	4,900
Source: Clough, Harbour & Associates, LLP (Reference 12) Note: Dix Hall Annex to be inspected for lead paint at a future date	

Hazardous Waste and Materials Management

CVH has developed a Hazardous Material and Waste Management Plan that has a stated purpose of minimizing risk to patients, personnel, visitors and the environment. Compatible with Federal and State requirements, the plan addresses the safe management of hazardous waste and materials from their point of entry into the hospital facility to their point of final disposal.

CVH's Safety Committee establishes priorities for the investigation and/or resolution of any identified problems. The Safety Committee annually reviews policies and procedures relating to the program, evaluates the programs's effectiveness, and reports its findings to the hospital Executive Committee. The Supervisory Housekeeping Staff delivers all solid waste to designated holding areas, while the disposal of chemical wastes is handled by the CVH Engineering Department.

The CVH Fire Chief has authority to institute an emergency plan in the event of a major chemical waste incident. An on-call contractor is available for rapid response to any hazardous materials spill or related emergency.

CVH's Hazardous Material and Waste Management Plan also contains policies and procedures for the safe handling of biomedical waste. Medical and infectious waste is separated at the source from the waste main stream and stored in separate limited-access areas until transported off-site. (One of these storage areas, in Old Weeks Hall, was found have two broken containers during the Phase I study). The Hazardous Material and Waste Management Plan provides specific handling procedures including deposition in designated receptacles, labeling, and removal of receptacles. Housekeeping staff receives special training prior to handling medical waste. Collection and removal of regulated medical waste is provided under the local contracting firm Stericycle.

It is CVH's written policy to make every effort to reduce its volume of hazardous chemicals and hazardous waste. To achieve this reduction, CVH limits the number of chemicals purchased, attempts to substitute less hazardous chemicals, and applies environmentally sound disposal techniques for chemicals that are no longer used.

Material Safety Data Sheets for every hazardous chemical used in the facility are made available to employees. The sheets provide informative data regarding the possible health effects and allowable exposures to chemicals. When ordering new supplies or materials, individual departments identify any items that contain hazardous substances and identify any need for an updated Material Safety Data Sheet. When new chemicals are added to a department, employees are advised to read product labels and directions for proper usage. Department heads and supervisors instruct new employees on proper handling, storage and dilutions of hazardous chemicals.

According to information obtained from CVH Plant Operations personnel, potentially-hazardous chemical substances requiring Material Safety Data Sheets are present in building space as summarized in Table 7.

The Phase I study (Reference 5) identified various chemical containers at several locations on the main campus, however no significant spills or evidence of chemical releases were found. The findings included electrical supply batteries, paint, solvents and other chemicals in containers less than one gallon, fuel storage tanks, and one 55-gallon drum of an unknown product.

TABLE 7 Summary Descriptions of Existing Chemical Inventory (Potentially Hazardous)		
Location	Department	Potentially-Hazardous Chemical Types
Carpenter Shop	Plant Operations	Chlorine bleach, petroleum-based lubricants, solvents, and motor oil.
Merritt Hall	Dental Clinic	Chlorine bleach
Cotter Building	Grounds	Solvents, motor oil, oil-based paint, anti-freeze, gasoline, kerosene, chlorine bleach paint remover and wood preservative
Various Buildings	Housekeeping	Chlorine bleach
Shew Hall	Human Resources Development	Chlorine bleach
Russell Hall	Laboratory	Mercury
Battell Hall	The Learning Center	Wood stain, nail polish remover
Paint Shop	Plant Operations	Paint thinner, lacquer thinner and paint remover
Dutton Hall	Campus Police	Chlorine bleach
Power Plant	Plant Operations	Petroleum-based lubricants, solvents, diesel fuel, mineral spirits and paint thinner
Page Hall	Scribe Office	Lacquer
Water Pollution Control Facility	Plant Operations	Motor oil, gasoline, petroleum-based lubricants, toluene, chlorine bleach, oil-based paints, mineral spirits, synthetic oil, and No. 2 fuel oil, Chlorine bleach
Russell Hall	X-Ray Department	Chlorine bleach

Pesticides

Cultivated areas on the CVH property receive insecticide, herbicide, and fungicide applications as needed to raise nursery plants. The products are applied by contractors licensed by DEP, who work in accordance with "best management practices" for the protection of the environment as detailed in a Soil Conservation Plan on file with the Middlesex County Soil and Water Conservation District. A listing of the products used is provided in a correspondence from Millane Nurseries, Inc. dated October 1, 1997 in Appendix C.

3.9 b. Impact Analysis

Asbestos

Prior to demolition of CVH buildings that are structurally sound, regulated asbestos-containing materials are required to be removed from the facilities before any activity begins that would break up, dislodge, or similarly disturb the material (Title 40, Code of Federal Regulations (CFR), Part 61, Subpart M, Section 61.145 (c)). Removal of regulated asbestos-containing materials will be performed by a licensed contractor in accordance with the State Regulations, Sections 19a-332a-1 through 19a-332-16 "Standards for Asbestos Abatement." The State of Connecticut Department of Public Health (DPH) must receive notification in advance of the removals as required by Section 19a-332a-3. The Federal EPA may also require advance notification of asbestos removal per 40 CFR Part 61.

Structurally unsound buildings in danger of imminent collapse may be demolished prior to the removal of asbestos-containing materials (RCSA 19a-332a-11). Such demolitions require an Alternative Work Practice approval from the State Department of Public Health. Buildings that may warrant this procedure include the Ice House, the Old Pig Slaughter House, and Old Weeks Hall. The demolition work must be performed in a manner consistent with the provisions of the U.S. EPA National Emissions Standards for Hazardous Air Pollutants (NESHAP).

The disposal of asbestos-containing materials must be performed under a permit in accordance with RCSA Section 22a-209-8. During asbestos removal, Occupational Safety and Health Administration (OSHA) regulates human exposure to airborne asbestos concentrations.

Overall, the proposed project will impact the timing of asbestos removals, however the project has no bearing on the eventual need for the removals. State and Federal regulations will assure that sound procedures are followed in the handling and disposal of asbestos-containing material, therefore no negative impact will result.

DMHAS will continue its ongoing efforts to identify asbestos containing materials facility wide. As needed, DPW's Asbestos Management Section will activate an on-call contractor to perform asbestos removals.

Lead

If the proposed building renovations would impact toxic levels of lead, then the prior removal or repair/management of lead-based paint is required. During abatement, lead exposure levels are regulated by 29 CFR 1926.62, which require proper worker protection and environmental compliance precautions. OSHA forbids exposure to lead at airborne concentrations greater than 50 micrograms per cubic meter of air (50 μg/m3) averaged over an 8-hour period. When at hazardous waste levels, lead waste disposal must be in accordance with 40 CFR Parts 260 through 271 and Connecticut Hazardous Waste Management Regulations Section 22a-209-1; 22a-209-8(c); 22a-449(c)-11 and 22a-449(c)-100 through 22a-449(c)-110. For unoccupied buildings, no lead abatement or repair is required. However during demolitions, worker protection and environmental compliance as discussed above will be maintained.

Hazardous Waste and Materials Management

Irrespective of consolidation activities, CVH intends to handle hazardous waste and hazardous materials at CVH in accordance with applicable laws. No adverse impact exists in this regard from any CVH actions.

3.10 Public Utilities and Services

3.10 a. Existing Setting

Water Supply

The entire CVH campus is provided with water supply and distribution service from a system owned by the State. Operation and maintenance of the entire system is under DMHAS jurisdiction. In addition to serving CVH facilities, the system service area includes the Department of Administrative Services Warehouse, Eddy Home, Shepherd Home, Riverview Hospital for Children and Youth, and Veteran's Cemetery. The service area is limited to State property except for two properties located adjacent to the CVH campus. At present, no connections to other systems exist.

The system is supplied entirely from five surface reservoirs located on State property southeast of the main campus (see Figure 1, Page 1-3). A sixth reservoir, Reservoir #1, has been disconnected from the system and is inactive. A summary of the reservoir statistics is provided in Table 8.

TABLE 8
Reservoir Statistics

Reservoir Number	Water Shed Area (Acres)	Water Surface Area (Acres)	Usable Storage (mg)	Safe Yield (mgd)	Elev. Spillway (Feet)	Elev. Outlet (Feet)	Depth Avg. (Feet)	Total Storage (mg)	Status
1	53.0	1.1	2.4	0.024	254.0	246.5	6.7	N/A	Inactive
2	135.0	14.5	40.0	0.150	351.0	332.5	7.3	N/A	Active
3 & 4	216.0	14.0	68.0	0.250	333.0	317.0	6.4	73	Active
5	75.6	14.2	39.8	0.093	493.0	484.0	5.2	57	Active
6	186.0	17.6	66.8	0.200	423.5	408.8	6.0	74.8	Active
Totals	665.6	61.7	217.0	0.717	-	-	-	-	-

Source: Nathan L. Jacobson & Associates, Inc. (Reference 27)

The reservoirs collect stormwater runoff from 613 acres of land. Any water drawn from Reservoir #6 must first be pumped to Reservoir #5, but otherwise raw water flows by gravity to an intake structure in Reservoir #4, then to be pumped to the filtration plant located around one mile southeast of the main CVH campus. Table 9 provides a tabulation of the registered diversions for each of the reservoirs.

The safe yield total for the reservoirs is 0.7 million gallons per day (mgd). The water production for 1994 was 0.306 mgd. The current margin of safety is calculated at 2.29, which is well above the recommended minimum of 1.10.

Prior to distribution, all water is treated at a water filtration plant located adjacent to Reservoir #4 off Cedar Lane. The plant, which began operation in 1990, is permitted by the Department of Public Health for the production of up to 0.7 mgd.

Water then flows to the system's only finished water storage tank, which has a storage volume of 800,000 gallons. The tank provides fire flow and system operating storage. From this tank, water flows by gravity through a 16-inch transmission main to the distribution system. In all, the distribution system has around 90,450 feet of piping. The distribution system is entirely fed by gravity (without pumping).

TABLE 9
CVH Diversion Registrations

Name of Registered Diversion	Use Status	DEP Reg. #	Basin Code	Maximum Withdrawal (mgd)
CVH Res #1 - Spillway Flow to Reservoir Brook	Inactive	58221	4000	0.000
CVH Res #2 12" Line to CVH	Active	58217	4000	2.310
CVH Res #2 8" Line to Res #3-4	Active	58217	4000	0.545
CVH Res #3-4 16" Line (Fire flow Cap)	Active	58218	4000	2.360
CVH Res #5 8" line to Res #2	Active	58219	4000	1.730
CVH Res #5 8" to Brook to Res #3-4	Active	58219	4000	2.080
CVH Res #6 Pump to Res #2 or #5	Active	58220	4000	0.540

Source: Nathan L. Jacobson & Associates, Inc. (Reference 27)

A separate fire distribution system serves a large portion of the CVH campus. Sprinkler and standpipe system designs for the buildings are based on gravity flow. However, a 1500-gallons-per-minute (gpm) steam turbine pump may be activated to boost pressures during major fire emergencies. Hydrants exist on this fire system as well as on the domestic distribution system. Table 10 provides fire flow data.

The distribution system map on the CVH main campus is shown on Figure 8. The distribution system pipes are typically cast iron or ductile iron. The service area ranges in elevation from 70 to 190 feet above mean sea level. Static pressures range from 65 to 115 pounds per square inch (psi). No areas of the CVH water system have unacceptably low pressure (less than 35 psi) during average or maximum day demand conditions.

At present, the ability to isolate sections of the system for repair is limited due to the high number of inoperable valves. To address that condition, CVH is undertaking an upgrade of distribution system valves. CVH has around 72 hydrants active on its system,

TABLE 10
Available Fire Flow

Pressure Hydrant	Flow Hydrant	Static Pressure (psi)	Residual Pressure (psi)	Test Flow (gpm)	Available Fire Flow at 20 psi (gpm)	Test Date
CVH, Merritt Hall #F-2	#F-63	87	57	1330	2053	3/17/95
Department of Administrative Services, Purchasing D-42	D-57	85	65	994	1878	11/17/95
Riverview Hospital Silvermine Hall D-54	D-70	103	73	994	1722	11/28/95

Source: Nathan L. Jacobson & Associates, Inc., (Reference 27)

In the last five years, CVH has been actively implementing structural solutions such as replacing older plumbing fixtures with low water use fixtures and eliminating water cooled refrigeration equipment. Replacement of water cooled refrigeration has resulted in an estimated 60,000 gallons-per-day (gpd) reduction in water consumption. The new conservation plan will expand those efforts into education of the consumer, leak detection, and water audits.

Currently, the system distribution samples are exceeding the State Health limit for odor in five percent of the samples. CVH will be continuing to implement a program to eliminate this problem. Non-structural operations changes will be addressed before more costly solutions are considered.

The system is not connected with any other water system. However, during past water supply emergencies a temporary interconnection had been made between the CVH system and the City of Middletown distribution system via a fire hose running between two hydrants. The interconnection, located on Davis Drive off Bow Lane, supplied to the City in 1963 for about two months and again for a period in the summer of 1991. The CVH system received water through the interconnection during a period in 1983 and during one day in 1995. The ability to receive emergency supply through an interconnection is especially important to CVH since its system relies on a single transmission main from its storage tank. The distribution system is vulnerable to cutoff from its supply by any break on the transmission main requiring its shut-down. In addition, due to friction losses through the temporary fire hose connection, fire flow capability cannot be maintained during its use. Concerns about the reliability and integrity of the fire hose interconnection scheme have led DMHAS to investigate the feasibility of providing a permanent interconnection with the City system. DMHAS held discussions with the City Water and Sewer Department, and retained a consulting firm to prepare a preliminary design and estimate the cost of the proposed interconnection (Reference 26, Project BI-I-378). The preliminary opinion of probable construction cost was $220,000.

The 1995 water supply emergency resulted from a broken water main which for a period went undetected. A storage tank low-level alarm proved inadequate. DMHAS has since added additional alarm points to allow for a staged response in any future breakages. In addition, an added alarm will monitor for excessively high distribution flow rates.

CVH is also performing a number of system upgrades, including reduced pressure type backflow preventors at certain locations to protect the potable water supply from contamination. A program of fire hydrant replacement is also proposed which will replace around 20 of the oldest hydrants. Dams of reservoirs 3 and 4 have been cleared of brush and trees, and further such work has been proposed.

The State of Connecticut Department of Public Health (DPH), Water Supplies Section indicated that CVH is presently "in full compliance both in monitoring requirements and water quality standards" with the Public Health Code (Section 19-13-B102). A correspondence from DPH to this affect is provided in Appendix C (see letter dated June 30, 1997). The only concern expressed by DPH was that since some buildings are not utilized to their full capacity, stagnant water may gain turbidity. CVH is addressing that concern with a program of active flushing.

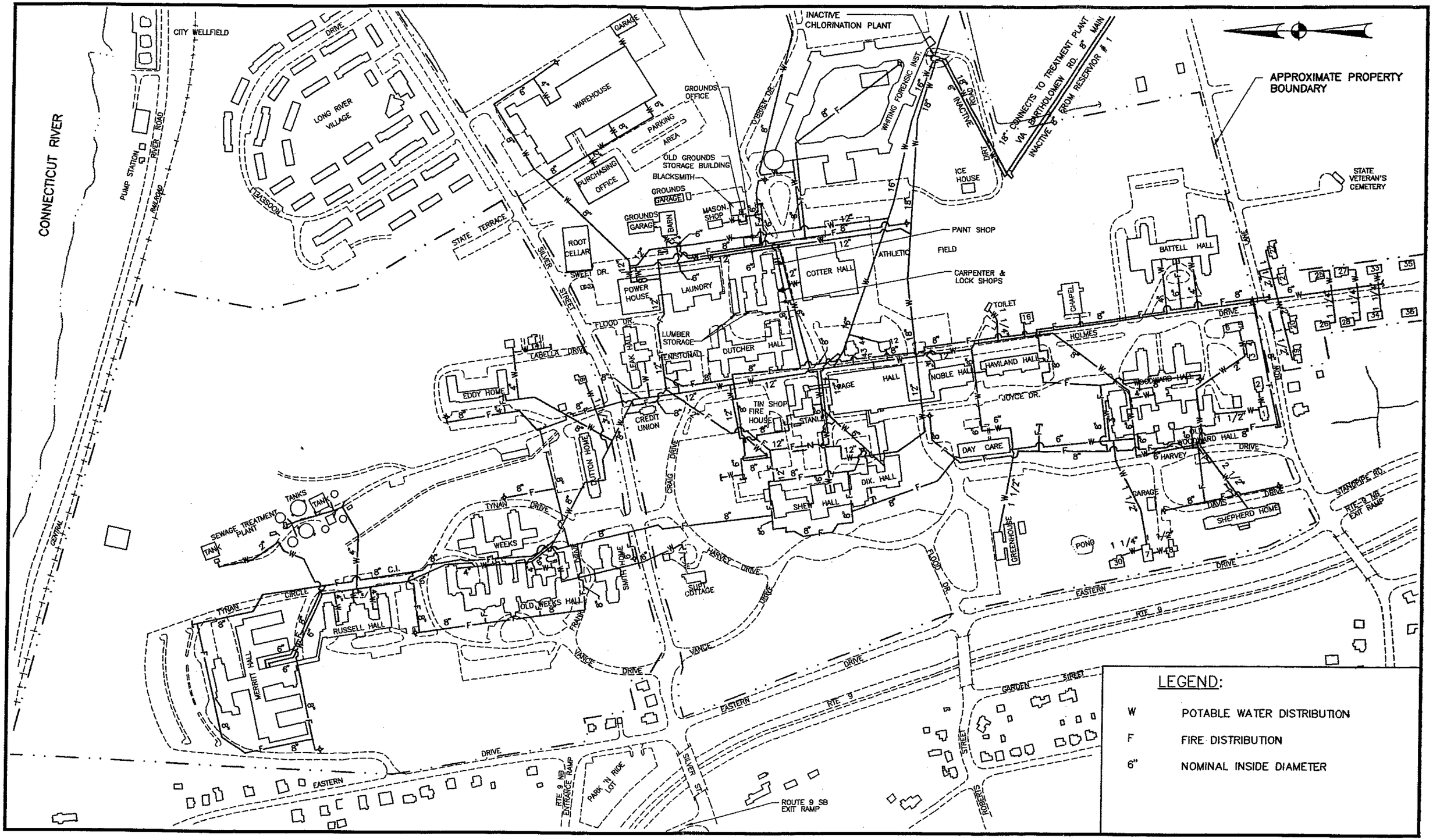
Sanitary Sewer

CVH has its own sanitary sewer system serving all buildings on the campus except a few maintenance/storage structures and outbuildings. No septic systems exist on the main campus, although several septic systems serve small cottages outside the main campus. The sanitary sewer system, in addition to serving CVH facilities and its tenants, serves the Department of Administrative Services facilities on Silver Street (Warehouse and Purchasing Office), the Riverview Hospital for Children and Youth, and the Veteran's Cemetery Center located on Bow Lane. See Figure 9 for a diagram of the system on the main campus.

The CVH sanitary sewage collection system consists of both gravity and force main lines. The main trunk line runs northward on Holmes Drive by gravity flow, transitioning from 8-inch tile pipe to a 15-inch reinforced concrete pipe and terminating at the CVH wastewater treatment plant near Russell Hall. The sanitary sewer system serving the Riverview Hospital for Children and Youth carries the waste by an 8-inch PVC pipe transitioning to a 10-inch tile pipe, and becomes a 6-inch force main at Silvermine Road. The force main discharges into the Holmes Drive trunk line near Page Hall. The Purchasing Office and Warehouse is served by another force main which also discharges into the Holmes Drive trunk line.

The CVH wastewater treatment plant, built in 1964, provides secondary treatment before discharging treated effluent into the Connecticut River. Currently, the plant is operating within its design capacity. The plant was designed to treat an average daily flow of 0.4 mgd and a maximum short-term flow of 0.75 mgd. In contrast, the existing dry weather flow is approximately 0.11 mgd, the average flow is 0.22 mgd, and the maximum flow during heavy rains is 0.5 to 0.7 mgd. Approximately 12,000 gallons of sludge is trucked each month to the Mattabassett District for disposal.

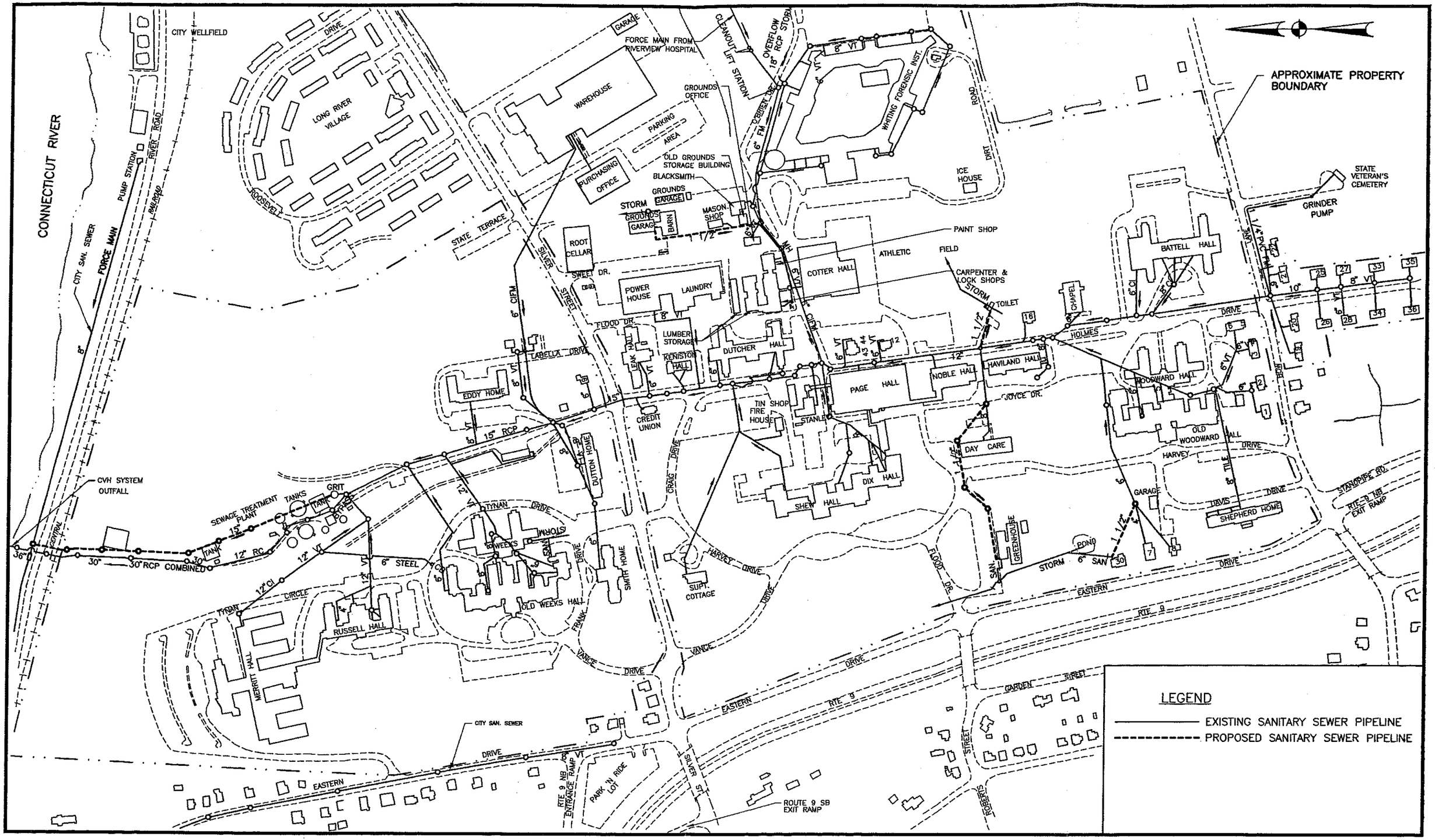
The plant is reportedly in good condition. However, at some point in the future, it is anticipated that new State regulations will be adopted which will require DMHAS to make capital expenditures to meet more stringent water quality goals. Specifically, DEP intends to require aggressive levels of nitrogen removal at all sewage treatment plants as a measure to prevent hypoxia (low dissolved oxygen) in Long Island Sound. Presently it is DEP's policy that any upgrade or renovation of a sanitary sewer plant should include provisions for nitrogen removal. In anticipation of this regulatory development, CVH has moved to assess cost effective alternatives that would provide nitrogen removal from its wastewater. One alternative under study is the option of closing the existing CVH sewage plant and tieing the system into the City of Middletown Water Pollution Control Facility. The City's facility is located on the north side of River Road around 2,500 feet east of Eastern Drive. Upgraded in 1976, that facility provides secondary treatment before discharging effluent into the Connecticut River. Sludge from the process is thickened, stored and transported to the Mattabassett Sewage Treatment Plant for disposal. The City's plant is designed to process an average daily flow of 6.75 mgd, a maximum dry weather flow of 8.4 mgd and a peak wet weather flow of 20 mgd. The actual flows to the facility are an average daily flow of 3.5 mgd, a dry weather peak flow of 6.5 mgd, and wet weather fully treated flow of 8.4 mgd. Influent exceeding 8.4 mgd bypasses the secondary treatment process, is chlorinated, mixed with secondary effluent, and then discharged to the Connecticut River. The City is undergoing a sanitary/stormwater separation program targeted to reduce the peak inflow to 4.2 mgd by the year 2000. The City, DMHAS and other entities are also exploring the possibility of interconnecting into a regional system, including CVH, which would discharge to the Mattabassett Water Pollution Control Facility in Cromwell.



SCALE: 1" = 300'

FIGURE 8

CONNECTICUT VALLEY HOSPITAL, MIDDLETOWN, CONNECTICUT
EXISTING WATER DISTRIBUTION SYSTEM



SCALE: 1" = 300'

FIGURE 9

CONNECTICUT VALLEY HOSPITAL, MIDDLETOWN, CONNECTICUT
EXISTING SANITARY SEWER SYSTEM

Based upon recommendations of the engineering consultant Purcell Associates, the connection of the CVH system to the City system would consist of a new 15-inch gravity line to convey sanitary sewer discharge from a point just above the existing CVH treatment plant 1,100 feet northward to the City's existing 8-inch force main on River Road. The 8-inch main would require a check for sufficiency in accepting the added flow. A wet tank and new pump station would be installed at River Road. The engineering consultant estimated a construction cost of around $700,000 for the proposed connection to the City system. Additional cost would be incurred if the 8-inch main requires upsizing.

With the proposed CVH connection to the City system, the City's treatment facility would remain below dry weather capacity. The proposed connection would require approvals from the City (municipal Water Pollution Control Authority and the Community Council) and DEP.

The existing condition of the CVH sanitary sewer piping is not well known. While some pipe segments have been installed recently, some segments are quite old. Certain portions of the system are known to accommodate combined sanitary and stormwater flows. At several specific locations on the campus, CVH is currently performing system alterations which will redirect sanitary flow, which had been discharging into storm sewers, into the sanitary sewer system.

DMHAS is in the process of making a study of its sanitary sewer piping system to determine inflow/infiltration problems. The infiltration study would require the use of visual inspection with remote image transmitting equipment. DEP Bureau of Water Management recommends that such a study be made as soon as possible and must be performed before CVH connects to another system. CVH facilities management personnel indicated that inflow is probably a larger problem than infiltration, since a very short time lag occurs between a storm event and a rapid increase in sanitary sewer flow.

Electrical Power

CVH has an agreement with the Connecticut Light and Power Company (CL&P) which requires CVH to generate minimal electrical power during normal periods. At the CVH Powerhouse, two 500 kilowatt (KW) and one 625 KW steam turbine generators provide standby emergency electrical power to the facility and self generation during periods of peak electrical usage. The generators are reportedly in good condition. Primary electrical power distribution to the campus is 4,160 volts stepped down to secondary service of 480/277 volts or 208/120 volts. The CVH Power Plant also provides steam for heating most of the buildings on the campus, air conditioning for some buildings, and domestic hot water.

The CVH plant has four boilers, built in 1951, generating 250 pounds per square inch gas (psig) superheated steam at 550°F, each having a full load rating of 40,000 pounds per hour. Each boiler has three burners which burn No. 6 fuel oil, however a proposed upgrade under DPW Project Number BI-2B-916F will install dual fuel burners (either natural gas or fuel oil). The boilers discharge to a common 175-foot stack. The plant reduces 250 psig heating steam to 150 psig before distribution to the campus. In addition, 10 psig steam provides domestic hot water.

Fuel oil is currently supplied to the Power Plant from six 30,000 gallon underground storage tanks. Currently, four of the tanks contain No. 6 fuel oil, and the remaining contain No. 4 and No. 2 fuel oil. All six tanks will be replaced in Spring 1998 (DPW Project No. BI-2B-760-A214).

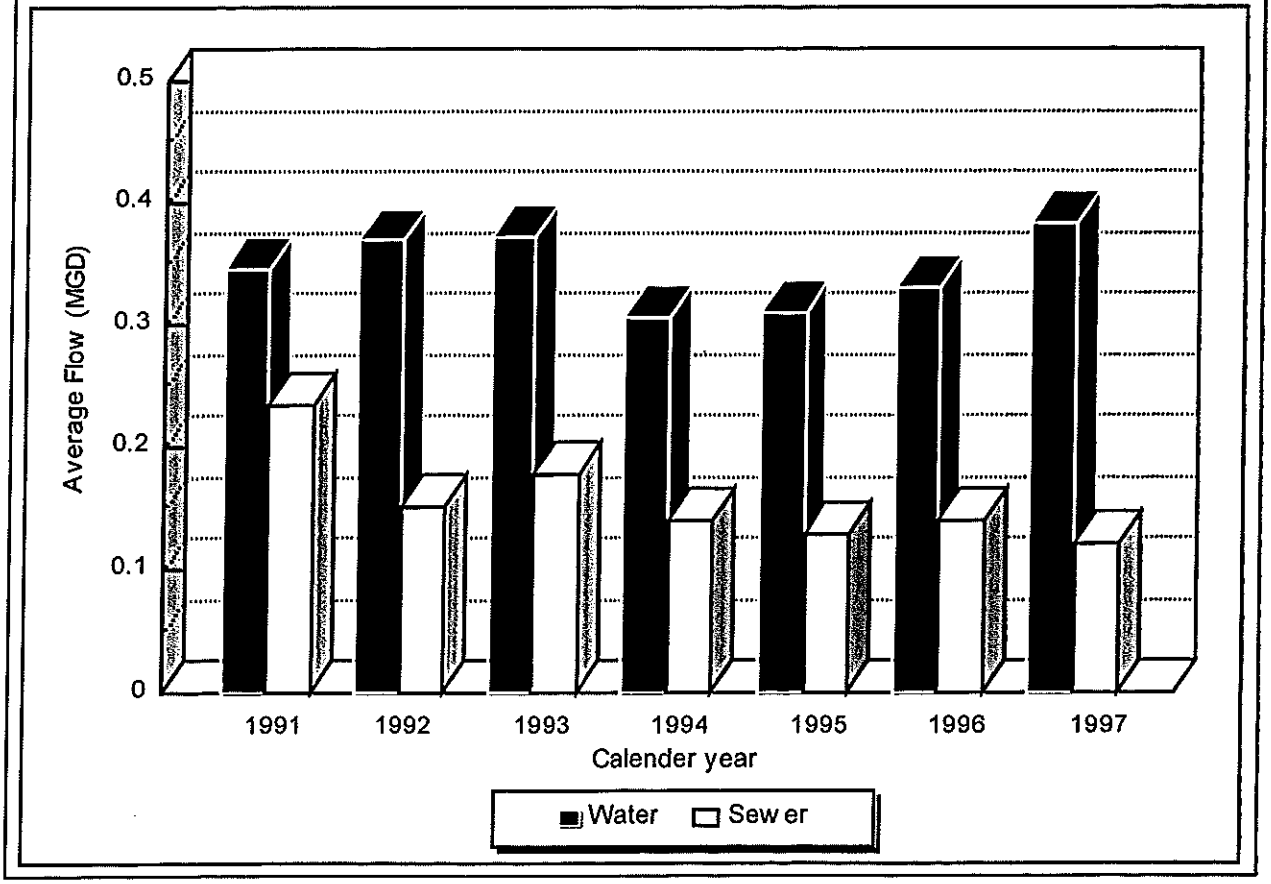
Natural Gas

Natural gas is supplied to the campus via a six-inch low pressure gas main extending eastward from Eastern Drive near Roberts Street. In fall 1996, the Yankee Gas Services Company installed an additional gas main on the CVH campus extending southward from River Road. The new main will serve the CVH Power Plant after new burners are installed. The main will adequately satisfy the demands of the facility.

3.10 b. Impact Analysis

Recorded annual flow data for the CVH water and sanitary sewer systems (average mgd) was plotted and provided in Figure 10 below.

FIGURE 10
CVH WATER AND SANITARY SEWER SYSTEMS - FLOW DATA



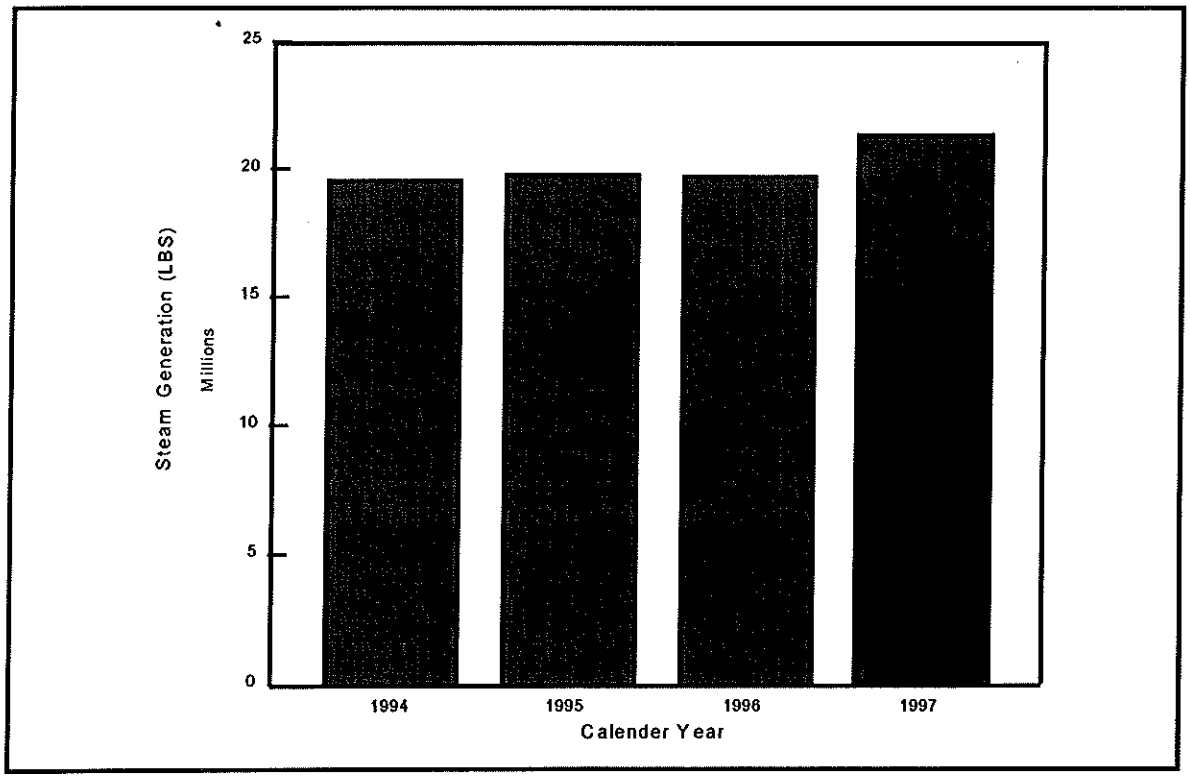
Source: Data provided by CVH Plant Operations

The sanitary sewer flow data plotted in Figure 10 was recorded at the collection system's discharge to the treatment plant. The water flow volumes reflect actual rates from the water plant to the potable water distribution system. In both cases, increases from the lows immediately preceding consolidation are evident (1994 and 1995), although neither systems are handling flow volumes that are significantly greater than those of 1993.

The water and sanitary sewer systems are presently performing to the satisfaction of jurisdictional authorities, as discussed above in Section 3.10 a. It is concluded that no adverse impact has resulted on the systems from the consolidation action. The proposal to tie the CVH sanitary sewer system into the City system is unrelated to the consolidation program or any utility demands.

Figure 11 provides a data plot of steam production at the CVH Powerhouse. No trend is discernible. CVH maintains heat within buildings irrespective of vacancy, therefore steam production during the colder months has generally remained unchanged through the consolidation program.

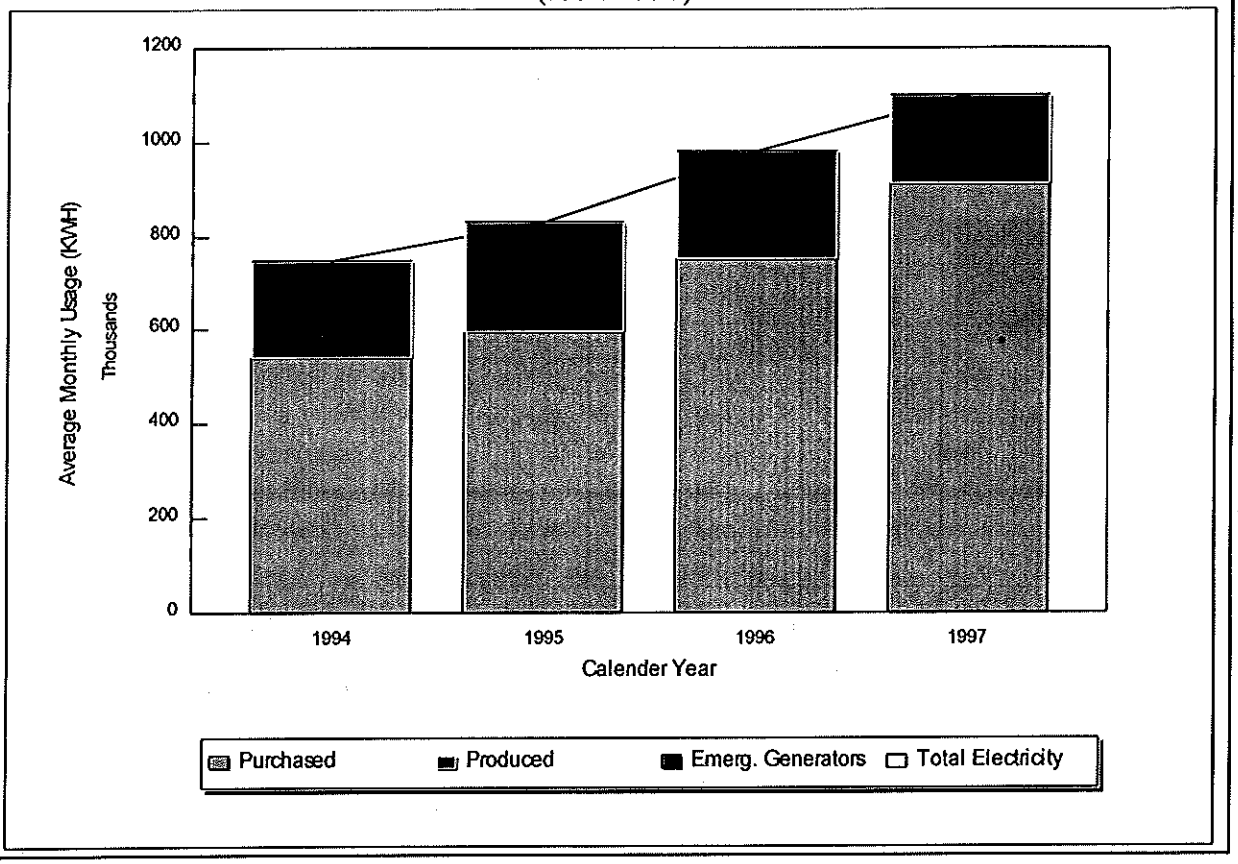
FIGURE 11
CVH POWERHOUSE STEAM PRODUCTION
(1994-1997)



Source: Data provided by CVH Powerhouse Engineering Manager

Data for electrical power used by the CVH system is plotted and provided in Figure 12. The figure illustrates that most electrical power is purchased from Northeast Utilities, while the remainder is generated at the CVH Powerhouse (except a small amount of power, not discernible on the graph, is occasionally generated by the diesel generator at the Powerhouse). The data indicates that electrical power usage has increased in recent years at CVH. A portion of this increase is due to the central air conditioning system that was installed in Merritt Hall under Project No. BI-I-333B. However, the majority of the impact from the consolidation has already been experienced. The system distribution infrastructure has the capability of satisfying both current and anticipated electrical power demands.

FIGURE 12
ELECTRICAL POWER USAGE - CVH SYSTEM
(1994-1997)



Source: Data provided by CVH Maintenance Department

Natural Gas

Gas service at the CVH Powerhouse is recent, therefore historical data does not exist. The gas service is adequate for projected demands, and no related shortfalls or adverse affects are expected. Natural gas will allow the facility to reduce stack emissions as disscussed in Section 3.6.

3.11 Traffic and Parking

3.11 a. Existing Setting

Area Roadways

State Route 9

Regional access is provided to the CVH campus vicinity by State Route 9. In the vicinity of the campus, Route 9 is a four lane, bidirectional, divided limited-access highway. Beyond the western edge of the campus, Route 9 parallels Eastern Drive within an earth cut between the state highway's underpasses of Silver Street and Bow Lane. Silver Street and Route 9 have a half-diamond interchange consisting of a southbound highway exit to Silver Street (Exit 12) and a northbound entrance ramp from Eastern Drive. The Route 9 northbound Exit 12 ramp terminates at the southwestern corner of the state property where it forms a four-leg intersection with Bow Lane and Eastern Drive. The exit ramp approach has two lanes measuring 26 feet total width. Around 2000 feet farther south, a Route 9 southbound entrance is provided from Saybrook Road, which may be accessed from Bow Lane. The segment of Route 9 adjacent to the CVH campus was constructed in 1959 (Connecticut Department of Transportation Project No. 82-105).

Silver Street

Silver Street is a 2-lane bidirectional arterial roadway extending over 1¼ miles from its signalized intersection at Main Street Extension to its eastern terminus at Silvermine Road near River Road. In the campus vicinity, the street is illuminated, and curbside parking is disallowed. Both street sides have curbing and a sidewalk exists on the northern shoulder along with overhead utilities. A bus kiosk is located at the outside of the sidewalk in the northwest quadrant of the intersection with Tynan Drive. Centerline double-bars are marked on the pavement throughout.

Silver Street in the hospital area is signed "Caution Hearing Impaired Patients" and "Slow Hospital Zone." The posted speed limit on Silver Street is 25 miles per hour (mph); however, actual running speeds are commonly much higher. The high speeds are partially attributed to the arterial function of the roadway and the fairly-straight alignment existing east of the campus. Many motorists may have come to expect a high operating speed, as implied by observed occasions when a through-vehicle decelerates so as to allow another vehicle to enter from a cross street, and a following through-vehicle sounds its horn. In the campus vicinity, sight distances are inadequate for the high operating speeds, and accordingly vehicles approaching from cross streets may have difficulty in negotiating a safe entrance to Silver Street during peak traffic hours. Visual obstructions include crest vertical curves located respectively east of the Holmes Drive and (especially) at Tynan Drive. In addition, a sharp reverse horizontal curve ("S" turn) exists at Vance Street through which sight distance is limited for westbound vehicles. Of

somewhat less concern, northbound vehicles stopped on Eastern Drive at Silver Street have an obstructed sight line in the southwest quadrant due to vegetation and an existing bridge parapet. While these available intersection sight distances along Silver Street are probably adequate for the posted 25 mph limit, they pose a traffic hazard due to the actual operating conditions.

The longitudinal grade on Silver Street between Eastern Drive and Tynan Drive is around 8 percent (steep) sloping westward, transitioning to just over 3 percent at the Route 9 overpass. Accordingly, westbound vehicles exceeding the posted speed limit and attempting to decelerate in slippery conditions may experience precariously long stopping distances.

Traffic signals on Silver Street exist at the respective intersections with Tynan Drive/Harvey Drive and Holmes Drive. During the field investigation, both traffic signals were in disrepair and were set in the flashing mode (amber facing both directions on Silver Street, and red facing the cross streets). Those signals were subsequently repaired and are now operating without full actuation. The State of Connecticut Department of Transportation (ConnDOT) plans to upgrade the traffic signals under Project Number 171-260 "District 1 Various Traffic Signals." That project will provide new semi-actuated traffic controllers, signal heads, emergency preemption (automatic phasing for emergency vehicles), and interconnection for coordination of the two signals. Targeted to receive 80 percent federal funding, the project is presently unfunded. ConnDOT personnel indicate that the project is scheduled for completion on May 1, 1999. After installation, the State will assume ownership of the traffic signals and will retain maintenance responsibility thereafter.

Eastern Drive

Eastern Drive is a two-lane, bi-directional local road extending 0.9 miles from its northern terminus at River Road to its southern terminus at Bow Lane, where it opposes the Route 9 northbound Exit 12 ramp. South of Silver Street it functions as a collector roadway linking the two halves of Route 9's Interchange 12. A public commuter parking lot exists adjacent to the Route 9 northbound entrance ramp just north of Silver Street. The lot has a CTTransit bus shelter and space for 85 vehicles. Access to the campus from Eastern Drive may be made via Silver Street, or respective entrances at Tynan Circle near Merritt Hall (North Campus) and Flood Drive near Shew Hall (South Campus). Eastern Drive's horizontal alignment is generally straight. Near the campus entrances its vertical grades are mild, with its high-point located at the campus entrance at Flood Drive. It has curbings on both sides and has overhead illumination throughout. Sidewalk is present only north of Silver Street on the western shoulder. The pavement width is around 28 feet. South of Silver Street, metal guide rail exists along the western shoulder protecting traffic from a wooded embankment which slopes downward toward Route 9. The posted speed limit is 25 mph.

Bow Lane

Bow Lane is a local road that carries bi-directional traffic on an illuminated two-lane section. Its western terminus at Saybrook Road is "Stop" controlled. In the vicinity of the State Hospital, no sidewalk exists and curbing is sporadic. Bow Lane's alignment is fairly straight near the campus, with its highpoint located at its overpass of Route 9. Its paved width varies from 25 feet to 27 feet. The posted speed limit is 25 mph and signage indicates "Slow Children at Play." Its intersection with Eastern Drive/Route 9 Exit Ramp is 4-way "Stop" controlled. An unsigned and mostly-unused commuter parking area is accessed from Bow Lane via Standpipe Road, with parallels and is adjacent to the Route 9 Northbound Exit Ramp. Bow Lane's eastern portions are more rural, and around a mile east of the hospital the road transitions to an unpaved road which continues into Cockaponset State Forest.

Campus Roadways

Internal campus roadways are owned and maintained by the State. The campus-wide posted speed limit is 15 mph. Curbing, roadway illumination, and sidewalks are sporadic. All campus roadways are 2-lane bi-directional, except at two locations roadway segments are signed for 1-way southbound vehicular travel, respectively Flood Drive north of O'Brien Drive and Joyce Drive north of Flood Drive. Pavement appears to be in good to fair condition. At several locations obstructions such as buildings or large trees are located close to existing roadways.

Further descriptive comments on each of the internal roadways follow:

Holmes Drive - At its southern end, Holmes Drive is a cul-de-sac serving CVH cottages. North of Silver Street, Holmes Drive is a dead-end roadway providing access to parking areas for Dutton Hall and Eddy Home as well as the CVH sanitary sewer plant. The 0.4-mile segment of Holmes Drive between Silver Street and Bow Lane functions as the principal north-south central access way of the South Campus. Through this area, Holmes Drive has straight alignment with its highpoint at Bow Lane, and a sidewalk runs along the east side of the street. Pedestrian crossings are marked between parking areas and major CVH facilities such as Battell Hall, Woodward Hall, the Chapel, and Dutcher Hall. However, centerline pavement markings are absent. Respective intersections with Bow Lane, Flood Drive, and O'Brien Drive have 4-way "Stop" controls. Holmes Drive's western curbing is offset from Page Hall a substandard distance of only 2.5 feet posing a potential danger to pedestrians.

Flood Drive - While carrying low traffic volumes, Flood Drive's entrance from Eastern Drive appears at a "main entrance" to the campus due to the presence of historic stone pillars. The pavement width ranges from 27 feet at its Eastern Drive entrance to 20 feet near Harvey Drive. Flood Drive travels an east-west alignment west of Holmes Drive and turns north-south for its approach to Silver Street. "Stop" controls exist at Eastern

Drive, Harvey Drive, and Silver Street. Centerline double-bar pavement markings are found through most of the street length. A pedestrian crosswalk is marked between the children's day care facility and the adjacent parking area west of Dix Hall.

Vance Drive - Vance Drive provides circulation between the North and South Campus from Frank Drive, across Silver Street to Harvey Drive near the front entrance to Shew Hall. Its approaches to Silver Street are "Stop" controlled. The southbound approach to Silver Street has particularly limited sight distance in the eastern direction due to Silver Street's alignment (see discussion of Silver Street). No traffic control exists at the roadway's southern end where it merges with Harvey Drive. Double bars are marked at the roadway centerline. Its pavement width varies 21 to 23 feet and curbs are absent.

Harvey Drive - Providing a north-south alternative to Holmes Drive, Harvey Drive is less traveled since major parking areas are instead accessed from Holmes Drive. Its horizontal alignment is mostly curvy and its grades are generally flat. Harvey Drive opposes Tynan Drive at Silver Street, where a traffic signal exists. Most vehicular traffic between the North and South Campuses travel through this intersection. Connection to Holmes Drive is achieved from either Silver Street or via Craig Drive. Near Shew Hall, Harvey Drive has an illuminated sidewalk and curbing on its east side. Curbing is absent along the west street side. A curbed, planted island located directly in front of the Shew Hall entrance allows 2-way traffic on either side. A "Yield" control is located at the southbound approach to Flood Drive. South of Flood Drive, cubing is absent on either side and large trees are located close to the roadway edge. Harvey Drive's T–intersection with Bow Lane is "Stop" controlled.

Tynan Drive/Tynan Circle - Tynan Drive is signed as "Tynan Circle" at its northern end. Tynan Circle provides access to the North Campus from Eastern Drive north of Silver Street. Most of the traffic volume accessing the large parking area north of Merritt Hall uses this approach. The approach to Eastern Drive is "Stop" controlled, and the pavement width is 24 feet. Roadway illumination is provided at this end, however illumination is absent near Silver Street. At its approach to Silver Street, the Tynan Drive travel way is 25 feet wide and parking spaces are provided on the east street side, while street side parking is typically practiced on the west street side. For southbound vehicles, the sight distance available to the west on Silver Street is very low due to a crest vertical curve.

Frank Drive - A short connector on the North Campus, Frank Drive has "Yield" controls at its termini at Vance Drive and Tynan Drive.

Magano Drive - Like Frank Drive, Magano Drive is a short connector on the North Campus between Vance Drive and Tynan Drive. Its terminus at Tynan Drive has a "Stop" control.

Labella Drive - Typically 18 feet wide, Labella Drive provides an outlet, secondary to Holmes Drive, from Eddy Home, in addition to providing access to two residences. No curbing or sidewalk is present, however roadway illumination exists. Its approach to Silver Street is "Stop"-controlled.

O'Brien Drive - On the CVH campus, O'Brien Drive is an east-west roadway providing access to the Whiting Building and the campus grounds and maintenance complex. The roadway also serves as the only internal roadway exiting the campus proper and providing access to the eastern portion of the State property including the Riverview Hospital, which is located around ¾ mile east of the CVH campus. O'Brien Drive typically lacks curbing, and the roadway is unilluminated except for security high-intensity illumination located along the Whiting Building. Much of the roadside just east of Whiting is cultivated.

Sweet Drive - Sweet Drive provides access from Silver Street directly to the Powerhouse, Laundry, and grounds maintenance facilities. The approach to Silver Street is "Stop" controlled. The pavement width is 25 feet near Silver Street and the paved width increases where parking space is provided.

Joyce Drive - A north-south access way to parking areas at Haviland and Shew Halls and building service entrances. The pavement width is typically 19 feet. North of Flood Drive, Joyce Drive has sidewalks on both street sides and is signed for 1-way southbound vehicular travel. Overhead illumination is sporadic.

Public Transit

Bus service in the area and the region is provided by CTTransit, a public non-profit service of the Connecticut Department of Transportation. Transit between downtown Hartford and a Silver Street terminus at CVH is provided by the M line. Certain trips extend to Riverview Hospital. Buses approach and depart the campus via East Main Street and Silver Street. Transfers are issued by drivers upon request from a boarding passenger. CTTransit offers monthly bus passes with unlimited rides, stored-ride tickets offering ten rides without expiration, senior/disabled passenger discounts, and ten-token discounts. Lifts are available for those having disabilities. The transit service is very lightly used by CVH staff, visitors, and patients compared with automobile usage, and the service has a negligible effect on the overall vehicular traffic pattern.

Parking

Presently at CVH, while some parking areas are under utilized, several parking areas are typically filled to their capacities. At Dutton Home, the adjacent parking area (#12) overflows daily into the next area to the west, Area #13, which in turn overflows onto roadside parking. (See Figure 4 for location). Area #6 and Area #3, located at either end of Holmes Drive on the South Campus near large active buildings, are also often filled to capacity. Grounds and maintenance personnel, CVH facilities engineering, and CVH fire department personnel who use the

maintenance complex around the Cotter Building have distributed parking among Areas #8, #9, #17, and #25.

Several parking areas are underused. On the North Campus, a completely unused parking area is #15 adjacent to the vacant Old Weeks Hall. On the South Campus, at the CVH Greenhouse, the existing asphalt parking area is signed for commuter parking, however few vehicles are typically present. This area is remote from main buildings. At the center of Holmes Drive, Area #9a opposite the vacant Noble Hall is also seldom used except during Chapel functions.

An active Park & Ride commuter parking area and CTTransit stop is located in the CVH vicinity at the Route 9 Northbound entrance ramp off of Eastern Drive. That lot probably does not affect the traffic and parking patterns at the project site. Another commuter parking area accessed from Bow Lane adjacent to the Route 9 Northbound Exit Ramp is normally vacant.

Vehicular Traffic Accidents

Vehicular accident data for the immediate project vicinity was received from the City of Middletown Police Department. The data is summarized for the most recent three-year period in Table 11. No fatalities occurred during this period.

TABLE 11
Recorded Vehicular Accidents (1994-1996)

Location	Year		
	1994	1995	1996
Silver Street at Eastern Drive	7	5	5
Silver Street at Holmes Drive	2	1	2
Bow Lane at Eastern Drive	0	0	1

Source: City of Middletown Police Department

Existing Traffic Generation

Significant traffic generators east of the CVH campus heavily impact the traffic conditions on Silver Street. The largest of these generators is the Pratt & Whitney Aircraft industrial facility located on the Connecticut River 3½ miles east of the site at the eastern limit of River Road at Aircraft Road. That facility presently employs approximately 3,500 persons. Northeast Utilities Company's Middletown Generating Station, located over 2 miles from CVH at 1866 River Road,

has around eighty employees total. In addition, the Riverview Hospital for Children and Youth, located adjacent to CVH, has approximately 340 employees. Each of these facilities operate three-shift schedules that generally correspond with those of CVH. While shift changes are somewhat staggered within each facility, the changes generally occur at 7:00 A.M., 3:00 P.M., and 11:00 P.M. As a result, the peak hours on Silver Street correspond with the first shift's inbound (eastbound) and outbound (westbound) movements.

In comparison to the large commercial generators, the residential generation in the area is small and has little effect on the timing of the peak traffic volume. The densest housing development in the area is located immediately adjacent to the CVH campus on the north side of Silver Street, where the 190-unit Long River Village, an affordable housing complex, exists. Under the City's proposed Long River Village Revitalization Plan all units are proposed for demolition and replacement with 80 rental units in a lower-density complex. The $9 million plan is targeted to receive funding from the federal Department of Housing and Urban Development.

A non-CVH traffic generator, the Connecticut Employees Credit Union branch office is located on the hospital grounds at the southwest quadrant of the intersection of Holmes Drive and Silver Street. Having four employees, the small facility draws off-site clientele not only from Middletown but also from surrounding towns. The next closest Credit Union service offices are located respectively in Hartford, New Haven and Norwich. The facility attracts peak traffic volumes following the release of State pay checks every other Thursday. A rush begins after many employees leave work at 3:00 P.M. on pay day until 4:00 P.M. when the facility closes. The rush lasts through the entire following day. According to a Credit Union coordinator, during a typical 3:00 P.M. to 4:00 P.M. pay-day rush, around 90 individuals are served, compared with only 40 individuals during a similar hour on an off-week. An estimated 40 percent of the clientele arrive from off-campus origins - a percentage that has decreased due to the State hospital consolidation. During peak periods, an estimate 25 vehicles are parked near the building.

The Valley View Children's Center, a children's day care facility, is located on the hospital grounds opposite Dix Hall at the intersection of Harvey Drive and Flood Drive. Operated by the State of Connecticut Employees Child Care Association, a private non-profit establishment, it serves the general public while offering incentives to State employees. Operating with sixteen employees, the facility reportedly experiences peak traffic associated with child pickups and drop-offs between 7:30 A.M. to 9:00 A.M. and between 4:00 P.M. to 5:00 P.M.

Short trips within the campus are generated from between two and six daily food deliveries made from Battell Hall to Dutcher Hall, Russell Hall, Merritt Hall, Woodward Hall, Power Plant, Page Hall, Shew Hall, Leak Hall, and the Whiting Building.

3.11 b. Impact Analysis

A quantitative evaluation of vehicular traffic conditions at CVH was conducted for intersections surrounding the site to determine the impact of the proposed internal roadway and parking project. The project is expected to redistribute traffic on the existing roadways due to the proposed closure

of Holmes Drive, the extension of Sweet Drive, and other alterations. In addition, because the parking areas will be reconfigured, trip origins will be redistributed. Refer to Figure 4 (Page 1-9) for the schematic design plan of the roadway and parking project.

The initial phase of the traffic study included the collection of existing roadway data in the site vicinity. Descriptions of the existing roadways are provided in Section 3.11 a., while Figure 13 (Page 3-62) presents the existing lane arrangements for the intersections studied.

Traffic behavior in the field was observed and hourly traffic volumes were manually collected. Traffic conditions were evaluated at the "peak hour" - the 60-minute period in which the heaviest traffic volumes are experienced. Field data indicates that on Silver Street the weekday morning inbound (eastbound) peak hour begins at 6:00 A.M., while the bi-directional peak hour is from 6:30 A.M. to 7:30 A.M., reflecting the changes between the third and first shifts at CVH, Riverview Hospital, Pratt & Whitney, and Northeast Utilities. At Bow Lane, where the influence of the Pratt & Whitney traffic is not apparent, the weekday morning peak hour is slightly later in the day, between 7:30 A.M. and 8:30 A.M. Weekday evening peak hours for all intersections studied was between 3:00 P.M. and 4:00 P.M. Existing peak hour traffic volumes through the intersections around the periphery of the site are shown in Figures 14 and 15.

Projections for future traffic scenarios assume that existing trip generators will respectively maintain their present locations and functions. The main kitchen may move from Battell Hall to the Warehouse under Project No. BI-I-481, in which case the traffic patterns for food deliveries would be altered. However, no impact is anticipated to the peak-hour traffic conditions.

Estimates were prepared for future traffic conditions in the absence of the roadway/parking project (future no-build condition). That model serves as a base condition against which the impact of the future project may be evaluated. To arrive at the future no-build condition, background (non-CVH) traffic was estimated, based upon through volumes on the local streets, and inflated upward to reflect the future condition. This study analyzes the condition for 1998, which is the assumed year of implementation for the roadway and parking project. An annual growth rate of 3 percent was applied to the 1997 volumes to project future background volumes. Figures 16 and 17 provide the no-build peak hour volumes.

Projections were made of the future "build condition" by redistributing the site-generated traffic to the roadway system surrounding the site. The proposed project will reposition parking areas for motorists accessing Haviland Hall, Woodward Hall, and Shew/Dix Hall such that traffic will likely increase at the Flood Drive entrance at Eastern Drive and the Harvey Drive entrance at Bow Lane. Figures 18 and 19 provide the future build condition peak-hour volumes.

Based upon the traffic volumes generated for the existing, future no-build, and future build conditions, capacities of the intersections surrounding the site were computed. Intersection capacities were calculated in accordance with the Highway Capacity Manual (Special Report 209), 1994, National Research Council, Transportation Research Board. Calculations were conducted using Highway Capacity Software (Release 2.4D), Transportation Research Center of the

University of Florida (McTrans). The employed methodology assigns a given intersection with a rating called a "level of service" (LOS) that is based on the average delay experienced by each vehicle passing through the intersection. The delay is measured as the interval, in seconds, from the time when a vehicle stops at the end of the queue to the moment when the vehicle enters the intersection. The vehicle delay levels of service are assigned letter designations from A to F, with LOS A representing the best operating conditions and LOS F the worst. Each Level represents a range of operating conditions. Descriptions of the respective levels of service for intersections are provided in Table 12.

The existing Silver Street intersections with Tynan Drive and Holmes Drive were each analyzed both for a STOP control at the side street approaches and for a fully-signalized condition. Phasing and timing plans acquired from the future State Department of Transportation for the signal replacement project were used for the level of service analysis.

TABLE 12
Level of Service Descriptions

Intersection LOS	Interpretation
A	Very short delay, with extremely favorable progression. At signalized intersections, most vehicles arrive during the green phase and do not stop at all.
B	Good progression. At signalized intersections, more vehicles stop than for Level of Service A, causing higher levels of average delay.
C	Light congestion. At signalized intersections, the number of vehicles stopping is significant.
D	Congestion is more noticeable. At signalized intersections, longer delays result and many vehicles stop.
E	Limit of acceptable delay.
F	Unacceptable delays occur. Often arrival rate exceeds the intersection capacity (intersection is oversaturated).

Source: National Research Council, Transportation Research Board, *Highway Capacity Manual*, 1994.

Holmes Drive at Bow Lane is presently a 4-way stop controlled intersection, and it was accordingly modeled as such. To determine whether the 4-way stop is warranted, that intersection was also modeled assuming a two-way STOP control on Holmes Drive and no control on Bow Lane.

Table 13 presents the results of the capacity analyses, while computations are provided in Appendix I. The levels of service indicated for the signalized and four-way STOP controlled conditions are overall ratings given to the whole intersection in terms of average delay per vehicle. For two-way STOP controlled intersections, the LOS for the worst case turning movement is shown. All cases analyzed resulted in LOS C or better except at the intersection of Silver Street and Eastern Drive during the P.M. peak hour, when the levels of service for the existing, future

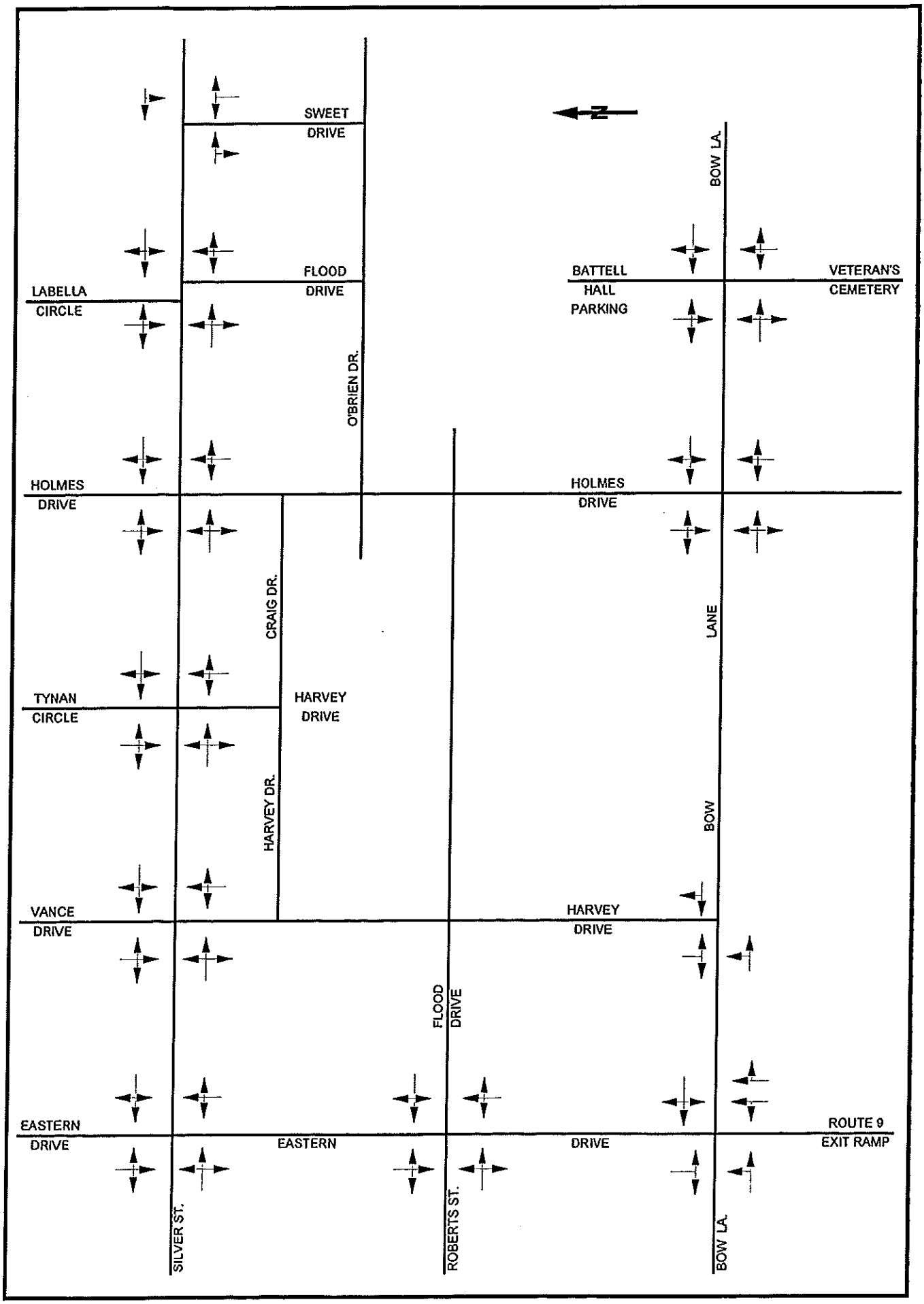


FIGURE 13
CONNECTICUT VALLEY HOSPITAL, MIDDLETOWN, CT
EXISTING LANE ARRANGEMENTS

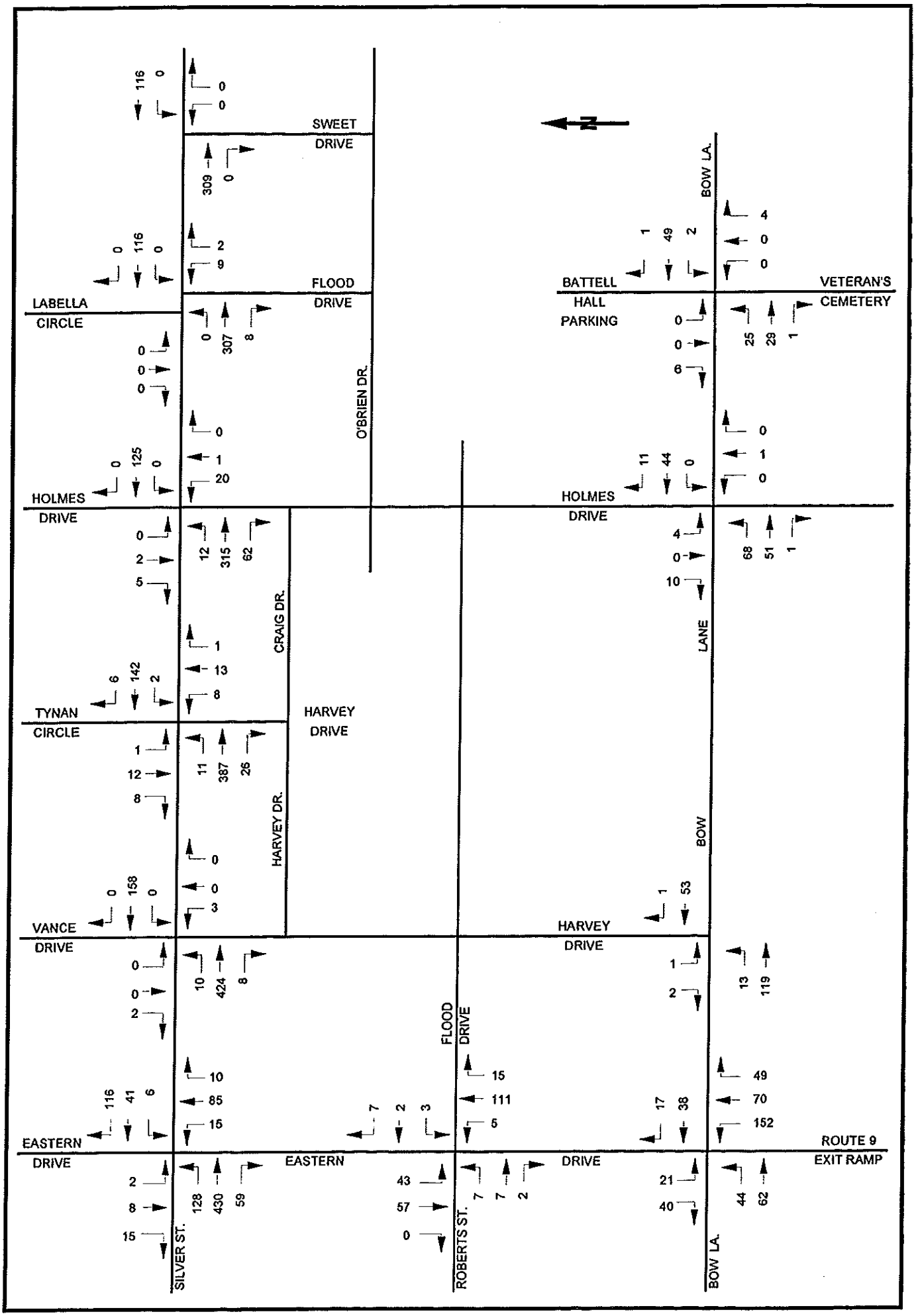


FIGURE 14

CONNECTICUT VALLEY HOSPITAL, MIDDLETOWN, CT

EXISTING TRAFFIC VOLUMES - WEEKDAY, A.M. PEAK HOUR

Counts taken Mo. June 16th through Th. June 19th, 1997

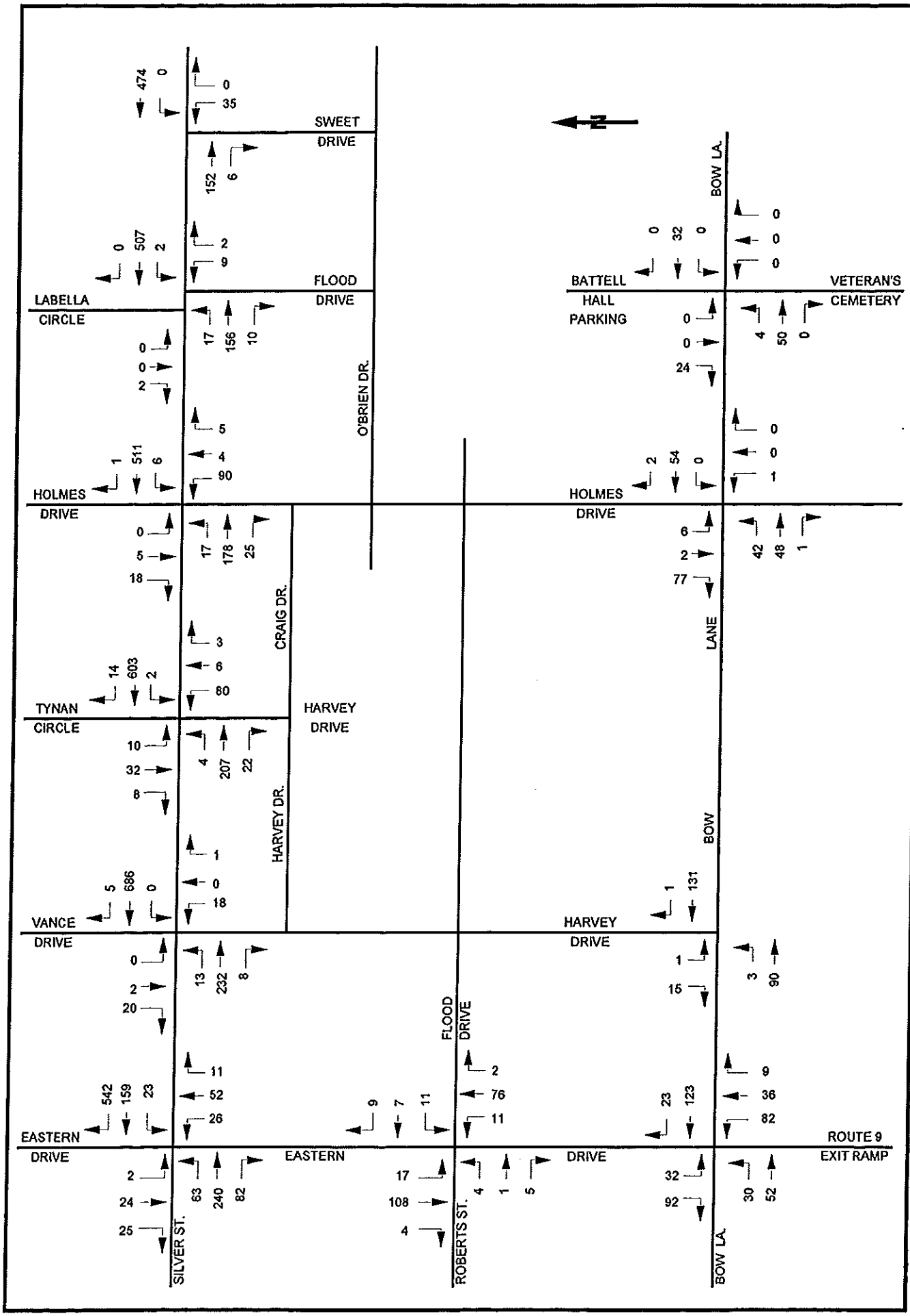


FIGURE 15

EXISTING TRAFFIC VOLUMES - WEEKDAY, P.M. PEAK HOUR

CONNECTICUT VALLEY HOSPITAL, MIDDLETOWN, CT

Counts taken Mo. June 16th through Th. June 19th, 1997

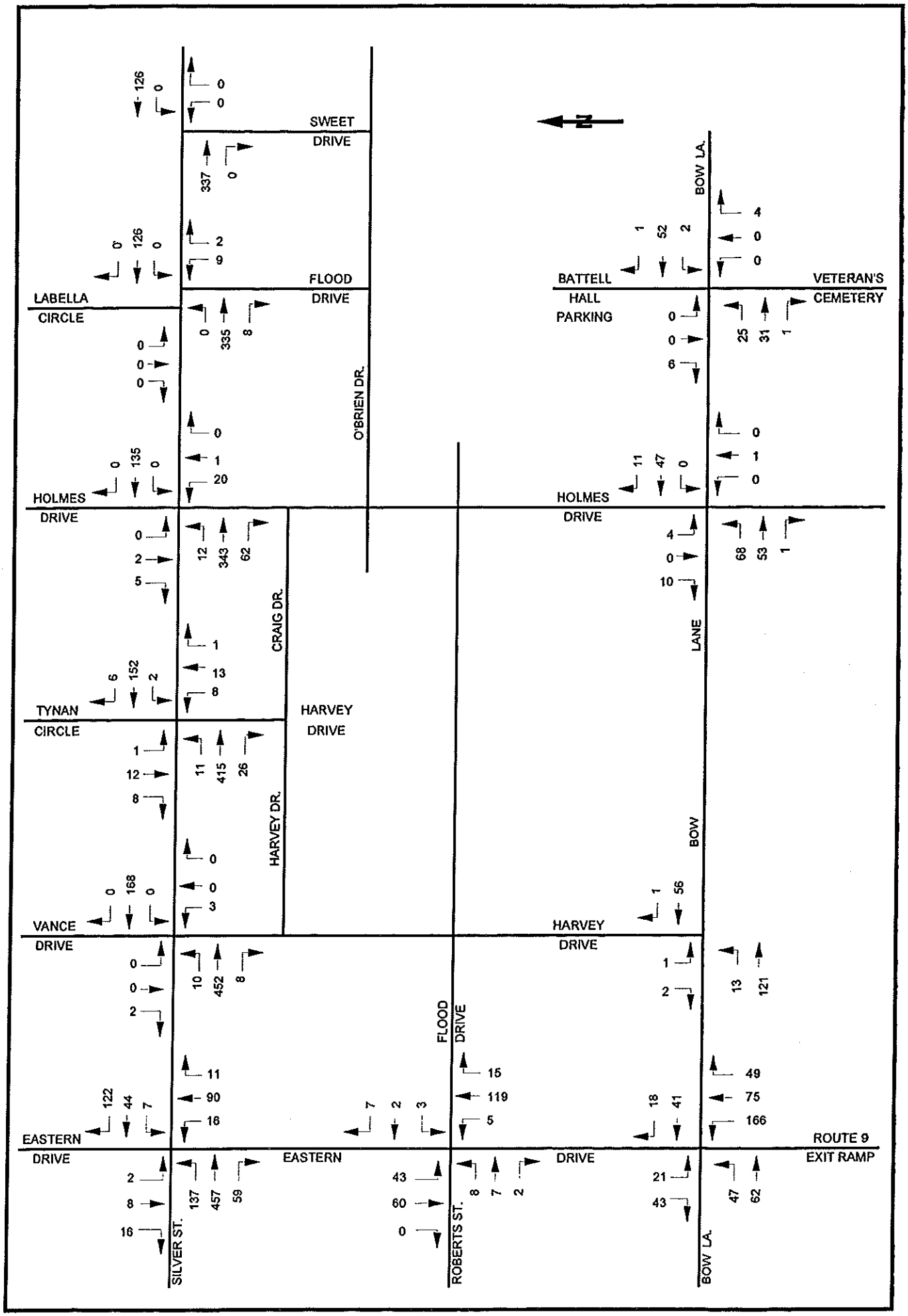


FIGURE 16

CONNECTICUT VALLEY HOSPITAL, MIDDLETOWN, CT

FUTURE NO-BUILD CONDITION - WEEKDAY, A.M. PEAK HOUR

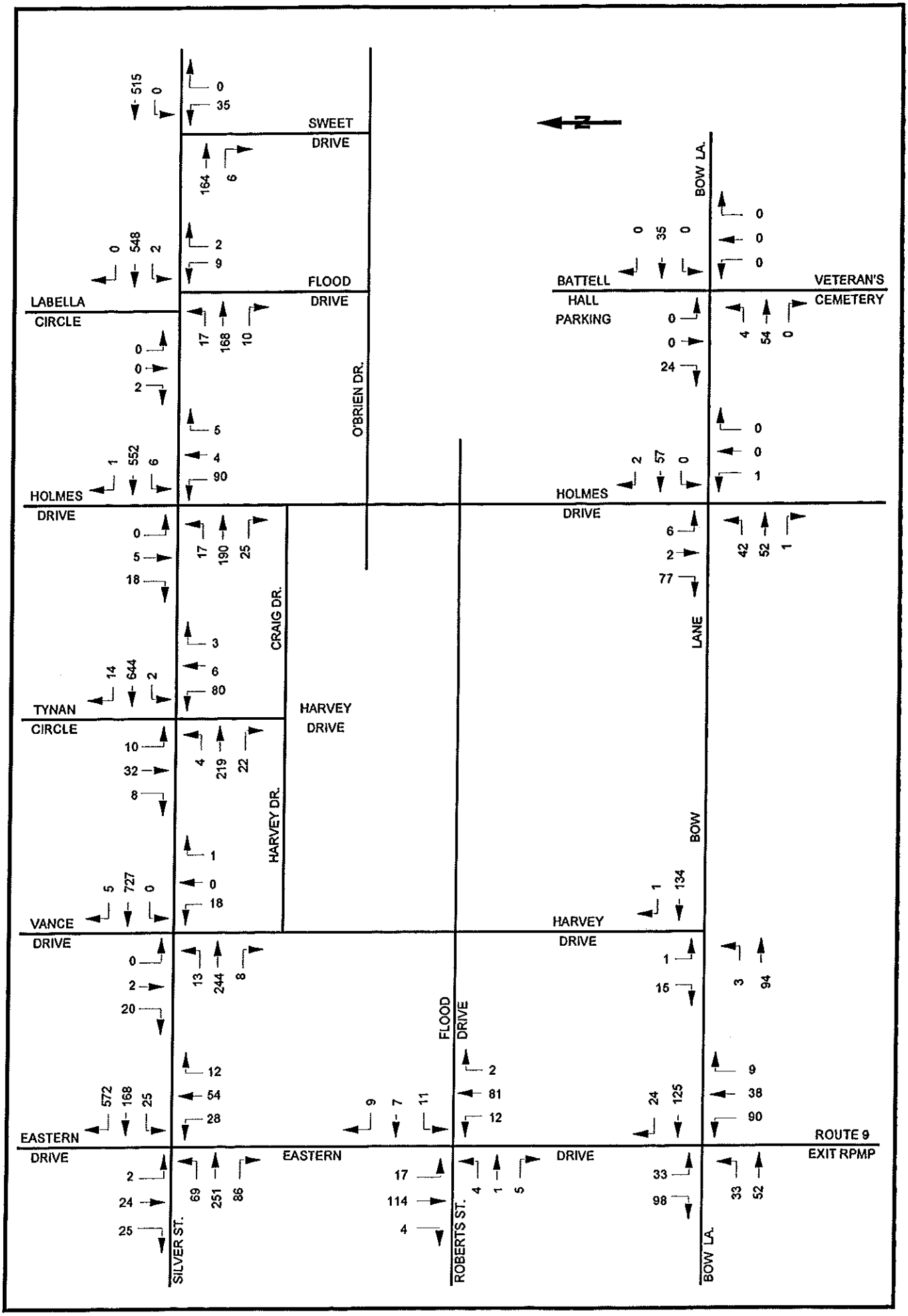


FIGURE 17

CONNECTICUT VALLEY HOSPITAL, MIDDLETOWN, CT

FUTURE NO-BUILD CONDITION - WEEKDAY, P.M. PEAK HOUR

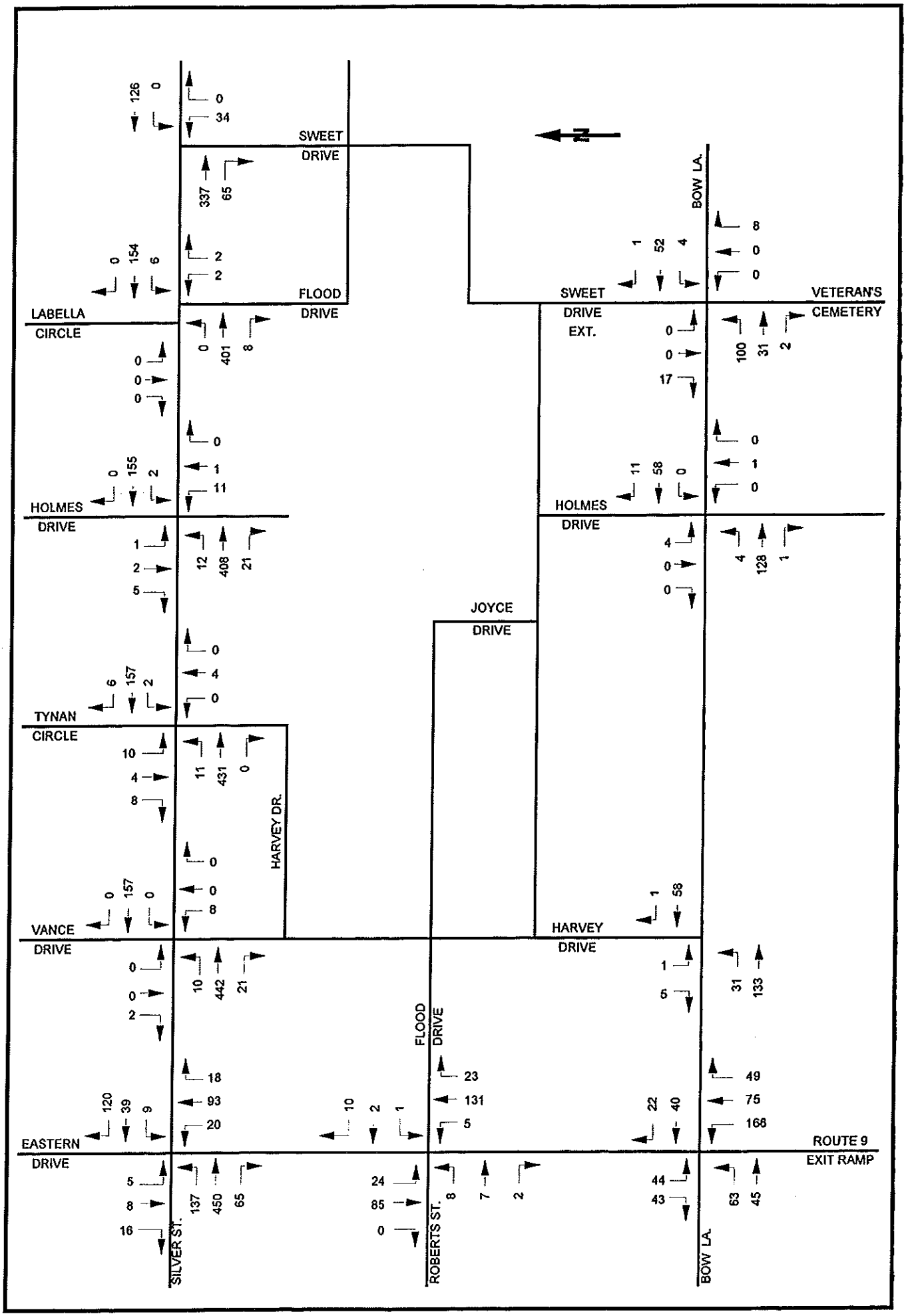


FIGURE 18

CONNECTICUT VALLEY HOSPITAL, MIDDLETOWN, CT

FUTURE BUILD CONDITION TRAFFIC VOLUMES - WEEKDAY, A.M. PEAK HOUR

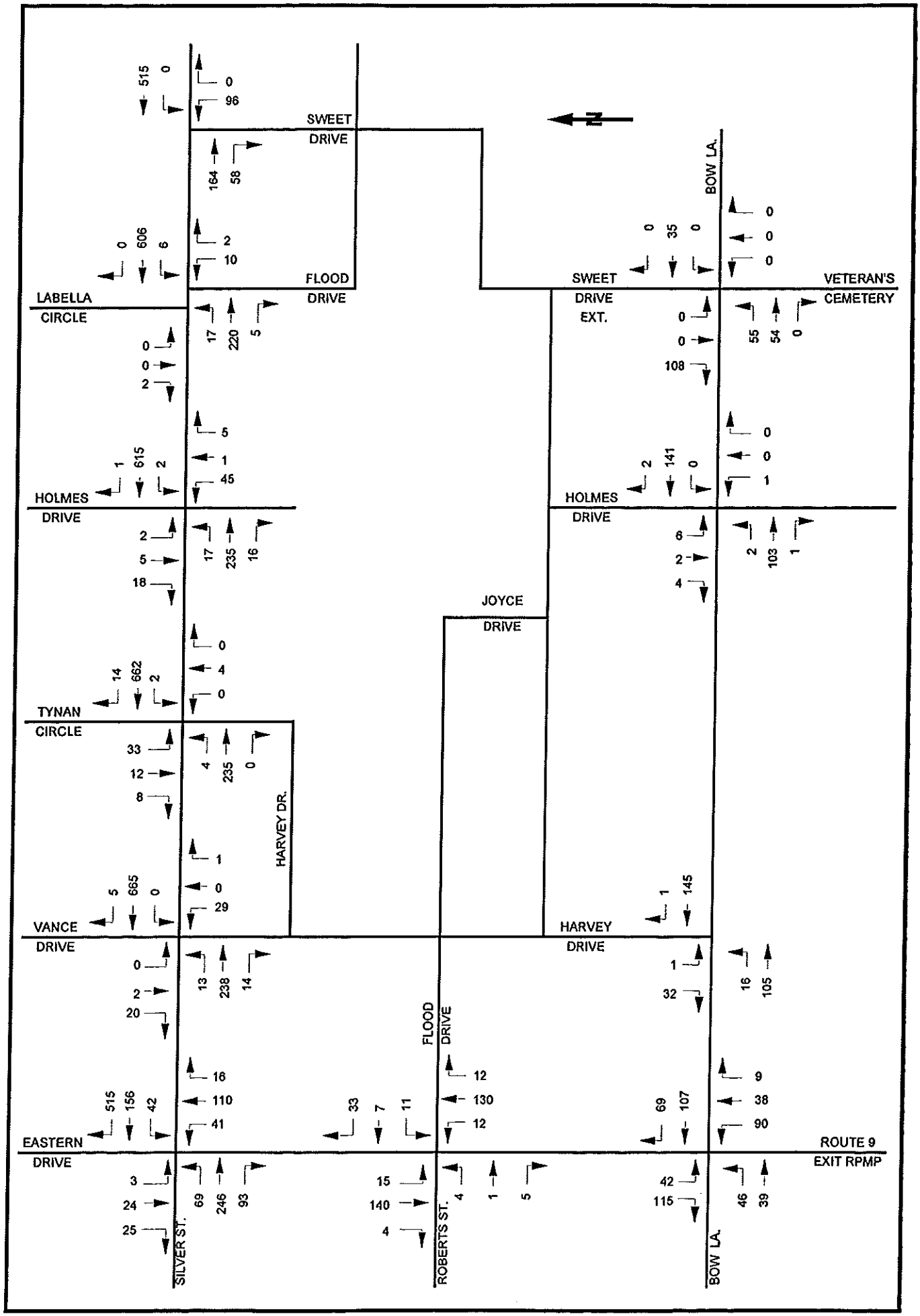


FIGURE 19

CONNECTICUT VALLEY HOSPITAL, MIDDLETOWN, CT

FUTURE BUILD CONDITION TRAFFIC VOLUMES - WEEKDAY, P.M. PEAK HOUR

Parking

The consultant Purcell Associates developed a modified parking system designed to serve individual buildings on campus with direct connections to the roadway network. Table 14 identifies proposed parking areas and approximate parking spaces. The key to the areas is provided on Figure 4 (Page 1-9).

The proposed design would result in a net increase of available parking area on the South Campus by an estimated 278 spaces. That number was originally estimated in the schematic design report as 357 spaces - a discrepancy which probably resulted from a different interpretation of the number of existing ill-defined parking spaces. The eventual number may change depending upon interpretation or subsequent revisions to the design.

Presently, CVH estimates that its campus-wide parking requirements based on shift staffing is 1,479 total spaces (both north and south campus). The parking space provided by the conceptual design will satisfy parking needs provided that ridesharing and mass transportation alternative are used where possible, such as office staff.

Table 15 provides CVH's estimated number of parking spaces required by the respective buildings. As indicated on the table, beyond staff and tenant parking, supplemental parking space is needed to support a training facility at Haviland Hall and an auditorium at Merritt Hall. In addition to the space requirements shown on the table, several other issues impact the parking requirements for the campus:

1. Due to the hospital's 24-hour operation, public transportation use is not always viable. Staff members on the first shift are frequently required to work onto the second shift when bus transportation is unavailable.

2. Presently, 28 vehicles are maintained on the campus for transportation of clients to off-campus appointments.

3. Twenty four trucks are used for transportation of goods and services around the campus.

4. A number of patients' family members regularly visit the campus.

5. Clients of River Valley Services in Leak Hall visit that site for services including therapy sessions, meetings, blood tests, and medications. At any one time there may be twenty to thirty patients receiving services from River Valley Services in Leak Hall and Dutton Hall.

6. Services provided in Russell Hall by River Valley Services are usually accessed by public transportation or by a van that is presently parked at that location.

TABLE 14
Parking Summary - South Campus

Parking Area	Location	Spaces		
		Exist.	Prop.	Change
Proposed Parking Areas				
A	Woodward Hall (east)	---	50	+50
B	Woodward and Haviland Halls	---	74	+74
C	Haviland Hall	---	20	+20
D	Credit Union	---	12	+12
E	East of Chapel	---	188	+188
Existing Parking Areas to be Altered/Reconstructed				
1	Battell Hall	128	139	+11
5	Shew/Dix Halls (west)	60	50	-10
7	Leak Hall	42	49	+7
20	Shew/Dix Halls (east)	26	54	+28
20a	Shew/Dix Halls (east)	30	89	+59
25	Lumber/Paint Shop	14	72	+58
26	Whiting (west)	70	90	+20
Existing Parking Areas to be Removed				
2	Shepherd Home	20	---	-20
3	Haviland Hall	62	---	-62
6	Dutcher, Dix/Beers	76	---	-76
9	Cotter Building (west, north and south)	29	---	-29
9a	Noble Hall	32	---	-32
17	Cotter Building (east)	20	---	-20
Existing Parking Areas to Remain				
4	Greenhouse	120	120	0
8	Powerhouse/Laundry	38	38	0
21	Day Care	17	17	0
26a	Whiting (east)	100	100	0
TOTAL		**884**	**1162**	+278

Notes: Proposed parking space quantities by Purcell Associates
Existing parking space quantities estimated by Frederic R. Harris, Inc.

CVH encourages alternatives to commutation in single occupant vehicles by encouraging ridesharing. A CVH employee is a designated coordinator responsible for obtaining and publicizing relevant information. At CVH, four Easy Street van pools are currently in operation. Three serve groups from the Norwich area and one serves a group from the Southbury area. The Easy Street program offers vans with twelve to fifteen person capacities to groups who organize themselves into commutation pools. Easy Street is operated by The Rideshare Company, a non-profit organization which encourages van pooling.

TABLE 15
Parking Requirements by Building Based on Staffing

Building	1st Shift	2nd Shift	3rd Shift	Tenants	Total Required
Battell	150	82	47	0	232
Beers	10	0	0	40	50
Cotter	40	1	1	0	41
Dutcher	81	37	28	0	118
Dutton	6	4	4	60	70
Haviland [1]	120	0	0	0	120
Leak	0	0	0	60	60
Merritt [2]	223	51	32	3	277
Page	20	0	0	0	20
Russell	2	0	0	20	22
Shew	35	1	1	5	41
Whiting	145	50	40	0	195
Woodward	40	20	20	0	60
TOTAL	872	246	173	188	1479

1. Training Site
2. Auditorium for Campus

Source: CVH Director of Fiscal Services & Plant Operations

3.12 Cultural Resources

3.12 a. Existing Setting

Historic Resources

The CVH property remained a rural area until its development into a hospital campus. An 1859 map predating the hospital shows the property as farmland with only a smattering of houses, and more intensive settlement westward toward the city (Smith, H.C.T, "Map of Middlesex County, Connecticut," 1859, see map in Appendix J). The map depicts Silver Street, which runs east-west across the CVH property; Holmes Drive, which runs north-south through the center of the property; and Bow Lane, the southern border of the campus. Eastern Drive exists only north of Silver Street; the section between Silver Street and Bow Lane had not yet been built. At the center point on Holmes Drive, in what would become the rough center of the CVH campus, the map shows a single house, labeled F.S. Hubbard. On the northwest corner of the intersection of Holmes Drive and Bow Lane is the Alfred Roberts house, and on the north side of Bow Lane west of Holmes Drive is the T. Congdon House. On the northeast corner of the Holmes Drive/Silver Street connection is the E.S. Hubbard house, and on the northeast corner of Eastern Drive and Silver Street are the A. Judd and Mrs. Tryon houses. Immediately south of the Eastern Drive-Silver Street junction is the N. Patten Shop. No other structures fall within the later CVH bounds.

By the mid-19th century the state recognized a need to create a separate facility to care for the indigent insane, who were placed in almshouses along with the sane poor at that time. In 1866 an act of the State Legislature established the Connecticut General Hospital for the Insane. That year, construction of the first structures began on 150 acres of farmland donated by the City of Middletown, and subsequently 80 acres of additional farmland was purchased (Reference 6). A wharf on the Connecticut River was quickly built at which supplies were received (Beers 1884:106-107).

The Connecticut General Hospital for the Insane (now CVH) was the first public institution for the mentally ill in Connecticut, and the only public mental hospital in the state until 1904 (Ohno 1985). The buildings and the landscaped campus were designed in accordance with state-of-the-art mental health treatment philosophy, which held that a visually attractive environment was therapeutic. In addition, the working farm and various small shops in the buildings (such as carpenter and paint shops and a bakery) provided occupational employment for the patients, which was also believed to be beneficial to recovery.

The buildings on the campus reflect changing conditions at the hospital and in mental health treatment philosophy. Overcrowding resulted in building modification and new construction and limited the hospital's efforts to provide the advanced therapeutic care to which it aspired. By 1872 the hospital began admitting the state's insane convicts, which it housed in a separate building. As other classes of patients such as alcoholics and epileptics were sent to the CVH, the care became more custodial and less therapeutic (Ohno 1985).

The first hospital buildings constructed at the site were Shew Hall and Stanley Hall. Both were

constructed in the French Second Empire style and built of Portland Freestone laid in ashlar blocks. Shew Hall, built in 1866-1874, was altered in 1939 at the roof line of the central pavilion. Shew Hall originally functioned as the single hospital building at the site. Stanley Hall was built in 1866-1869 as the hospital's carpenter shop and in 1879 was expanded along with the construction of the adjacent Tin Shop. Stanley Hall stands 2-1/2 stories tall. Its fire tower which is attached to the east of Stanley Hall was built in 1950.

Dix Hall was part of the original 1872 construction of Shew Hall, but was reconstructed in 1919 with additions in 1920 and 1950.

An 1874 map depicts the hospital property which then differed considerably from the campus of today (Beers, J.B. and Company "Atlas of Middlesex County, Connecticut," 1874, see Appendix J). Sometime between 1859 and 1874 Eastern Drive was extended from Silver Street south to Bow Lane, with two houses built on the west side. The east side of Eastern Drive forms the western border of the hospital property, which spreads out west to east for over a mile to past Duck Hill. Silver Street forms the northern border. The southern border does not reach Bow Lane as it does today and therefore excludes the houses on this street. Shew Hall is the only structure depicted on the hospital property. Interestingly, Holmes Drive does not appear, nor does the Hubbard house along that road, but a school district boundary follows the same course and may obscure these features.

In terms of structures which were later subsumed by CVH, their number and location differ little from 1859. Two of three small houses on the northeast corner of the Silver Street/Eastern Drive intersection are probably the A. Judd and Mrs. Tryon houses shown on the 1859 map. The Patten Shop to the south is gone, probably destroyed by the extension of Eastern Drive. On the north side of Bow Lane are three houses: the J. O'Bryen house, immediately northeast of the Holmes Drive/Bow Lane junction; the A. Roberts house midway between Eastern Drive and Holmes Drive; and the T. Condon house, east of Holmes Drive; the latter two are unchanged from 1859; O'Bryen's was built between 1859 and 1874.

By 1877, when a bird's eye view was drawn (Bailey, D.M., "Bird's Eye View of Middletown, Connecticut", 1877, see Appendix J), a large number of small buildings had been constructed along the north and south sides of Silver Street, particularly at the intersection with Eastern Drive (shown as Asylum Street on the map). Shew Hall appears to have been enlarged.

1879 brought the construction of Cottage #12 - a two story L-shaped wood frame cottage with a gable roof. Its porch features chambered columns. Presently, its siding is aluminum.

Old Woodward Hall (former South Hospital) was built in 1885 in the Queen Anne style of red brick. Old Woodward Hall is three and one-half stories tall and thirty-four bays wide. A projecting central pavilion is flanked by two wings, each having three projecting pavilions. Two of the pavilions are cylindrical with conical roofs. The remainder of the building has hipped or gabled roofs. The building was altered in 1940 with a 1920's Colonial Revival wing attachment (Woodward Hall) to the rear (east).

Cottage #43/44 (duplex) was constructed in 1888. A 1-1/2 story brick Queen Anne cottage, it has four bays with a hipped roof and entrance pavilions flanking the main block.

Old Weeks Hall, built in 1896, is very similar in its detail and size to Woodward Hall. Old Weeks Hall is a brick Queen Anne style hospital building standing 2-1/2 stories tall with hipped roofs. Its projecting central pavilion is flanked on either side by wings having three projecting bays each. At its rear (to the east) is New Weeks Hall, a two-story brick Colonial Revival wing constructed in 1940.

Smith Home is executed in the Colonial Revival style. It was built in 1890-1911 as a nurses' home. A three-story brick building, it features three projecting cross gable pavilions seventeen bays wide with single-story open porches on either end. The central pavilion displays a cupola.

Page Hall is a large three-story Beaux-Arts style building of brick with limestone trim. It was originally designed to house the hospital's sole congregate dining facility. Its construction is dated at 1903 with reconstructions in the 1950's.

The Lumber Buildings are respectively single-story and 1½-story wood frame barns with gable roofs. Presently associated with the Carpenter's Shop, they were originally horse stables built in 1908.

Kenniston Hall, built in 1907, is a two-story brick Colonial Revival style structure. A central projecting pavilion houses a large arched entrance. Two gabled pavilions flank the central pavilion. The roof is hipped.

Noble Hall, which is designed as a theater, is a monumental brick Colonial Revival structure. Noble Hall was built in 1908. This square brick building is 4-bays wide and 2 stories high. A central projecting pedimented pavilion houses three arched entrances. The rooftop has a domed cupola. A covered, overhead pedestrian walkway (tramway) system links Dix Hall with Noble Hall, Page Hall, and Stanley Hall.

The Ice House was built in 1919 as a ice storage building. The ice was gathered from a small man-made pond which existed adjacent to the building. The remains of the pond's impounding earth berms are still visible today in the athletic field east of the Chapel building. In 1920, the Old Firehouse was built fronting on Holmes Drive.

By 1922, when the CVH grounds were surveyed and plotted, the cluster of small buildings on Silver Street was gone, as were all the structures from the maps dating back from 1887 with the exception of Shew Hall and the possible exception of a small building on Bow Lane west of Holmes Drive in the vicinity of the A. Roberts house (Lucey, J.M.,Civil Engineer and Surveyor, "The Connecticut State Hospital, Middletown," 1922, see Appendix J) . Holmes Drive appears on the 1992 map as an "Old Highway," partially obstructed by new, large-scale buildings.

In 1940, the Carpenter's Shop was constructed. It is a single-story brick Colonial Revival style building still in use today as a carpenter's shop, but more generally used for repair of the

hospital's furniture and equipment. The attached Paint Shop is also a 1940 structure. The adjoining Lock Shop was added in 1953.

A modern, utilitarian structure located off the main campus at Silvermine Road, the Incinerator Building was built in 1954.

The CVH campus is listed in the National Register of Historic Places as a Historic District. The eastern boundary of the District is inconsistently defined on the federal forms, however the boundary definitely excludes CVH property on Holmes Drive south of Bow Lane beyond the site of Cottage Number 22. The Federal Register individually lists 52 principal and secondary buildings, of which 27 are said to contribute to the significance of the site. In 1997, individual Statewide Historic Resource Inventory Forms were completed for 20 of the buildings already listed, in addition to another 34 CVH buildings and structures not identified on the National Register (Reference 33).

The State Register of Historic Places lists 91 structures, which appears to cover all CVH buildings in intent. However, the Pig Slaughter House was not found to be listed, in spite of the modern Incinerator Building appearing on the list. A representative of the Connecticut Historical Commission indicated that inconsistencies that may exist on the State Register can be resolved with their field investigation as needed. No historic district is defined by the State Register, however in practice the Connecticut Historical Commission looks to the National Register's historic district boundary as a indicator of an individual building's significance.

Visual inspections and structural evaluations of buildings and structures considered for demolition were performed in March 1997 by the firm Clough, Harbour & Associates LLP (Reference 1). Their scope excluded structural calculations, exhaustive inspection, or material testing. No record structural drawings were available so none where reviewed. Recommendations by the consultant were based upon structural criteria without consideration to economic feasibility. A summary of those recommendations is provided below in Table 16, detailed descriptions of the recommendation categories follow the table. Of the buildings studied, three were found to warrant complete demolition due to structural instability (Old Weeks Hall, Ice House, and Old Pig Slaughter House).

TABLE 16 Structural Recommendations/Ratings for Buildings	
Structure Name	**Structural Recommendation**
Old Weeks Hall	Complete Demolition
Kenniston Hall	Rehabilitation Rating II
Old Woodward Hall	Rehabilitation Rating I
Old Tin Shop	Rehabilitation Rating I
Old Firehouse	Rehabilitation Rating I
Connector Between the Stanley Hall & Page Hall	Rehabilitation Rating II
Connector Between Dix Hall & Page Hall	Rehabilitation Rating II
Connector Between Page Hall & Noble Halls	Rehabilitation Rating II
Smith Home	Rehabilitation Rating II
Duplex Cottage #43 & 44	Rehabilitation Rating III
Cottage #12	Rehabilitation Rating III
Ice House	Complete Demolition
Old Pig Slaughter House	Complete Demolition
Incinerator Building	Rehabilitation Rating III
Old Wooden Grounds Storage Building	Rehabilitation Rating III
Carpenter, Lock, and Paint Shops	Rehabilitation Rating III
Lumber Storage - North	Rehabilitation Rating I
Lumber Storage - South	Rehabilitation Rating III

Key to Recommendations:
Rehabilitation Rating I: Complete replacement of all floor & roof framing
Rehabilitation Rating II: Partial replacement/reinforcement of local areas
Rehabilitation Rating III: Minor repairs

Note: Dix Hall Annex to be studied
Source: Clough, Harbour & Associates, LLP (Reference 1)

STRUCTURAL RECOMMENDATION CATEGORIES
(Source: Clough, Harbour & Associates, LLP)

Complete Demolition - The subject building or structure has sustained damage and deterioration to an extent which introduces structural instability, danger toward occupancy or entrance, and a generally unsafe condition. Accordingly, demolition is considered the only realistically viable engineering option. The term *Complete Demolition* is intended to define demolition of the entire superstructure and foundation to a minimum elevation of slightly below existing grade, with backfill of remaining subgrade excavations and void spaces.

Rehabilitation Rating I - Complete Replacement of All Floor & Roof Framing - The basic structural shell of the subject building or structure appears to retain an acceptable degree of its assumed designed integrity. However, floor and roof framing components exhibit an exceptionally poor and unsafe condition. Accordingly, combined with anticipated minimal reinforcing or life-extending repairs to the shell, the complete engineered replacement of all floor and roof structural systems may avail safe usage and/ or occupancy. All buildings and structures designated with the term *Rehabilitation Rating I - Complete Replacement of All Floor & Roof Framing,* while possessing the potential for structural rehabilitation, will require levels of repair that may both economically and feasibly justify complete demolition. Furthermore, the costs associated with required non-structural improvements will compound financial demands and likely define complete demolition as a more favorable option.

Rehabilitation Rating II - Partial Replacement / Reinforcement of Local Areas - The basic structural shell and primary floor and roof framing components of the subject building or structure appear to retain a substantial degree of their assumed designed integrity. However, to facilitate usage and/ or occupancy, "portions" of said framing will likely require replacement or reinforcement to achieve a code required load capacity. It should be noted that the term "portion," as implemented herein, defines a cumulative area less than fifty percent of the component's entire constructed area. Furthermore, an in-depth inspection, which can only be performed after complete exposure of representative framing components, may reveal that a "Rating I," is more appropriate than the currently assigned "Rating II" condition.

Rehabilitation Rating III - Minor Repairs - Based upon visual inspection, the subject building or structure is currently in a condition satisfactory for its present usage and/ or occupancy. However, to prolong effective utilization, routine maintenance and repairs are suggested.

Archaeologic Resources

The consulting firm Public Archaeology Survey Team, Inc. (PAST, Inc.) conducted a Phase 1 archaeological reconnaissance survey of areas proposed for construction of a recreational complex (North Campus) and a new roadway and parking system (South Campus). The survey was requested by the Connecticut Historical Commission (see Appendix C for correspondence dated 2/4/97). All work was performed in accordance with the Connecticut Historical Commission's *Environmental Review Primer for Connecticut's Archaeological Resources* as part of the environmental assessment (DPW Project No. BI-I-489). The archaeologist's efforts included background research, surface walkover inspection, subsurface testing, and data analysis as required to identify and evaluate archeological sites that might exist. Their background research indicated that the project area is in a general area of intensive prehistoric and historic period Native American occupation. Euro-American use of the project area was known to consist of a domestic farmstead and one unidentified shop prior to the hospital construction in 1866.

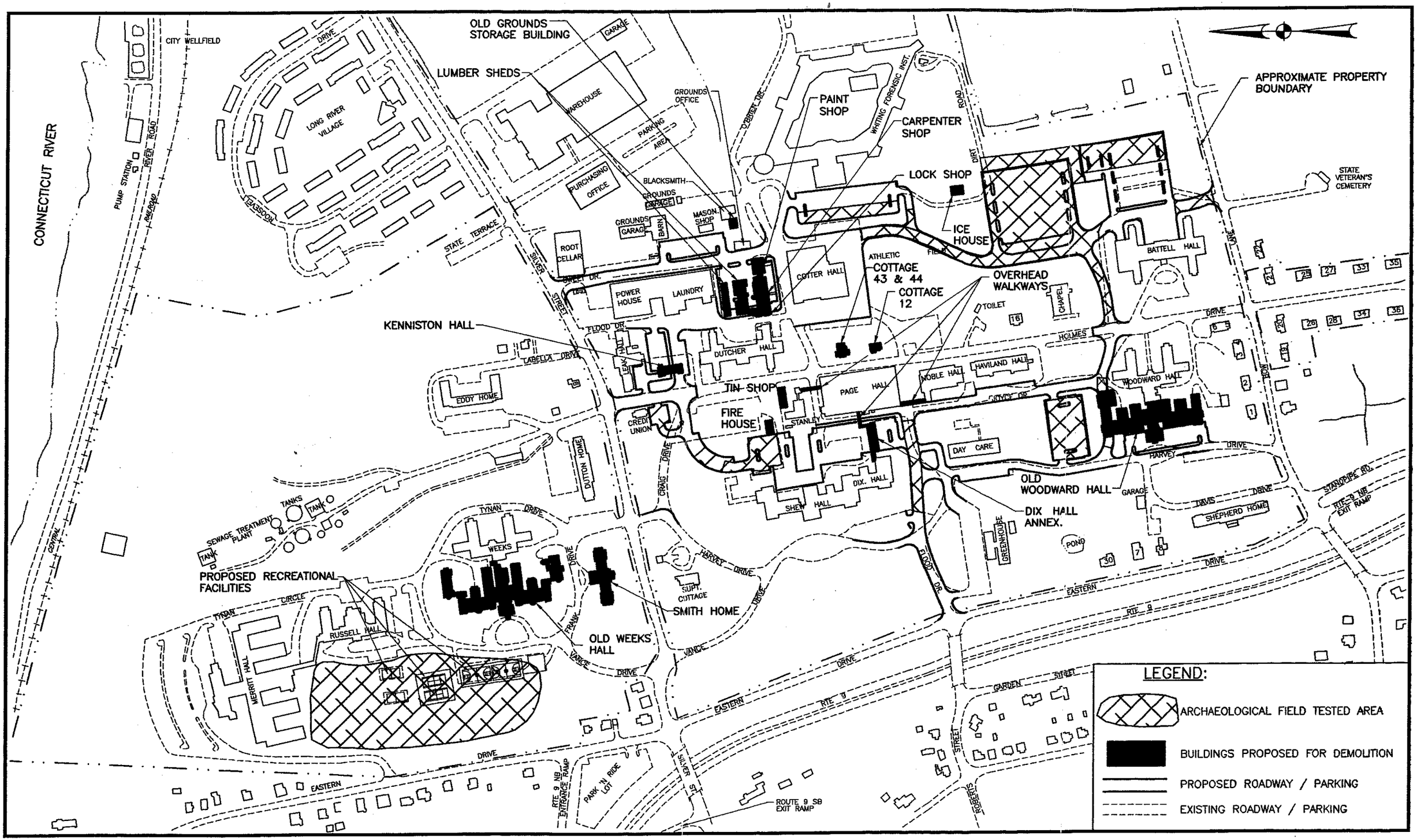
At the site of the proposed recreational complex near Merritt Hall, the archaeologist excavated thirty-seven test pits over this 200 by 500 feet area. The pits were placed at 20-meter intervals along five transects oriented north-south and spaced 20 meters apart. Figure 20 indicates the

extent of the tested area. A scatter of 74 artifacts was found, with 13 of the pits containing cultural material. The test pit profiles showed evidence of plowing and filling, with the degree and depth of disturbance much greater on the eastern edge near Russell Hall, where asphalt and modern trash were found as deep as 70 and 90 centimeters below the surface. In the center of the field, plastic was found at 60 centimeters deep. The pits to the west and southwest show shallower fill/plow levels, to only 40 centimeters deep near the Tynan Circle/Eastern Drive intersection and 25 centimeters deep in the southwestern limit of the tested area.

The cultural material found in the proposed recreational complex includes seven quartz flakes or fragments, which are the byproducts of stone tool manufacture or maintenance by Native Americans. However, all but one of these prehistoric artifacts were found intermixed with historic period material in fill or plow zone levels. The remaining 67 artifacts include 33 ceramic shards, some of which (whiteware and yellowware) have manufacture dates of 1820 to 1900+ and a few (pearlware and refined earthenware) which date to an earlier period (1780-1840, 1795-1840, and 1760-1780); eight undatable glass container shards; two window glass shards; 11 brick fragments; two iron fragments; three iron nails; an ox shoe; two slag fragments; and two coal fragments. Although some of the test units show intact subsoil beneath the fill/plow levels, none of the cultural material was found in intact subsoil and thus comes from a disturbed context. The cultural material, with the exception of the quartz, can be characterized as domestic and may be associated with the A. Judd or Mrs. Tryon houses shown on 1859 and 1874 maps, or one of the small hospital buildings built between 1874 and 1877; all were destroyed before 1922. This locus was documented with the Connecticut Historical Commission as Site 83-11.

In the southern portion of the project area subsurface testing was confined to portions not yet paved, otherwise disturbed, or having steep slope (see Figure 20). In the resultant survey area 85 test pits were excavated, at 20-meter intervals. All but six test pits were sterile (i.e., devoid of cultural material). The recovered cultural material was confined to the southeastern-most limit of the campus near the Battell Hall parking area. The material, found in plowed/fill levels, was a light scatter of domestic debris consisting of two glass container fragments, two iron nails and two iron fragments, three brick fragments, and five ceramic shards, the latter datable to 1820-1900+ and 1762-1820 (whiteware, yellowware, and creamware). This assemblage, although 1600 feet south of Site 83-11 (at the proposed recreational complex), is similar in content and may be associated, distributed across the campus in the course of plowing and landscaping. However, it is in the immediate vicinity of the T. Congdon house, shown on the 1859 and 1874 maps, and the J. O'Bryen house, built between 1859 and 1874. Both of these houses were destroyed by 1922. This locus was designated Site 83-12.

In conclusion, the visual inspection and subsurface testing indicated that the potential for finding intact archaeological evidence of pre-hospital occupation had been substantially reduced by road and building construction and extensive land modification. The vast majority of the project area was found to be too disturbed to contain intact archaeological sites. The two identified archaeological sites (Sites 83-11 and 83-12) were both confined to levels disturbed by plowing and filling activities. Because both sites were found in disturbed contexts, their integrity has been severely compromised. It is possible that the sites extend outside of the project area and that less disturbed components exist. Within the project area, however, additional archaeological investigation is not likely to recover significant information from the sites.



SCALE: 1" = 300'

FIGURE 20

CONNECTICUT VALLEY HOSPITAL, MIDDLETOWN, CONNECTICUT
ARCHAEOLOGICAL AND HISTORIC IMPACTS

3.12 b. Impact Analysis

Historic Resources

Section 1.1 lists structures considered for future demolition. Some of the buildings considered for demolition were in disrepair long before Public Act 95-257 (the legislation mandating consolidation) was enacted and their demolition has no connection with consolidation. Other buildings are in conflict with the proposed roadway and parking project and are therefore under consideration for demolition. In those cases, the need for demolition derives from the need for the roadway and parking project, discussed in Section 1.2 (see Page 1-14). DMHAS considers that project crucial to developing an environment on the site which will allow it to best perform its mission of providing inpatient behavioral health services.

Most of the buildings considered for demolition are directly related to the history of the hospital and are considered as resources that contribute to the significance of CVH as a historic property. Given that the buildings considered for demolition are all listed in the National and/or State Registers of Historic Places, the impact upon the historic site will be adverse. However, the State Historic Preservations Officer, Connecticut Historical Commission, may approve of the proposed action provided that no feasible and prudent alternative to the building demolitions is identified and acceptable mitigative measures are provided.

Based upon structural engineering evaluation, no alternatives to demolition exist for buildings that have been found to be structurally unstable (Old Weeks Hall, Ice House, and Old Pig Slaughter House).

The Sponsoring and Participating agencies have coordinated with the Connecticut Historical Commission for its review of existing conditions and the proposed state actions. The Connecticut Historical Commission has received a copy of the Draft EIE for their review. In addition, DMHAS and the Connecticut Historical Commission are preparing a Memorandum of Understanding which would establish a framework for further efforts in identifying alternatives to demolition and implementing mitigative measures.

The historic buildings proposed for demolition will also be considered for preservation via adaptive re-use or moving off site. Where no feasible and prudent alternative can be identified, prior to demolition, photographic documentation to State standards or Historic American Building Survey (HABS) standards will be performed to the satisfaction of the State Historic Preservation Officer. Such documentation would also be performed for any structures scheduled for adaptive re-use.

Where overhead connectors between buildings are removed, patching of attachment points to the buildings that are to remain will be performed with the intent to match the existing building materials and features. The CVH building interior spaces have, over the years, been modified; therefore recent and proposed interior renovation projects have no significant impact upon historic resources.

Archaeologic Resources

The consulting archaeologist, based upon their Phase 1 archaeological reconnaissance survey, rendered the opinion that construction of the proposed recreational complex and the proposed roadways/parking project (the only projects under review impacting large site area) will not have an adverse effect on historically significant sites or structures. No further archaeological or historical research was recommended unless new areas of the CVH property are proposed for development. The archaeological potential of portions of the hospital property remains high - particularly areas away from the core campus and areas near the Connecticut River. The Connecticut Historical Commission has reviewed the archaeologist's report (Reference 29), and has concurred with their findings (see correspondence dated October 21, 1997 from Dawn Maddox, Connecticut Historical Commission in Appendix C).

3.13 Energy Use and Conservation

3.13 a. Existing Setting

Recent upgrades of air conditioning systems on the campus have resulted in overall improvements in energy efficiency. Merritt Hall previously had individual window-mounted units. Under Project No. BI-I-333 a central plant was installed which had a number of energy-efficient features. One feature is a chilled water pump that varies its output with demand. Another feature is energy management of the air conditioning system by a networked computerized system. Individual zones within Merritt Hall are individually controlled in accordance with programmed schedules. Battell Hall and Dutcher Hall already had been served by the energy management system network. Other CVH buildings that have recently been upgraded to allow the network to control their air conditioning include New Woodward Hall (under Project No. BI-I-333C) and Haviland Hall (under Project No. BI-I-439).

The proposed Power Plant upgrade (discussed on Page 3-27) will result in a fully-automated plant continuously operating at its performance peak. New burners will operate properly and efficiently under new burner management and combustion controls. In addition, a centralized Plant Energy Management System will be installed to interface with all plant controls and allow for data acquisition and reports, facilitating efficient plant management. Together, the management system and new burners will have turn-down ratio capability, such that summer venting of large amounts of steam will be unnecessary.

Other projects underway at the Power Plant include Project No. 4403512, which will install instant hot water units. New units will have the capability to heat water with one pass, allowing energy savings by avoiding the need to keep hot water stored in tanks for long periods. In addition, Project No. BI-I-288 will install a demand meter at the power plant which will work with the plant's Energy Management System to perform "demand side" management of electrical power usage. In summer months, the system will monitor incoming electrical power usage, anticipate demand peaks, and toggle back chillers at buildings as required to avert new demand peaks. The system will also avoid peaks by allowing for phased equipment start ups.

3.13 b. Impact Analysis

As stated in Section 1 of this document, DMHAS is attempting to execute the legislative order to consolidate at CVH in the most efficient manner feasible. Through the campus planning process, energy efficiencies of new projects is one design consideration that is routinely addressed. Based upon a review of the list of projects discussed in Section 1, no identified significant energy inefficiencies are associated with the projects, while the air conditioning improvements discussed above (Project Numbers BI-I-333, BI-I-333C, and BI-I-439) have increased efficiencies.

3.14 Aesthetic Effects

3.14 a. Existing Setting

The study area is located on a hilltop which offers many striking medium and long-range views. Historic structures and adjacent farmland give it a distinctive character. Open space both on the hilltop and on areas just east of the campus enhance the scenic potential.

The most scenic views are from the North Campus, from where a full view of downtown Middletown and its frontage on the Connecticut River can be found. The Route 66 Bridge is also prominent. The western hillside on the North Campus is used by neighbors annually to view Independence Day fireworks events.

Distant views can be gained from the South Campus eastward across rolling agricultural/open space area toward the Riverview Hospital facility. Several historic structures add to the traditional feel of the views eastward from the South Campus. Most prominently the Ice House and the Barn (located opposite the Laundry Building). Another active agricultural field boarders the north edge of the North Campus at the Eddy Home.

The westward view from the South Campus is screened from Route 9 by existing vegetation. The view south from the South campus looks toward abandoned agricultural fields, a portion of which is now a large cemetery. Also in this direction, a water tower is a prominent feature located at a high point beyond the tree line. The southern end of Holmes Drive, a cul-de-sac, has a subdivision of small residential structures.

The front (western) lawn of Shew Hall has a broad gentle slope down to Eastern Drive. This area has a park-like feel - complete with sporadic park benches. The belt roadways along the western edge of the campus (Eastern Drive and Vance Drive) follow sinuous paths and are often shaded with mature trees. The existing Greenhouse fits well into this setting. Throughout the campus, a number of prominent trees and attractive ornamental plantings are found (see Section 3.3 beginning on Page 3-12 for a discussion of plantings).

Central South Campus buildings are arranged around Holmes Drive. The roadway is straight and mostly unshaded, experiences the bulk of hospital vehicular traffic, and therefore does not have

the park-like feel of the western campus. Still, the historic buildings and medium-range views are attractive. The single intrusion on the character of this area is the A-frame, concrete walled Chapel.

Campus lighting is presently sporadic, with some areas being highly illuminated and others having occasional sidewalk lights. To address this condition CVH is upgrading its external lighting (Project No. BI-1-479). New "period" lighting compatible with the historic nature of the area is being installed across the campus to assure access to buildings after dark. The project will also install security lighting to improve public and staff safety.

The aesthetic nature of the campus is largely affected by the buildings themselves. Comments regarding the architectural character of the buildings under review, provided below, were prepared by the firm Clough, Harbour & Associates LLP (Reference 1).

Old Weeks Building

The building incorporates several distinguishing aesthetic and ornamental features, including a multi-planed slate roof, carved brownstone shields and accents, corbeled brick ledges, curved brick lintels, highly detailed brick chimneys, and at porticos, sculpted stone railings, arches and columns.

Kenniston Building

Although less ornate than other campus buildings, Kenniston has elaborate brick work at its many chimneys and full perimeter fascia. Brown stone trim banding, sills and lintels are extensive.

Old Woodward Building

Exclusive to the building's exterior are many ornamental features, including gabled, curved and dormered slate roofs, carved brownstone inlays and accents, intricately detailed pediments and chimneys, curved brick lintels, copper gutters, leaders and junction boxes, and extensive examples of masonry craftsmanship.

Old Tin Shop

The relative lack of defining architectural features is indicative of the structures intended functionality.

Old Firehouse

Significant architectural details are primarily limited to a laid-in brick shield at the south wall and basic soldier course decorative banding.

Skywalk Connectors

No special features of ornamental or aesthetic significance are considered to exist.

Smith Building

The building's exterior possesses many ornamental features, including gabled slate roofs, circular keystone attic windows, a central cupola and weather vane, in-laid brownstone accents, intricately detailed chimneys, setback brickwork, east, west and south side porches, ornamental wood cornices and entry transoms.

Duplex Cottages 43 & 44

Ornamental features are basically limited to brick banding, brownstone lintels, and wood accent details at the gable siding and porch turnings. The roof is entirely slate clad.

Cottage 12

No significant architectural features are evident for this structure.

Old Ice House

The structure has no defining architectural elements.

Old Pig Slaughter House

No significant architectural features are evident for this structure.

Incinerator Building

No significant architectural features are evident for this functional structure.

Old Wooden Grounds Storage Building

Although a very well preserved example of early construction, no significant architectural features are evident for this building.

Lock Shop

No significant architectural features are evident.

Carpenter's Shop

No significant architectural features are evident.

Paint Shop

No significant architectural features are evident.

Lumber Storage Sheds

No significant architectural features are evident at either building.

3.14 b. Impact Analysis

The Roadway/parking project is designed with the intent to create a safer, more attractive setting at the campus core while maintaining and creating open space at the campus periphery. Proposed roadway and parking area reconfigurations are largely internal to the South Campus and setback

from the surrounding public street system. Therefore, any aesthetic impact to the neighborhood would be very minor.

The site design of the proposed Athletic Complex offsets development over 200 feet back from Eastern Drive. The courts will be removed from the sight lines made from Eastern Drive by proposed lawned embankments. Court fencing will probably be visible from the local street.

Where the building removals that are under consideration target historic structures with good exterior appearance, the local aesthetic quality of the campus may be adversely affected. Subjectively, certain building removals may have a positive aesthetic impact - most notably the modern, utilitarian Incinerator Building. Removals of buildings which are outwardly dilapidated, including the Old Pig Slaughter House and portions of Old Weeks Hall, would have no adverse impact to campus aesthetics. In possible exception to this, the dilapidated Ice House, which holds a prominent location with a wooded backdrop, provides viewers with a pleasant reminder of the pre-industrial era. In general, where reuse alternatives to demolition prove to be feasible and prudent, such alternatives might be aesthetically more desirable.

3.15 Consistency with State Plans and Policies

3.15 a. Existing Setting

Conservation and Development Policies Plan of Connecticut 1992-1997, State of Connecticut Office of Policy and Management (OPM) - This Plan provides a policy and planning framework for the administrative and programmatic actions and capital and operational investment decisions of state government that influence the future state development. Public Act 91-395 requires state agencies to be consistent with the Plan when developing or improving real property when the development costs are in excess of $100,000. Included as part of the Plan is a statewide "Locational Guide Map," which assigns one of eight land categories to any specific area according to the area's characteristics and suitability for various forms of development or conservation action.

The Locational Guide Map classifies the CVH property west of the Reservoir Brook and North of Bow Lane as "Urban Center," which is an urban area. The exact limits of the Urban Center map unit are difficult to discern on the Locational Guide Map, which is mapped at 1 inch equals 3.2 miles, and Silvermine Road is not shown; therefore the disposition of the Incinerator Building and the Pig Slaughter House relative to the map unit boundary is uncertain. For Urban Centers, the Plan offers a strategy that assigns the "highest priority for affirmatively supporting rehabilitation and further development toward revitalization of the economic, social and physical environment of urban centers." An economic development guideline for Urban Centers is to "locate all appropriate state facilities within urban areas with preference to Urban Centers."

In apparent conflict with the Urban Center designation at the CVH site, the Conservation and Development Policies Plan assigns another classification, "Existing Preserved Open Space" to Class I water supply lands such as CVH. (See Section 3.1 for a discussion of Class I water supply

lands). Specifically, the Plan states in its Area Definitions that Existing Preserved Open Space includes "Class I type water supply lands in state and water utility ownership as related to both existing and potential future water supplies (including reservoir, diversion, and wellfield sites)."

In clarification, personnel at OPM's Policy Development & Planning Division indicated that the designations specifically indicated on the Locational Guide Map apply. However, the Existing Preserved Open Space guidelines should also apply to new actions within Class I lands to the extent feasible. The Conservation and Development Guide's approach and guidelines for Existing Preserved Open Space are:

> Continue long-range protection of the Existing Preserved Open Space areas and the appropriate utilization of their resource and recreational values.
>
> > State actions should be limited to those acquisitions, improvements, and structural developments which are consistent with long-term preservation of the natural resource and open space values of the site and the appropriate public use and enjoyment.
> >
> > State plans and actions not consistent with the long-term preservation values should be approved only when it is demonstrated that there are overriding social, economic, or public benefits and there is a lack of feasible alternative sites.
> >
> > Encourage public use of these areas in conformance with management plans that should be developed and that should provide long-range, multi-purpose management guidelines.
> >
> > Maintain all Class I lands (critical areas closest to reservoir, diversion, or wellfield sites in water utility ownership) in existing water utility ownership through Department of Health Services [now Department of Public Health] regulation of sale and use and maintain all Class I type lands which are presently in state ownership. Any state or water utility facilities should conform to the Class I area guidelines.

(Draft) Conservation and Development Policies Plan for Connecticut 1998-2003 - This updated Conservation and Development Policies Plan was released for public review summer 1997. A revised version will be presented to the Connecticut General Assembly for adoption in Spring 1998. The stated overall Plan strategy is "to reinforce and conserve existing urban areas, to promote staged, appropriate, sustainable development, and to preserve areas of significant environmental value."

As it applies to the CVH site, the Draft Plan is similar to the currently-adopted Plan. Its new "Draft Locational Guide Map" dated March 1997 shows that all CVH property bounded by north of Bow Lane and west of Silvermine Road is classified "Regional Center," which is an "urban development area." The Plan's Development Priority 1 assigns "highest priority for affirmatively supporting rehabilitation and further development toward revitalization of the economic, social, and physical environment of Regional Centers." The guidelines for Regional Centers urge the state to "locate all appropriate state facilities within urban areas with preference to sites in Regional Centers."

Like the 1992-1997 Plan, the Draft Conservation & Development Plan assigns another classification, "Existing Preserved Open Space" to Class I water supply lands such as CVH. Specifically, the Plan states that Existing Preserved Open Space includes:

> Class I water supply lands in water utility ownership and state-owned land that meets the definition of Class I land contained in regulations of the Department of Public Health. Class I lands are critical areas closest to reservoirs or diversion sites in water utility ownership; and well field sites that equate with DEP's "initial setback area" and "recharge area" under the Level B Definition, and "wellfield," "area of contribution," and "recharge area" under the Level A definition.

While the Regional Center designation shown on the Locational Guide Map applies to the site, the Existing Preserved Open Space guidelines should also apply to new actions at the site to the extent feasible. The Conservation and Development Guide's approach and guidelines for Existing Preserved Open Space are:

> Continue long-range protection of the Existing Preserved Open Space areas and the appropriate management and use of their resource and recreational values.
>
> - Limit state actions to those acquisitions, improvements, and structural developments that are consistent with long-term preservation of the natural resource and open space values of the site and the appropriate public use and enjoyment. State plans and actions not consistent with the long-term preservation values should be approved only when it is demonstrated that there are overriding social, economic, or public benefits and there are no feasible alternative sites.
>
> - Encourage public use of these areas in conformance with management plans that provide long-range, multi-purpose management guidelines.
>
> - Maintain all Class I water supply lands in water utility ownership through Department of Public Health regulation of sale and use, and maintain all similar lands that are presently in state ownership. Any state or water utility facilities should conform to the Class I area guidelines.

The Incinerator Building, located on the east edge of Silvermine Road, is within an area classified as "Rural Land." Most of the Plan's guidelines for Rural Land address development patterns which would reflect the historical character of communities, encourage cluster development, etc.

3.15 b. Impact Analysis

The (Draft) Conservation and Development Policies Plan for Connecticut 1998-2003 locates all proposed construction activity within a Regional Center, except the demolition of the Incinerator Building would occur within Rural Land.

State actions at CVH are clearly compatible with the priority and guidelines for Regional Center areas which encourage development and economic activity. It is less clear whether the proposed site developments, specifically the roadway/parking project and the recreational complex, are consistent with the Existing Preserved Open Space guidelines associated with Class I water supply land. Those projects are not likely to be considered consistent with the "long-term preservation of the natural resource and open space values of the site and the appropriate public use and enjoyment." However, social benefits to CVH patients and the public are associated with these projects as described in Sections 1.2 and 3.16. No feasible alternative sites exist since the proposed projects are targeted to improve the hospital campus, which is pre-existing. The projects will be constructed in observance of best management practices which will protect the natural resources in the area consistent with the intent of the Existing Preserved Open Space designation.

The building demolitions which are under consideration appear to be compatible with the guidelines for Existing Preserved Open Space and Rural Land. Moreover, the demolitions are consistent with the Urban Center and Regional Center designations to the extent that the actions enhance the function of the hospital facility.

3.16 Consistency with Adopted Municipal and Regional Plans

3.16 a. Existing Setting

The City's Plan of Development ("Guiding the Future: A Plan of Development for the Year 2000," City of Middletown Planning and Zoning Commission) quotes from Section 8-23 CGS, which states that the plan shall be;

> . . . a statement of policies, goals, and standards for the physical and economic development of the municipalities . . . In preparing the Plan, the Commission may consider physical, special, economic and governmental conditions and trends. . . The Plan shall be designed to promote with greatest efficiency and economy the coordinated development of the municipality and the general welfare and prosperity of its people.

The Plan briefly mentions CVH in descriptive text only. Page 52 of the Plan notes the following:

> The State of Connecticut is the largest single land owner in the city. The state owns approximately 1,530 acres. The vast majority of this land is composed of the Connecticut Valley Hospital. While the campus proper is quite developed, the majority of this land is for the protection of the hospital's water supply reservoirs.

In addition, Page 117 notes that CVH "owns the watersheds of their reservoirs and also significantly sized parcels of agricultural or forested lands near the Connecticut River." No other references to CVH could be found in the Plan. The City's Plan of Development does not contain any policies, goals, or standards that reference CVH by either name or description.

The Zoning Map for the City of Middletown "Zoning Code, City of Middletown" designates the entire CVH property Institutional Development Zone (Zone ID). The description of that zone provided in the city's Zoning Code is "the zone is designated for development of institutional complexes." Permitted uses are described as follows:

> Permitted uses shall be limited to governmental, health, educational, charitable and religious institutions. An institution is an organization, establishment, or foundation or society devoted to the promotion of government, health, educational, charitable or religious objective and include its buildings. The facility should be compatible with its setting in scale and design.

While state property is not subject to local zoning regulation, it appears that the existing hospital use is compatible with the Institutional Development Zone.

3.16 b. Impact Analysis

A review of the City Plan of Development found no recommendations, goals, policies or standards that are at variance with the consolidation plan or other capital projects reviewed in this document. Certain subjects covered in the Plan are addressed in other sections of this document, including protection of the public water supply (Section 3.1), air quality (Section 3.6), noise (Section 3.7), and transportation (Section 3.11).

3.17 Economic Effects, Public Health and Safety

Effects upon the local economy, public health, and safety which may be directly attributable to the physical consolidation projects are discussed in this section. Socioeconomic issues not causally connected to elements of the consolidation plan that produce physical environmental impacts are discussed in a study provided in Appendix K.

3.17 a. Existing Setting

Economic Effects

While state-owned property is not subject to local taxation, the state instead provides host municipalities with payments in lieu of taxes (PILOT). PILOT amounts are set at an established percentage of the taxes that would be paid if the property were privately owned. The PILOT rate for respective properties ranges from 20 percent to 100 percent, depending upon the land use or specific case. The PILOT rate for property comprising the CVH main campus is 40 percent. The real property (land and buildings) value of the CVH campus is $89,209,790 (1987 assessed value). The mill rate for Middletown in 1997 is 23.1 per $1,000 assessed value; yielding a taxable base of approximately $2,060,700 for the CVH campus. Forty percent of that taxable amount equals a payment to the city of $824,298 for fiscal year 1997-1998.

Public Health and Safety

An electronic security system was recently installed in Dutcher and Battell Halls, consisting of a Honeywell computer-integrated, keyless entry system and closed circuit video monitoring system. From the Campus Police Department's substation in Battell Hall, a police officer studies the security video monitors continuously (24 hours a day, 7 days a week). The officer also addresses all alarms and provides radio communication for the Campus Police Department. Security system external and internal alarms will be triggered if someone attempts (a) to gain access to an unauthorized area; (b) to gain access to an authorized area at an unauthorized time; or (c) to open a door without a key card. The alarms are also triggered if (1) a door remains open longer than the preset duration; (2) communication failure occurs between a card reader and the system; or (3) a system or component failure occurs. Response instructions and locational information is computer generated at the substation. Descriptions of additional system features is provided in Appendix K, Section 3.1 a.

The CVH Police Department has jurisdiction within the boundaries of the CVH property. Its police officers have duties, responsibilities, and authority identical to members of any municipal police department in the State. Its membership is concerned with the protection of life and property, the prevention and suppression of crime, the apprehension and the assistance in the prosecution of offenders, the preservation of peace, and the regulation of vehicular traffic. Its sworn officers are graduates of the Municipal Police Training Academy and undergo retraining every three years. Empowered by State legislation to affect arrest, police officers patrol the campus by foot and by patrol car 24 hours a day, 7 days a week.

Improvement of exterior lighting under Project No. BI-I-479 will in some cases enhance the operation of the campus security system. In other areas it will improve safety on walkways for employees on 2nd and 3rd shifts and to assure evening access to buildings.

The CVH Fire Department operates from the Cotter Building on the South Campus. Emergency vehicles on site include three pump trucks and one patrol vehicle. The Department has fourteen staff of which two are full-time staff and twelve are part time fire fighters. The part time fire fighters are located within five miles of the campus and are able to rapidly respond to a fire emergency. Five staff are trained Fire Fighters Level II, who have hazardous materials training and are equipped to handle spill containment.

3.16 b. Impact Analysis

Economic Effects

The building demolitions, renovation projects, and site improvements will likely affect the CVH property's assessed value. The actual effect will be known after a revaluation of the CVH property anticipated in 1999. PILOT to the city will be impacted by this revaluation in the fiscal year 1999-2000. A broader discussion of PILOT is provided in Appendix K.

Capital expenditures at CVH can stimulate the area economy. The general contractor for renovation projects reportedly indicated that "over-the-counter" supplies and services were purchased from two Middletown businesses (see discussion in Appendix K, Section 5.2.ii.). However, the majority of capital expenditures affect businesses beyond the local area.

Public Health and Safety

The proposed roadway and parking project is designed to safeguard CVH patients from vehicular traffic by closing Holmes Drive to through-traffic. In addition, the project is conceived and designed to improve the ability of the CVH police to monitor the campus perimeter and discourage unauthorized boundary infractions, thereby safeguarding both the patients and the public. An expanded discussion of the effect upon public safety from the roadway/parking project is provided on Page 1-14.

The electronic security system installed in Dutcher Hall, under Project No. BI-MH-198, provides increased security on the campus as discussed above in Section 3.17 a.

A number of building renovation projects have been designed specifically to meet current fire safety codes, improve patient safety, and meet Americans with Disabilities Act (ADA) requirements. The State Fire Marshal's office reviewed and approved of the fire alarm system installed in Merritt Hall under Project No. BI-I-333B. In case of fire emergency at any CVH building, the CVH Fire Department is on site and is capable of providing rapid response.

Several buildings under consideration for demolition are outwardly dilapidated, including the Old Pig Slaughter House and portions of Old Weeks Hall. In such cases, the buildings may pose health hazards in terms of fire risk and vermin control. Several buildings have been skirted with chain link fence due to concerns of structural failure. Where no feasible and prudent alternative exists, such public health concerns will be eliminated by demolition.

SECTION 4
Impact Evaluation

4.1 UNAVOIDABLE ADVERSE ENVIRONMENTAL IMPACTS

The following adverse environmental impacts cannot be avoided if the proposed site development projects are constructed and buildings are demolished:

Important Farmland Soil - The proposed roadway and parking project at the South Campus as configured in Figure 4 would impact around 4½ acres of Prime Farmland soil plus any additional area that might be landscaped as part of the final design. The proposed recreational complex (as shown in Figure 3) based upon the site design would impact around 5½ acres of Prime Farmland, although this site is known to have been disturbed by past activities. No Additional Farmland of Statewide Importance or active farmland would be affected under either project.

Impervious Surface - Based on a review of the schematic design site plan of the roadway/parking project, the project will result in a net increase in paved area of approximately 4.2 acres, comprising approximately 0.3 percent of the Level B aquifer protection area. The additional paved surfaces will discourage stormwater from infiltrating into the ground and encourage stormwater runoff to flow more rapidly. Peak stormwater discharge from the drainage systems would result without the installation of stormwater detention structures.

Construction - Construction of the proposed site development projects (South Campus roadway/parking and North Campus recreational complex) would be expected to produce temporary impacts during the construction period including 1) effects on air quality due to construction vehicle emissions; 2) increased noise levels due to the operation of construction equipment; and 3) minor increased traffic on site and along the surrounding roadways due to the increased volume of construction vehicles (trucks and equipment).

Flora - The construction of the proposed roadway and parking project at the South Campus will displace some individual trees within the proposed roadway corridor. The great majority of the newly-paved area will be constructed on existing lawned areas. The other site development project, the recreational complex, will impact lawned area along with very few individual trees.

Historic Buildings - Buildings and other structures under consideration for removal are within a site listed in the National Register of Historic Places, and the structures are individually listed both on the National Register and also the State Register of Historic Places. The structures considered for demolition number at eighteen (or twenty, if the adjoining Carpenter, Lock, and Paint Shops are viewed as three structures).

4.2 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

State actions reviewed in this CEPA document will involve the following irreversible and irretrievable commitment of resources.

Important Farmland Soil - Areas designated as Prime Farmland will be lost to the site development projects as follows: around 4½ acres (at South Campus roadway/parking project) and around 5½ acres (at North Campus recreational complex). No active farming is present at these locations.

Historic Buildings - Buildings proposed for removal are within a site listed in the National Register of Historic Places, and the buildings are individually listed both on the National Register and also the State Register of Historic Places. Historic resources would therefore be lost.

4.3 MITIGATIVE MEASURES

This section summarizes the mitigation measures that would be used to reduce the adverse impacts which would result from state actions at CVH:

Water Quality - The potential for the transport of sediment, debris, and other pollutants will be minimized with the use of the following measures: 1) deep sumps for all site catch basins, 2) stormwater detention as required to maintain existing peak stormwater discharges from the site, 3) gross particle separator(s) on proposed storm drainage systems, and 4) other measures as required under the contract and as may be required for certification to DEP under the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities (Section 22a-430b CGS as amended).

Construction Activities - The final contract plans and specifications for proposed site development projects, including building demolitions and subsequent site restorations, will provide the following mitigative measures:

- Prohibition on Wetland Encroachment - Contractor's activities will be barred from wetland areas.

- Best Management Practices - Contract specifications will incorporate in full Section 1.10 "Environmental Compliance," the State of Connecticut Department of Transportation *Standard Specifications for Roads, Bridges and Incidental Construction* (Form 814A), 1995. The specifications are intended to safeguard air, water, and wetland resources from sedimentation, dust, and wastes generated during construction activity. Included in these specifications is a restriction on construction noise limiting the allowable continuous levels to a maximum of 90 decibels on the "A" weighted scale (dBA) when measured at the nearest residence or occupied building.

- The historic buildings considered for demolition will also be considered for preservation via adaptive re-use or moving off site. Where no feasible and prudent alternative can be identified, prior to demolition, photographic documentation to

State standards or Historic American Building Survey (HABS) standards will be performed to the satisfaction of the State Historic Preservation Officer. Such documentation would also be performed for any structures scheduled for adaptive re-use.

- Building demolitions and renovations, in accordance with applicable law, will incorporate environmental compliance precautions including protection of workers from regulated materials.

4.4 COST BENEFIT ANALYSIS

The intent of this section is to discuss the costs and benefits associated with the State actions reviewed in this CEPA document, and compare those costs and benefits against alternatives available to the DMHAS Commissioner. As discussed in Section 2 (Alternatives Considered), DMHAS had no alternative to implementing the mandated consolidation plan. Therefore, no cost/benefit comparison with alternatives to consolidation is offered herein.

In planning for consolidation at CVH, an alternative campus configuration was considered (see discussion in Section 2.2 beginning on Page 2-1). However, the alternative proposal was found to be unfeasible since it would have provided insufficient bed space within the time frame needed to implement the consolidation plan; therefore no discussion of relative costs is required.

Alternatives to the roadway/parking project were also discussed in Section 2.2. Most of those alternatives have been rejected. The selected alternative is projected to cost $2 million (Reference 30). However if needed, less development-intensive alternatives, including the no-build alternative, could be designed. Such scaled-back alternatives would be less costly but might also offer fewer benefits to the hospital. The benefits associated with the roadway/parking project cannot be quantified in dollars, but rather can be described in terms of parking convenience, safety to CVH patients and the public, and enhancement of a therapeutic environment for CVH patients.

Similarly, the no-build alternative is available to the proposed recreational complex. The cost savings for that alternative is quantifiable ($295,000 for Project No. BI-I-475 according to DMHAS). As well, the benefits associated with the project's completion are not quantifiable, but may be measured in terms of furthering DMHAS's mission to serve its patients.

4.5 LICENCES, PERMITS, CERTIFICATIONS, AND APPROVALS

The following list summarizes the licences, permits, certifications, and approvals which may be required for the completion of this project:

See Page No.

- Registration under General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities (Section 22a-430b CGS as amended by Public Act 91-263) 3-6
- Water Company Land Permit - Change in Use (Public Health Code Regulation Section 25-37d-1 et sequens) 3-6
- Floodplain Management Certification 3-11
- Registration under General Permit to Construct and/or Operate an Emergency Engine (22a-174-3 CGS) 3-28
- Alternative Work Practice approval from the State Department of Public Health (RCSA 19a-332a-11) 3-37
- Asbestos Abatement Notification (Section 19a-332a-3 RCSA) 3-37
- Special Waste Authorization (Section 22a-209-8 RCSA) 3-37
- State Traffic Commission Certificate (Section 14-311 CGS) 3-60

The sponsor agency will also solicit the approval of the State Historic Preservations Officer, Connecticut Historical Commission for the considered building demolitions (see Page 3-82).

References

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20. Federal Transit Administration (FTA) (Formerly the Urban Mass Transportation Administration); "Guidelines for Preparing Environmental Assessments" (Technical Circular C 5620.1.); 1979

21. Fletcher Thompson, Inc. "Survey of Underground Services" Drawings, 6/7/50

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23. Maguire Group, Inc., "Middletown Roads - Group VI", (SU3-20), 6-13-90

24. Marin Environmental, Inc., "Landfill Investigation, Connecticut Valley Hospital, Middletown, Connecticut," August 1997

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APPENDIX A

Responses to the
Notice of Scoping

WRITTEN RESPONSES TO THE NOTICE OF SCOPING

Date	Name
1/10/97	Earle V. Roberts, Jr.
1/10/97	Attorney John C. King, Updike, Kelly & Spellacy, P.C.
1/10/97	Steven A. Rocco, AIA, Greater Middletown Preservation Trust
1/9/97	Douglas J. Bennet, President, Wesleyan University
1/9/97	David J. Fox, Senior Environmental Analyst, Department of Environmental Protection
1/6/97	Jeffrey Geller, M.D., M.P.H., Department of Psychiatry, University of Massachusetts
1/2/97	Annette B. Ward, Director, Welfare Department, City of Middletown
1/1/97	Mary K. Xenelis, Middlesex Fruitery
12/24/96	Michael J. Bartlett, Supervisor, USDA Fish and Wildlife Service
12/20/96	Leon F. Vinci, M.P.H., Director or Health, City of Middletown
12/17/96	Guy P. Russo, Director, Water and Sewer Department, City of Middletown
12/17/96	William Warner, AICP, Director of Planning, Planning and Zoning Department, City of Middletown
12/17/96	Cynthia G. Wilcox, Project Development Manager, Municipal Development Office, City of Middletown
12/12/96	D. Clark Smith, State Department of Public Health (phone memo by Michael Lucas, III)
12/11/96	Ronald Skomro, Supervising Environmental Sanitarian, State Department of Public Health
11/26/96	Ralph D. Steadham, Jr., Environmental Planning, State Department of Transportation

Jan, 10/97 #23

Public Scoping Meeting: Tuesday, December 17, 1996
Environmental Assessment at Connecticut Valley Hospital, Middletown, CT
Project Numbers: DMHAS 4403-489; DPW #BI-I-489 (4403489)

Comment Sheet

RECEIVED BY
DMHAS OOC
JAN
ENGINEERING SERVICES

Agency Contact:

Mr. Michael Lucas III, Chief of Engineering Services 2
State of Connecticut
Department of Mental Health and Addiction Services
Connecticut Valley Hospital
Middletown, CT 06457
(860) 344-3009; fax (860) 344-3016

Name: Earle V. Roberts Jr. (860) 346-0068

Address: 785 Bow Lane, Middletown CT 06457

RE: Protection of Water Quality of CVH Reservoirs #1 & #2

Current Situation: The narrow dirt road which divides CVH Reservoirs #1 & #2 is a city road which provides access to several parcels of private property. Currently many 4-wheel drive vehicles, motorcycles and cars use this road when hunting, walking in the woods, driving on wood trails and exercising dogs. The City is responsible for maintaining this road, which gets rutted by water & traffic, by bringing in gravel & grading the road. The City also removes garbage and abandonned vehicles.

If CVH expands & these 2 reservoirs are the main drinking water supply, allowing unrestricted traffic between the reservoirs could be courting a water quality disaster.

Suggestions: ① Abandon the current access road and create a new dirt access road to the private properties on the southerly side of the reservoirs. This suggestion was made by me to CVH/State Land Acquisition Dept. in 1982. ② Purchase development rights from private property owners. Currently land is zoned R-60 which is private residential and allows septic systems. Purchasing development rights would protect watershed courses that feed directly to the reservoirs.

Updike, Kelly & Spellacy, P.C. Counselors at Law

Hartford • New Haven • Stamford

Affiliated Partnership, Providence, RI

Independent Member of
Commercial Law Affiliates

John C. King
(860) 548-2608

One State Street, P.O. Box 231277
Hartford, Connecticut 06123-1277
Telephone (860) 548-2600
Facsimile (860) 548-2680

January 10, 1997

Mr. Michael Lucas III
Chief of Engineering Services 2
State of Connecticut
Department of Mental Health and Addiction Services
Connecticut Valley Hospital
Middletown, CT 06457

Re: *City of Middletown/Connecticut Valley Hospital*

Dear Mike:

On behalf of the City of Middletown, the undersigned provides these written comments in response to the Notice of Scoping. The undersigned provided comments, together with Mary Palladino, Executive Assistant and General Counsel to the Mayor, on December 3, 1996, at the scoping meeting at Connecticut Valley Hospital. Respectfully, I direct your attention to these comments as summarized in the minutes.

On December 17, 1996, the undersigned provided comments, together with the Hon. Maria Madsen Holzberg, Mayor. The undersigned respectfully directs your attention to the transcription of these comments.

Also, the undersigned directs your attention to the written comments of Jeffrey Geller, M.D., M.P.H., dated January 6, 1997, directed to your attention. Pursuant to correspondence, dated January 7, 1997, at the direction of Mary Palladino, Attorney Osowiecki of this office forwarded to Mark Foster of Frederick R. Harris, Inc., Dr. Geller's *cirriculum vitae*. The undersigned requests that the Department of Mental Health and Addition Services consider retaining Dr. Geller as a consultant in connection with the CEPA study.

68432

The undersigned directs your attention to the Memorandum of Decision of the Superior Court, dated August 9, 1996, and particularly its references to the social and economic consequences, as well as its references to the supporting statutory and regulatory criteria. Specifically, Conn. Agencies Regs. §22a-1a-3, includes economic and social consequences and a study of the disruption or division of an established community, or inconsistency of the project with adopted municipal and regional plans.

Thank you for your courtesy and consideration. Should you have any questions or comments regarding the foregoing, please do not hesitate to contact me.

Very truly yours,

John C. King

JCK:mjp
cc: The Hon. Maria Madsen Holzberg
Mary L. Palladino, Esq.

FAXED 1/10/97 3:10 PM SR

The Greater Middletown Preservation Trust

Serving the towns of northern Middlesex County

January 10, 1997

Mr. Michael Lucas III
State of Connecticut
Department of Mental Health and Addiction Services
Connecticut Valley Hospital
Middletown, CT 06457

re: CVH Consolidation Environmental Study

Dear Mr. Lucas,

We wish to state for the record our objection to the plan to demolish old Woodward, Smith, and Weeks Halls at the CVH main campus. These buildings are important contributors to the character of the CVH campus, which is, as you know, on the National Register of Historic Places. CVH represents a magnificent example of a nineteenth century asylum complex, with grand and handsome buildings assembled in a park like setting.

These buildings appear to us to have great potential for creative adaptive reuse. The GMPT believes in economically viable solutions for making historic buildings useful. We believe that residential use may be one possible solution which merits further investigation. At the very least, we would ask that the State pursue Requests for Proposals from the public at large at an appropriate time. If a viable economic solution cannot be found at this particular point in time, let us take the long view and preserve the buildings for another time.

The State of Connecticut plays the role of judge and jury regarding the fate of these buildings, but it should also remember its role as steward. The Connecticut Valley Hospital campus and the significant buildings therein represent a cultural asset and historical artifact for the City of Middletown and the State of Connecticut, which should be maintained and preserved.

Thank you very much,

Steven A. Rocco

Steven A. Rocco, AIA
Architect
First Vice-President, GMPT

RECEIVED BY
DMHAS OOC
JAN 13 1997
ENGINEERING SERVICES

27 Washington Street
Middletown, Connecticut 06457
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WESLEYAN
UNIVERSITY

Middletown, Connecticut 06459-0290
(860) 685-3500 FAX: (860) 685-3501

Douglas J. Bennet
President

RECEIVED BY
DMHAS OOC
JAN 10 1997
ENGINEERING SERVICES

January 9, 1997

Mr. Michael Lucas, III
Chief of Engineering Services 2
Department of Mental Health and Addiction Services
State of Connecticut
Connecticut Valley Hospital
Middletown, CT 06457

Dear Mr. Lucas:

I am writing to express my concern about the consolidation of programs at the Connecticut Valley Hospital and the attendant renovations required to administer both inpatient and outpatient care at this facility, specifically projects DMHAS 4403-489 and DPW #B1-1-489(4403489). The overarching issues are the degree to which a large patient population will have a negative impact on efforts to revitalize our downtown business district and put additional stress on existing community service programs.

In considering the scope of the environmental assessment at Connecticut Valley Hospital, it is incumbent on the agency to consider the aggregate size of both the inpatient and outpatient population that will be served at this facility. The size of this population bears directly on the need to conduct the level of demolition and renovation proposed for this site. Specifically, the agency should consider:

1. establishing a maximum inpatient population and safeguards to prevent the housing of patients who require high levels of security;

2. the impact of a larger population of outpatients who will likely remain in the Middletown area, either after treatment or during periods of prolonged outpatient treatment; the impact that this increased population of outpatients will have on health services and other community agencies within Middletown; and

3. the degree to which the outpatient services can be better provided in a regional program which allows patients more accessible care in an environment where they may be more likely to seek help. Ultimately, a regional approach may result in more effective care which, I know, is the primary mission of your agency.

I believe that the scope of the proposed activity, the large number of issues identified in the public hearing, and the potential future consequences for Middletown make the determination to proceed with a comprehensive Environmental Impact Evaluation a prudent next step in this process.

Sincerely,

DJB/pp/j

STATE OF CONNECTICUT

DEPARTMENT OF ENVIRONMENTAL PROTECTION

OFFICE OF ENVIRONMENTAL REVIEW

79 ELM STREET, HARTFORD, CT 06106-5127

RECEIVED BY
DMHAS OOC
JAN 13 1997
ENGINEERING SERVICES

To: Michael Lucas, III - Chief of Engineering Services II
Department of Mental Health & Addiction Services, Holmes Dr., Middletown

From: David J. Fox - Senior Environmental Analyst D.J.F. **Telephone:** (860) 424-4111

Date: January 9, 1997 **E-Mail:** david.fox@po.state.ct.us

Subject: Environmental Assessment for Connecticut Valley Hospital

The Department of Environmental Protection has reviewed the Notice of Scoping circulated for the proposed series of projects at the Connecticut Valley Hospital associated with the transfer of programs from the former Fairfield Hills and Norwich Hospitals. The following comments are submitted for your consideration during preparation of the CEPA document.

The project sites may be within an Aquifer Protection Area. Based on existing geologic mapping, the State Aquifer Protection Area Program has preliminarily identified the contribution and recharge areas surrounding wells in stratified drift used by water companies serving more than 1000 people. The portion of the campus slated for improvement is within this area, delineated by Level B mapping for the Middletown Water Department's River Road Wellfield along the Connecticut River. Aquifer Protection Areas will be conclusively established based on modeling of hydrogeologic data and hydraulic characteristics of the aquifer (Level A mapping). Based on review of preliminary mapping, there is a good chance that most of the area where projects are proposed will be within the final Aquifer Protection Area boundary. (Please note that this judgment, based on additional preliminary review by the Bureau of Water Management, is contrary to the initial opinion that I expressed during the December 3 agency scoping meeting.)

Regulations have been drafted which will cover both existing and proposed land uses within established Aquifer Protection Areas (copy of draft regulations enclosed). Land use regulations will prohibit certain new activities including some industries, the outdoor storage of hazardous materials and underground storage tanks, except for #2 fuel oil for residential heating located more than 500' from the nearest public water supply well. Best management practices will be prescribed for certain new and existing activities. It is recommended that the project be designed in conformance with anticipated standards of the Aquifer Protection Area Program. All proposed activities should be reviewed for consistency with the proposed regulations, including compliance with the best management practices for hazardous materials storage, waste disposal and stormwater. For further information regarding the program and its potential regulatory requirements, contact Rob Hust of the Bureau of Water Management at 424-3718.

Plans for demolition and construction activities should be sensitive to the campus's role as a public water supply source area. Several of the sites and buildings may have associated hazardous materials. The Notice of Scoping includes hazardous material remediation as a work item required in association with demolition. Prior to demolition, buildings and their environs should be inspected

for potential hazardous materials, including underground storage tanks, asbestos, lead paint and PCBs. Appropriate remediation, such as segregation and proper disposal of hazardous components, should be accomplished prior to demolition. The possibility that removal of buildings may uncover hazardous materials, increasing their potential to contaminate groundwater, should also be considered.

Of those buildings listed in the Notice of Scoping, the old tin shop, old fire house, incinerator building, old wooden grounds storage building and lumber storage facility would be more likely to contain or have hazardous materials nearby. In addition, the lock, carpenter and paint shop, immediately north of the Cotter Building, is not included in the list for demolition, but it is located where new parking is proposed.

If soil and/or ground water contamination is discovered during the implementation of the projects, the Permitting, Enforcement and Remediation Division should be notified. In order to achieve proper remediation, the extent of contamination should be clearly defined, a cleanup plan developed, and measures implemented that will clean up the site in accordance with applicable criteria in the Remediation Standard Regulations adopted pursuant to section 22a-134k of the Connecticut General Statutes. For further information regarding remediation, contact the division at 424-3705.

The Soil Conservation Service's Soil Survey of Middlesex County reveals that the only inland wetland soil within the portion of the campus slated for construction activities is a lobe of Leicester, Ridgebury and Whitman extremely stony fine sandy loams across Bow Lane immediately south of the parking lot to be constructed east of the Battell Building. This wetland would apparently not be directly impacted by the proposed projects. However, the campus may include wetlands or, more likely, watercourses that would not appear on the soil survey. Existing wetlands and watercourses at the site should be delineated by a certified soil scientist and their functional values should be evaluated. Any development should avoid regulated areas to the maximum extent practicable. Unavoidable impacts should be mitigated and buffer areas established to further protect wetlands and watercourses. The degree of impact should be quantified by acreage and a discussion of the functional values that would be lost or impaired should be included in the CEPA document. For further information concerning CEPA review of potential wetland impacts, contact Steve Tessitore of the Inland Water Resources Division at 424-3871.

The proposed roadway scheme circulated with the Notice of Scoping depicts a number of apparently new parking lots. The rationale for the size and location of new parking lots should be explained in the CEPA document.

The existing condition of the campus's infrastructure and its ability to continue to reliably serve the increased number of patients and staff should be examined in the CEPA document. This includes the wastewater treatment plant, water supply system and heating plant.

With regard to the CVH sewage treatment facility, a Wastewater Tie-In Study completed by Purcell Associates in March 1996 examined connection with the City of Middletown system. The recommended alternative was closure and demolition of the CVH facility, installation of 1100 feet of 15-inch gravity sewer line from the existing CVH plant to River Road and construction of a pump station at River Road to connect to an existing 8-inch force main. An Infiltration/Inflow Study and

any necessary system repairs would be required prior to tie-in to the Middletown system. The draft Priority List for 1997 Clean Water Funds includes $850,000 for these projects. The CEPA document should discuss DMHAS's future plans regarding the wastewater treatment system. For further information concerning the Clean Water Fund, contact Walt Sinnott of the Water Planning & Standards Division at 424-3759.

The Purcell study also identified a number of instances of stormwater inflow to the sanitary sewer system, including roof leaders from several buildings. The rehabilitation of buildings should include directing storm flows to the stormwater collection system. Similarly, the runoff from the new parking and driving areas should be directed to the stormwater collection system.

The Water Supply Plan for the Connecticut Valley Hospital was revised by Nathan L. Jacobson & Associates in May 1996. This document outlines the performance of the existing water system, projects consumption trends (including the consolidation of DMHAS programs), and provides an analysis of system deficiencies and a list of recommended improvement programs. With regard to capacities, the document reports that, based on the 1994 maximum day per capita consumption of 173 gallons per day and the proposed laundry maximum of 0.2 million gallons per day (MGD), the projected maximum day consumption, after consolidation, will be 0.71 MGD, virtually matching the approved filtration plant capacity. The plan concludes that CVH should actively pursue conservation and, if maximum day water use approaches 0.7 MGD, the hospital should pursue obtaining approval for a 1.0 MGD filtration plant capacity. The CEPA document should include projections of water usage and commitments for any improvements required to the system in order to insure that the water can be reliably supplied.

It is likely that the hospital will be a Title V source, as defined in section 22a-174-33 of the Regulations of Connecticut State Agencies. Therefore, it will require either a Title V Permit to Operate or a General Permit to Limit Potential to Emit. The Clean Air Act Amendments of 1990 require each state to develop a Title V operating permit program to permit all major sources of air pollution and other sources subject to federal Clean Air Act requirements. The DEP Bureau of Air Management has established the Title V operating permit program to meet this federal requirement. The bureau will issue Title V permits containing all applicable state and federal air pollution control requirements which include provisions for schedules and certifications, record keeping, monitoring and compliance plans. The Title V Operating Permit will be a facility wide permit that brings all applicable air pollution control requirements together into a single document. DEP expects that EPA will approve Connecticut's Title V program in early 1997, which will trigger the one-year transition period during which DEP must receive all Title V applications. The owner or operator of a source subject to the Title V operating permit program may seek coverage under a General Permit to Limit Potential to Emit instead of obtaining a Title V Operating Permit. This General Permit will enable Title V sources to limit their potential/actual emissions to levels below the applicable major source thresholds. For additional information concerning the Title V Program, contact the Bureau of Air Management's helpline at 1-800-760-7036.

According to an Underground Storage Facility Notification form on file with the Underground Storage Tank Program, there are six 30,000-gallon steel tanks located immediately north of the power plant along Flood Drive. These tanks were reportedly installed in 1954 and have exceeded their life expectancy. Accordingly, they should be removed.

The proposed projects are not within the 100-year flood zone on the community's Flood Insurance Rate Map. However, because they are State actions, the projects involving construction of roadways and parking lots may require stormwater management certification pursuant to section 25-68d of the Connecticut General Statutes regardless of their location in relation to the floodplain. If that is the case, prior to construction, the DMHAS must certify that the activity complies with the stormwater management standards specified in section 25-68h-3 of the Regulations of Connecticut State Agencies. In order to determine whether a project would require certification, additional detailed information concerning the existing extent of impervious surface and the storm drainage at the site in comparison to any additional impervious surface and the proposed storm drainage system must be provided. For further information concerning the potential applicability of this requirement and details concerning the certification process, contact Art Christian of the Inland Water Resources Division at 424-3880.

Appropriate controls, designed to remove sediment and oil or grease typically found in runoff from parking and driving areas, should be included in the stormwater collection system to be installed at the site. Potential controls include gross particle separators, deep sump catch basins with oil-grease traps, and/or sedimentation basins. Any catch basins installed in conjunction with paving should have deep sumps to trap sediments and hoods to trap oil and grease. If more than 1 acre of pavement drains to a common discharge point, a gross particle separator should also be installed. Advanced designs for gross particle separators have been developed, such as Vortechnics, Downstream Defender and Stormceptor, that the Department believes are very effective in removing contaminants. The last type of separator is designed to treat runoff from areas up to approximately 1 acre in size, while the former two can be sized to accommodate flow from larger areas. It is recommended that the appropriate variety of this or similar type of unit with a cyclonic design be installed in conjunction with each outfall, depending on the size of the drainage area. Provisions should be made for the periodic maintenance that will be required to insure continued effectiveness of these control measures. For further information concerning water quality and stormwater management, contact Chris Stone of the Bureau of Water Management at 424-3850.

The following generic comments may be applicable to those projects involving the demolition and/or rehabilitation of structures.

Prior to the demolition of any commercial or industrial buildings or buildings containing five or more residential units, they must be inspected for asbestos-containing materials and any such materials must be removed. The National Emissions Standards for Hazardous Air Pollutants - Subpart M also requires that the Federal EPA be notified 10 working days prior to demolition. For further information, contact the EPA at (617) 223-4859.

The disposal of material containing asbestos requires the approval of the Waste Engineering and Enforcement Division pursuant to section 22a-209-8(i) of the Regulations of Connecticut State Agencies. Proper disposal technique requires that the material be bagged and labeled and placed in an approved secure landfill. For further information and to obtain the application for approval, contact the division at 424-3366.

The disposal of demolition waste should be handled in accordance with applicable solid waste statutes and regulations. Clean fill is defined in section 22a-209-1 of the Regulations of

Connecticut State Agencies (RCSA) and includes only natural soil, rock, brick, ceramics, concrete and asphalt paving fragments. Clean fill can be used on site or at appropriate off-site locations. Clean fill does not include uncured asphalt, demolition waste containing other than brick or rubble, contaminated demolition wastes (e.g. contaminated with oil or lead paint), tree stumps, or any kind of contaminated soils. Landclearing debris and waste other than clean fill resulting from demolition activities is considered bulky waste, also defined in section 22a-209-1 of the RCSA. Bulky waste is classified as special waste and must be disposed of at a permitted landfill or other solid waste processing facility pursuant to section 22a-208c of the Connecticut General Statutes and section 22a-209-2 of the RCSA. For further information concerning disposal of demolition debris, contact the solid waste staff of the Waste Engineering & Enforcement Division at 424-3366.

Residue generated by the removal of lead paint is considered to be hazardous waste if it meets the characteristics contained at 40 CFR 261. This must be determined on a case-by-case basis for each abatement project prior to disposal. The disposal of hazardous waste is regulated pursuant to sections 22a-449(c)-11 and 22a-449(c)-100 through 22a-449(c)-110 of the Regulations of Connecticut State Agencies. Proper disposal procedure is for a permitted hazardous waste hauler to transport the waste to an approved disposal facility. The Bureau of Waste Management has prepared a document, "Guidance for the Management and Disposal of Lead-Contaminated Materials Generated in the Lead Abatement, Renovation and Demolition Industries." For further information and to obtain the guidance document, contact the Waste Engineering and Enforcement Division at 424-3372.

The site should be inspected for any electrical equipment such as transformers or capacitors which may contain PCB's. PCB transformers are prohibited from use in and near commercial and public buildings (e.g. schools, hospitals, offices, etc.) such as CVH. For further information, contact the Bureau of Waste Management, PCB Program at 424-3368.

If the rehabilitation of structures involves the removal of exterior paint, certain precautions should be taken to protect ground and surface water quality. The methods of paint stripping and disposal of spent stripping fluid should be selected to minimize potential impacts. The Bureau of Water Management has prepared draft guidelines for stripping operations, including the appropriate collection, testing and disposal procedures for paint stripping wastes. For further information, contact the bureau at 424-3018.

Thank you for the opportunity to review these projects. If there are any questions concerning these comments, please contact me.

Enclosure

cc: Phil McLellan, OPM
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July 1996 REVISION (after informal AG review)

AQUIFER PROTECTION AREAS - LAND USE CONTROLS

SECTION 1. **The Regulations of Connecticut State Agencies are amended by adding sections 22a-354i-1 through 11 as follows:**

(NEW) **Section 22a-354i-1 through 11. Regulations For Delineation of Aquifer Protection Areas, Best Management Practices, and Prohibition of Regulated Activities Within Such Areas**

Section 22a-354i-1. Definitions

(a) As used in this regulation, the following definitions apply:

"Affected water company" means affected water company as defined in section 22a-354h of the general statutes.

"Aquifer protection area" means aquifer protection area as defined in section 22a-354h of the general statutes and any subsequent change to such area approved by the Commissioner pursuant to section 22a-354i-2 of the Regulations of Connecticut State Agencies.

"Area of contribution" means area of contribution as defined in section 22a-354h of the general statues and as mapped by Level A mapping pursuant to sections 22a-354b and 22a-354c of the general statutes and section 22a-354b-1 of the Regulations of Connecticut State Agencies;

"Bulk storage facility" means any portion of property where oil or petroleum liquids are received by tank vessel, pipeline, railroad car, or tank vehicle.

"CFR" means Code of Federal Regulations.

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"Commissioner" means the commissioner of environmental protection;
"Connecticut Building Code" means section 29-252-1b of the Regulations of Connecticut State Agencies.

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"Domestic sewage" means domestic sewage as defined in section 22a-430-3(a) of the Regulations of Connecticut State Agencies;

"Dry well" means any discharge device installed below the ground surface which is designed to allow process waste water or hazardous material discharged to such device to enter the ground;

"Existing regulated activity" means a regulated activity which substantially commenced, or with respect to which a municipal building permit has been issued, on or before the date an applicable aquifer protection area is designated on municipal zoning district and inland wetland maps and section 22a-354i-1 through 11 of the Regulations of Connecticut State Agencies have been adopted. A regulated activity is not an "existing regulated activity" if (a) it was continuously out of service or operation for three years preceding such date or (b) it is subject to section 22a-449(d)-1 of the Regulations of Connecticut State Agencies and is defined thereunder as "temporarily out of service".

"Existing well field" means existing well field as defined in CGS section 22a-354a of the Regulations of Connecticut State Agencies;

"Expand an existing regulated activity" or "expansion of an existing regulated activity" means to increase the size, capacity, or operations of an existing regulated activity, to otherwise intensify the use of an existing regulated activity, including by increasing the amount of hazardous materials used, stored, or stockpiled, or to otherwise alter an existing regulated activity.

"Floor drain" means any opening in a floor or surface which opening or surface receives materials spilled or deposited thereon;

"Hazardous material" means (i) hazardous material as defined in 49 CFR 171.8 and includes each material listed in 49 CFR 172.101, (ii) any hazardous substance as defined in 40 CFR 302.4 and listed therein at Table 302.4, or (iii) any hazardous waste as defined in section 22a-115 of the general statutes with the exception of those listed in Appendix A of this regulation;

"Hazardous Waste Facility" means a hazardous waste facility as defined in section 22a-115 of the general statutes.

"Industrial laundering" means any action or process for washing rags or other

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fabrics utilized in industrial operations;

"Level A mapping boundary" means the lines as shown on Level A maps approved or prepared by the Commissioner pursuant to section 22a-354c of the general statutes, any other provision of the general statutes, or section 22a-354i-2 of the Regulations of Connecticut State Agencies, encompassing the area of contribution and recharge areas;

"Modify a new regulated activity" or "modification of a new regulated activity" means to alter a new regulated activity after an exemption is issued pursuant to section 22a-354i-5 of the Regulations of Connecticut State Agencies.

"Municipal aquifer protection agency" means the board or commission authorized by municipal ordinance under section 22a-354o of the general statutes.

"Owner or operator" means the person who either owns or is responsible for the operation of a regulated activity.

"Municipal sewerage system" means municipal sewerage system as defined in section 7-245 of the general statues;

"New regulated activity" means a regulated activity which commences after the date an applicable aquifer protection area is designated on municipal zoning district and inland wetland maps and section 22a-354i-1 through 11 of the Regulations of Connecticut State Agencies have been adopted.

"Oil or petroleum" means oil or petroleum as defined in section 22a-448 of the general statutes;

"Pavement deicing chemical" means sodium chloride, calcium chloride, or calcium magnesium acetate;

"Person" means any individual, partnership, association, firm, corporation or other entity, except a municipality, and includes a federal agency as permitted by law, the state or any instrumentality of the state, and any officer or governing or managing body of any partnership, association, firm or corporation;

"Pesticide" means pesticide as defined in section 22a-47 of the general statutes;

"Pollution" means pollution as defined in section 22a-423 of the general statutes;

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"Potential well field" means potential well field as defined in section 22a-354a of the general statutes;

"Public water supply" means public water supply or community water system or public water system or seasonal water system, as each such item is defined in sections 19-13-B102 of the Regulations of Connecticut State Agencies;

"Publicly owned treatment works" means publicly owned treatment works as defined in section 22a-430-3 of the Regulations of Connecticut State Agencies;

"Recharge area" means recharge area as defined in section 22a-354h of the general statutes and as mapped by Level A mapping pursuant to sections 22a-354b and 22a-354c of the general statutes and section 22a-354b-1 of the Regulations of Connecticut State Agencies;

"Regulated activity" means an activity, structure, or appurtenance thereto listed in section 22a-354i-4 of the Regulations of Connecticut State Agencies, if such activity, structure, or appurtenance is located or conducted wholly or partially in an aquifer protection area.

"Release" means any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping or disposing of a hazardous material;

"Septage disposal area" means septage disposal area as defined in section 22a-430-5 of the Regulations of Connecticut State Agencies;

"SIC code" means the standard industrial classification code found in the Standard Industrial Classification Manual, Executive Office of Management and Budget 1987.

"Storage" means the holding of any hazardous material for a temporary period, at the end of which such hazardous material is treated, disposed of, utilized, abandoned or stored elsewhere;

"Storage tank" means a stationary device which is designed to store hazardous materials and is constructed of non-earthen materials that provide structural support, including but not limited to concrete, steel, fiberglass or plastic;

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"Topographic feature" means an object whether natural or man-made located on the earth surface and of sufficient size that it appears on a 1:24,000 scale topographic quadrangle map drawn by the United States Geologic Survey;
"Underground" means wholly or partially below the surface of the ground and not fully visible from the surface;

"Wastewater treatment system" means any operation or process for reducing the concentration of wastes in any solution of water and wastes;

"Zoning district map" means any map showing zoning districts prepared in accordance with CGS chapter 124 or 126 or any special act or planning district maps.

Section 22a-354i-2. Delineation of Aquifer Protection Area Boundaries; Extension for Administrative Purposes; Approval

(a) **Delineation of Aquifer Protection Boundaries**

Within ninety (90) days after the Commissioner notifies a municipality that one or more Level A mapping boundaries are located entirely or in part therein, the municipality shall, on all municipal zoning district and inland wetland maps, delineate such boundaries or other such boundaries approved by the Commissioner pursuant to subdivision (b)(1) of this section, and shall designate such delineated areas as aquifer protection areas.

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(b) **Extension and approval of aquifer protection area boundaries**

(1) A municipal aquifer protection agency may, for the purpose of clarifying the location of an aquifer protection area and facilitating administration of regulations pertaining thereto, submit a written request to the Commissioner to extend an aquifer protection area boundary approved by the Commissioner under 22a-354d to coincide with the property line, municipal boundary, or topographic feature nearest such boundary. Such proposed extension shall, at a minimum, fully encompass the aquifer protection areas bounded by the approved Level A mapping but shall not exceed the distance necessary to clarify the location of the aquifer protection area. An aquifer protection area boundary may not be extended without prior written approval of the Commissioner.

(2) Any request to the Commissioner pursuant to subdivision (b)(1) of this section for extension of an aquifer protection area boundary shall include at least the following:

(A) a map to scale delineating (i) all Level A mapping boundaries within the requesting municipal aquifer protection agency; (ii) the proposed aquifer protection area boundary; and (iii) boundaries of any existing aquifer protection areas within the municipality adopted pursuant to section 8-2 of the general statutes; and

(B) (i) an explanation of the need for such proposed extension; (ii) a demonstration that a reasonable relationship exists between the proposed extended boundaries and the protection of existing and potential well fields; and (iii) a certification by the chairperson of the requesting Municipal Aquifer Protection Agency submitting the request that all owners of property upon which the proposed extended aquifer protection

area is located, all owners of property immediately contiguous to such properties, and all affected water companies, have been notified of the request in accordance with subdivision (2) of this subsection and offered a 30 day comment period on the proposed extension in such notice; and (iv) a summary of all such comments received by the requesting agency and a response by the Agency to each comment.

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(3) Notification required by subparagraph (2)(B) of this subsection shall be effected by the following:

(A) delivery by first class mail,

(B) publication which shows a map of the aquifer protection area in a newspaper having substantial circulation in the affected area, and

(C) posting near the boundaries of the subject aquifer protection area of at least four (4) signs two feet by two in size.

(4) No later than sixty (60) days after receiving the Commissioner's written approval of a request to extend an aquifer protection area boundary, the requesting municipality shall delineate such extended boundary on all municipal zoning district and inland wetland maps and shall designate such delineated area as an aquifer protection area.

(5) No later than sixty (60) after receiving notification from the Commissioner that a Level A mapping boundary has been amended, each municipality affected by the amended boundary shall amend all municipal zoning district and inland wetland maps to reflect such amended boundary.

Section 22a-354i- 3. Adoption of Municipal Regulations; Commissioner's Approval.

(a) No later than six months after a municipality receives notice from the Commissioner that a Level A mapping boundary is located in such municipality, the municipal aquifer protection agency thereof shall adopt regulations pursuant to 22a-354p of the general statutes and shall submit such regulations to the Commissioner for approval.

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(b) If the Commissioner disapproves a municipal regulation submitted pursuant to subsection (a) of this section, the Municipal Aquifer Protection Agency shall, within ninety days of such disapproval adopt and submit a revision. The Commissioner shall consider such revised regulation in the same manner he considers a regulation submitted under subsection (a) of this section.

(c) A municipal regulation adopted pursuant to this section may be amended only with the Commissioner's approval.

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Section 22a-354i-4. Regulated Activities

(a) For the purposes of Section 22a-354i -1 through 11 each of the following is a regulated activity:

(1) to construct or operate any solid waste facility, including a resources recovery facility as defined in section 22a-207 of the general statues; any intermediate processing facility as defined in section 22a-260 of the general statutes;

(2) to construct or operate any recycling facility authorized by a general permit issued pursuant to section 22a-208a(r) of the general statutes which accepts waste oil, spent anti-freeze, or spent lead-acid batteries;

(3) to cause or allow any discharge to the ground from a hazardous waste storage, treatment or disposal facility, septage disposal area, publicly owned treatment works, or waste water treatment system, other than a discharge resulting solely from treatment and disposal of domestic sewage or from an agricultural waste management system;

(4) to contruct or maintain any floor drain; any dry well or other leaching structure or appurtenance designed to allow process waste water or hazardous material to enter the ground;

(5) to install or use any equipment for the underground storage or transmission of oil or petroleum or hazardous materials, except underground storage tanks which contain number 2 fuel oil for residential heating that are located more than 500 feet from the nearest public water supply well;

(6) to store hazardous materials outside or inside any structure located within a 100-year floodplain as mapped under 44 CFR 59 et seq., or in any structure which is not weather-tight and waterproof or which does not comply with any provision of the Connecticut Building Code located in section 29-252-1b of the Regulations of Connecticut State Agencies;

(7) to store more than 200 pounds of pavement deicing chemicals, except if such storage occurs within a weather tight waterproof structure and for the purpose of retail sale;

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(8) to contruct or operate any public airport;

(9) to construct, operate, or conduct a textile mill, tannery, or apparel production activity described in SIC codes 22, 31, and 23 which involves dying, textile coating, or fabric printing;

(10) to construct, operate, or conduct any manufacturing activity described in SIC code 24 involving hard or softwood veneer or plywood production, wood preservation, production of reconstituted wood products, or pulp or paper manufacturing;

(11) to construct, operate, or conduct any printing or publishing activity described in SIC code 27 involving plate making, commercial lithography, photoengraving, commercial printing, or gravure;

(12) to construct, operate, or conduct any activity described in SIC codes 28 and 29 involving the production or refining of chemicals, petroleum, or products derived from petroleum or coal;

(13) to construct, operate, or conduct any activity described in SIC code 30 involving the manufacture of coated rubber products, resin cements, tires, or tubes;

(14) to construct, operate, or conduct any activity associated with the production of stone, clay, or glass objects described in SIC code 32 and which engage in chemical processes for mirror or glass coating or which have machine shops;

(15) to construct, operate, or conduct any primary metal industry, metal part fabrication, manufacturing of metal products, electronic and other electrical equipment and components, including but not limited to those industries described in SIC codes 33,34,35,36,37,38 and 39, which involve foundry operations, metal forming, machining, metal plating, cleaning or degreasing or etching operations, or which involve the use, storage, handling or disposal of hazardous materials;

(16) to construct, operate, or conduct any generation of electrical power by means of fossil fuel, other than natural gas, or by means of nuclear power, except during an emergency;

(17) to construct, operate, or conduct any retail trade activity involving motor vehicles or oil or petroleum liquids including but not limited to: those described in SIC codes 55 or 59 involving the sale of new or used motor vehicles, boats or power equipment, and which provide repair and service for such vehicles, boats, or power equipment; fuel

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oil dealers, automobile service stations, gas stations, municipal garages, company fleet maintenance garages, automobile body repair and paint shops, automobile radiator, tire, exhaust, or transmission repair shops, tire retreading, or any other activities involving the repair and service of internal combustion engines or vehicles powered by them;

(18) to construct, operate, or conduct any wholesale trade activity described in SIC codes 50 and 51 involving the storage or handling of coal, ore, minerals, chemicals , paints, varnishes, or solvents; metal and auto parts salvage operation, or any bulk storage facility;

(19) to construct, operate, or conduct any personal or business services operation described in SIC codes 72,73 and 76 involving dry cleaning, industrial laundering, or commercial laundering; storage, mixing, loading or disposal of pesticides; construction equipment rental; and furniture stripping or finishing;

(20) to construct, operate, or conduct any personal or business services operation involving funeral services or photographic processing operations;

(21) to construct, operate, or conduct any laboratories described in SIC codes 80,82, and 87 engaging in biological, chemical, research, clinical, educational or product testing, but not including a laboratory for engaging solely in the testing of a public water supply or photographic processing from radiological examination;

(22) to conduct any home occupation involving any activity listed in this subsection.

(b) Notwithstanding any provision of subsection (a) of this section, an activity shall not be deemed a regulated activity if:

(1) Such activity consists of prototype modeling, office printing or duplicating, and analytic laboratory facilities;

(2) Such activity is incidental to, and supports a primary activity;

(3) Any wastewaters generated by such activity are disposed of through a connection to a municipal sewerage system authorized under 22a-430 of the General Statutes; and

(4) Any hazardous material utilized or possessed in connection of such activity is handled in accordance with all applicable law, does not pose a threat of pollution to the aquifer, and is utilized, stored, or otherwise handled solely within an enclosed structure having no floor drain or other facilities by which such material may be released to the aquifer.

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(c) The following is not a regulated activity provided all wastewaters from such activity are disposed of through a connection to a municipal sewerage system: a medical facility, including a doctor's office, dentist office, veterinarian office, medical laboratory, ambulatory patient care facility; a commercial laundry operation provided there is no drycleaning activity, commercial photographic processing operation; car wash, or a funeral home.

(d) Each regulated activity listed in subsection (a) of this section is prohibited unless such activity has been (1) registered in accordance with section 22a-354i-6, (2) exempted under section 22a-354i-5, or (3) permitted under section 22a-354i-7 of the Regulations of Connecticut State Agencies.

Section 5. Exemptions

(a) The Commissioner may, upon application in accordance with the provisions of this section, exempt a new regulated activity from the provisions of section 22a-354i-4 of the Regulations of Connecticut State Agencies if he finds that such activity does not or will not pose a threat to any existing or potential drinking water supply.

(b) The Commissioner shall not grant an exemption from the provisions of section 22a-354i-4 of the Regulations of Connecticut State Agencies for any new regulated activity if such activity would result in the presence of more than 280 gallons or the approximate equivalent of 1,060 kilograms, or the approximate equivalent of 2,337 pounds of hazardous material at any time.

(c) An applicant for an exemption from the provisions of section 22a-354i-4 shall submit an application therefor to the Commissioner on a form prescribed by him, and shall concurrently submit a copy of such application to the municipal aquifer protection agency and any affected water company. The application shall, without limitation:

(1) Provide a map showing the location of the regulated activity.

(2) Describe the purpose and nature of the subject regulated activity, any associated processes, and the type and quantity of all materials used or produced or to be used or produced.

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(3) Demonstrate that the subject regulated activity does not or will not pose a threat to any existing or potential drinking water supply.

(4) Demonstrate that any hazardous material present or to be present at the subject regulated activity is or will be handled within a weather-tight, water-proof structure.

(5) Describe the nature, chemical composition, and means of disposal of any waste, including wastewater, generated or to be generated in connection with the subject regulated activity and, if any wastewater is or will be discharged to a water of the state, identify by means of an engineering drawing all points at which such discharge occurs or will occur. Demonstrate that any wastewater generated in connection with the subject regulated activity is or will be disposed of through a municipal sewerage system.

(6) Provide a pollution prevention plan to be implemented in connection with the subject regulated activity. For purposes of this subparagraph "pollution prevention" means the use of processes and materials so as to reduce or minimize (A) the amount of hazardous materials used or (B) the quantity and concentration of waste generated.

(7) Demonstrate that stormwater discharge is managed in a manner that prevents pollution to the groundwater.

(8) Any other information that the Commissioner reasonably deems necessary to determine whether the subject regulated activity poses or may pose a threat to any existing or potential drinking water supply.

(d) A municipal aquifer protection agency may, within 60 days of receiving a copy of an application for exemption under this section, submit to the Commissioner written comments on such application. The Commissioner shall give due deference to any such comments. If the Commissioner rejects any such comment, he shall provide in writing to the commenting municipal aquifer protection agency the reasons for rejection.

(e) The Commissioner may issue an exemption from the provisions of section 22a-354i-4 of the Regulations of Connecticut State Agencies on such conditions as he reasonably deems appropriate to assure that the subject regulated activity does not or will not pose a threat to any existing or potential drinking water supply.

(f) Agricultural wastewater management systems shall be managed in accordance with regulations adopted under section 22a-354m(d) of the general statutes.

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Section 22a-354i- 6. Registration of Existing Regulated Activities

(a) Within 90 days after the adoption by a municipality of regulations under section 22a-354p of the Regulations of Connecticut State Agencies, each person who is engaged in an existing regulated activity shall register such activity with the Commissioner and the municipal aquifer protection agency of such municipality. Registrations for regulated activities conducted by other state agencies shall be processed by the Commissioner. Registrations for all other regulated activities shall be processed by the Municipal Aquifer Protection Agency. Such agency may reasonably request information in addition to that required by this section. Such registration shall include at least the following:

(1) The name of the facility or business, and in the case of a corporation, the full name of such corporation as registered with the Connecticut Secretary of the State.

(2) The name, business telephone number and mailing address of (A) the facility owner and if different the operator of the subject facility, and (B) the manager or other individual who oversees operations at the facility.

(3) The location of such facility, using street address or other appropriate method of location.

(4) The nature of the business, including any product produced, conducted at such facility.

(5) A description of the raw materials, fuels, and chemicals transferred, treated, stored, utilized or otherwise handled at such facility, including any hazardous material or hazardous waste, and the quantities of any such material, fuel, or chemicals so handled per annum.

(6) A description of waste management practices at such facility and of potential sources at such facility of releases to the ground, including: materials handling and storage areas, fuel handling and storage areas, process operation areas, floor drains, and waste management areas, including waste treatment disposal areas.

(7) A legible photocopy of each state, federal, and local authorization

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issued with respect to such facility or activities thereat.

(8) A certification that the subject regulated activity is being conducted and will continue to be conducted in compliance with the required best management practices set forth in section 22a-354i-9 (b) through (e) of the Regulations of Connecticut State Agencies.

(b) If the Commissioner, or the Agency, as appropriate, determines that a registration is incomplete, the Commissioner or the Agency may reject the registration and notify the registrant of what additional information is needed and the date by which it must be submitted. If the registration is determined to be complete, the subject regulated activity shall be deemed registered.

22a-354i- 7. **Permits for Expansion of Existing Regulated Activities and for Modification of New Regulated Activities**

(a) No person shall modify a new regulated activity or expand an existing regulated activity without having first received a permit therefor from the Commissioner or applicable municipal aquifer protection agency, as appropriate.

(b) The Commissioner shall issue permits for regulated activities conducted by state agencies. The Municipal Aquifer Protection Agency shall issue permits for all other regulated activities.

(c) A permit under this section shall be issued on a form prescribed by the Commissioner and shall at a minimum contain the same information required for registration under 22a-354i-6 of the Regulations of Connecticut State Agencies. The Commissioner, or the municipal aquifer protection agency, as appropriate, may request from the applicant for such permit any additional information reasonably deemed necessary and relevant by such agency or the Commissioner to determining whether to issue a permit.

(d) The Commissioner or a municipal aquifer protection agency may impose reasonable conditions on any permit issued under this section, including, without limitation requirements for:

(1) performance bonds;

(2) best management practices in addition to those set forth in section 22a-354i-9;

(3) ground water monitoring;

(4) recordkeeping.

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(e) A permit may not be issued under this section unless the Commissioner or the municipal aquifer protection agency, as appropriate, makes written find of facts and conclusions of law that:

(1) The applicant for such permit demonstrates to the satisfaction of the Commissioner or the Agency that:

(A) the subject expansion or modification thereof will not cause an increase in the use of hazardous materials at the subject facility and will not pose a threat to any existing or potential drinking water supply in the aquifer protection area, and

(B) the applicant has a good compliance record with environmental protection laws of this state. The applicant shall provide the following information on a form provided by the commissioner regarding enforcement proceedings involving the applicant:

(i) Any criminal conviction involving a violation of any environmental protection law if such violation occurred within the five years immediately preceding the date of the application,

(ii) any civil penalty imposed in any state or federal judicial proceeding, or any civil penalty exceeding five thousand dollars imposed in any administrative proceeding, for a violation of any environmental protection law if such violation occurred within the five years immediately preceding the date of the application, and

(iii) any judicial or administrative orders issued to the applicant regarding any such violation. For any such proceeding initiated by the commissioner or the attorney general, the commissioner may require the applicant to provide dates, case or docket numbers or other information which identifies the proceeding. For any such proceeding initiated by an agency of another state or the federal government, the commissioner may require the applicant to provide a copy of any official document which initiated the proceeding, the final judgement or order and a description of any violation which was found.

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22a-354i-8. Transfer of Permits

(a) No permit issued under section 22a-354i- 7, or exemptions issued under section 22-354i-5 of the Regulations of Connecticut State Agencies shall be assigned or transferred except in accordance with the provisions of Public Act 95-218, section 2.

22a-354i-9. Best Management Practices for New and Existing Regulated Activities

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(a) Materials Management Plan

(1) (A) The owner and operator of any regulated activity shall be responsible for compliance with the provisions of this section. The Commissioner or the municipal aquifer protection agency, as appropriate, may require the owner or operator of any existing regulated activity to submit for approval a materials management plan for the proper management of hazardous materials. The Commissioner, or municipal aquifer protection agency, as appropriate, shall require that any applicant for a permit under section 22a-354i-7 or for an exemption under section 22a-354i-5 of the Regulations of Connecticut State Agencies submit such a materials management plan with the permit or exemption application. A materials management plan for an existing regulated activity, once approved by the Commissioner or municipal aquifer protection agency, as appropriate, shall be implemented by the owner and operator of such regulated activity. A materials management plan for a new regulated activity, or an expansion of an existing regulated activity, once approved by the Commissioner, shall be deemed a condition of any permit issued with respect to such regulated activity under 22a-354i-7 of the Regulations of Connecticut State Agencies.

(B) At a minimum materials management plans shall include the following:

(i) A pollution prevention plan to be implemented in connection with the subject regulated activity. For purposes of this subparagraph "pollution prevention" means the use of processes and materials so as to reduce or minimize (A) the amount of hazardous materials used or (B) the quantity and concentration of waste generated.

(ii) An inventory of all hazardous materials which are or will likely be manufactured, produced, stored, utilized or otherwise handled at the subject property, a description of waste and waste waters generated and their handling, storage, and disposal, and a detailed description of the methods used or to be used for such handling and for the disposal of any hazardous materials so handled.

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(iii) A description of any operations or practices associated with the regulated activity which may pose a threat of pollution to the aquifer.

(iv) The name, mailing address, title and telephone number of the individual(s) responsible for implementing the materials management plan and the individual(s) who should be contacted by the Department in an emergency.

(v) A description of a system for maintaining records showing the types, quantities, and disposition of hazardous materials which are used, stored, or otherwise handled at the subject property or which are discharged or emitted therefrom; such description shall also identify the individual(s) responsible for maintaining such records. Records created under such system shall be maintained at the subject property and shall be made available thereat for inspection by representatives of the Commissioner and the municipal aquifer protection agency during normal business hours.

(vi) A description of a system for responding to an emergency at the subject property; such an emergency shall include a plan for emergency response to fire, explosion, earthquake, floods and storms. Such description shall explain how each such event could potentially result in a release to the aquifer and shall set forth the methods used or to be used to prevent and abate such a release.

(2) A completed emergency and hazardous chemical inventory form required by section 22a-610 of the general statutes may be submitted in lieu of the materials management plan described above, to the extent that all hazardous materials are accounted for, and provided that the report includes all the information required by subdivision (1) of this subsection.

(b)Storing hazardous material.

(1) Hazardous materials may be stored at an aquifer protection area only as follows:

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(A) Hazardous materials shall be stored in an enclosed structure or under a roof which minimizes stormwater entry to the containment area, except for those hazardous materials stored in containers of 100 gallon capacity or more, in which case a roof is not required.

(B) Hazardous materials and their containers shall be stored on a paved surface graded for positive drainage. Paving materials shall be treated to protect such a surface from deterioration due to chemical spillage. Stormwater run-on shall be diverted by berms or other structures.

(C) Hazardous material shall be stored within an impermeable containment area which is capable of containing at least the volume of the largest hazardous material container, or 10% of the total volume of all containers in the area, whichever is larger, without overflow from the containment area.

(D) Hazardous materials shall be stored in a manner that will prevent the contact of chemicals so as to create a hazard of fire, explosion or generation of toxic substances.

(E) Hazardous material shall be stored only in a container that has been certified by a state or federal agency or the American Society of Testing Materials as suitable for the transport or storage of such material.

(F) Hazardous material shall be stored only in an area that is secured against entry by the public.

(2) The requirements of subdivision (1) of this subsection are intended to supplement, and not to supersede, any other applicable requirements of federal, state, or local law, including applicable requirements of the Resource Conservation and Recovery Act of 1976, as amended.

(c) Discharge of Wastes. No industrial process wastewater, cooling water, stormwater or hazardous material, including but not limited to petroleum products, photographic processing chemicals, volatile organic chemicals, or furniture stripping wastewater shall be discharged to the ground

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in an aquifer protection area, provided domestic sewage may be discharged to the ground in an aquifer protection area so long as such discharge complies with all applicable state and local law.

(d) Dry Wells. No owner or operator of a regulated activity shall, in an aquifer protection area, use or construct any dry well, leachfield, basin or other device which is or has been intended for the disposal of industrial process waste water, cooling water, stormwater, or hazardous material unless otherwise permitted by the Commissioner. Any dry well, leachfield, basin or other device which exists on the subject property shall be removed or rendered permanently incapable of use upon the effective date of compliance with the best management practices in this section.

(e) Stormwater management. The Commissioner or the municipal aquifer protection agency, may require that any registrant under 22a-354i-6 of the Regulations of Connecticut State Agencies, or any applicant for a permit under section 22a-354i-7, to conduct a new regulated activity implement a plan to manage storm water. Stormwater shall be directed as an above ground discharge. In the Commissioner's or Agency's judgement, stormwater may be discharged to the groundwaters in a manner and volume so as to prevent pollution to such groundwaters. When a registrant or applicant is required by the Commissioner or agency to prepare and submit a stormwater management plan, the plan shall, at a minimum, be consistent with the requirements for a stormwater management plan contained in the General Permit for the Discharge of Stormwater Associated with Commercial Activity. A Stormwater Management Plan under this subsection shall be submitted on a form prescribed by the Commissioner.

Section 22a-354i-10. Schedule of compliance with BMPs for Existing Regulated Activities.

(a) The owner or operator of an existing regulated activity shall comply with section 22a-354i-9 (a) of the Regulations of Connecticut State Agencies within 180 days from the date the owner or operator is notified by the municipal aquifer protection agency, or the Commissioner, as appropriate, that such compliance is required. The owner or operator of a new regulated activity or an expansion of an existing regulated activity shall comply with such requirements upon commencing such activity.

Section 22a-354i-11. Other state, federal and local laws.

Nothing in any exemption issued under section 22a-354i-5, or any permit issued

under section 22a-354i-7 of the Regulations of Connecticut State Agencies shall relieve any person of any other obligations under federal, state, or local law.

STATEMENT OF PURPOSE: To establish Aquifer Protection Areas and prohibitions of regulated activities proposed to be located entirely or in part within Aquifer Protection Areas, to establish best management practices for new and existing regulated activities, and provide for procedures for exempting regulated activities in Aquifer Protection Areas in cases where the Commissioner determines that such regulated activities do not pose a threat to any existing or potential drinking water supply.

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Section 22a-354i-1 through 11. Aquifer Protection Areas - Land Use Controls

APPENDIX A: Exceptions to the list of hazardous materials.

The following materials shall not be considered to be hazardous with respect to ground water for the purposes of these regulations:

Acetic acid
Benzoic acid
Beryllium powder
Butyric acid
Calcium carbide
Copper powder
Nickel powder
Nitric oxide
Nitrogen dioxide
Nitrogen oxide
Nitrogen(IV) oxide
Phosgene
Phosphine
Phosphorus
Propionic acid
Saccharin and salts
Silver powder
Sodium azide
Sodium bisulfite

Accumulator, pressurized
Aluminum hydride
Aluminum, metallic, powder
Aluminum phosphide
Ammonia, anhydrous
Ammonium chlorate
Ammonium fulminate
Ammonium nitrate ?
Ammonium perchlorate
Ammonium picrate
Ammunition, chemical (containing a Poison A liquid or gas)
Ammunition, chemical (containing a Poison B material)
Ammunition, chemical (containing an irritating liquid or solid)
Ammunition, chemical, explosive, with Poison A material
Ammunition, chemical, explosive, with Poison B material
Ammunition, chemical, explosive, with irritant
Ammunition for cannon with empty projectile
Ammunition for cannon with explosive projectile
Ammunition for cannon with gas projectile
Ammunition for cannon with illuminating projectile
Ammunition for cannon with incendiary projectile
Ammunition for cannon with inert loaded projectile

Ammunition for cannon without projectile
Ammunition for cannon with smoke projectile
Ammunition for cannon with solid projectile
Ammunition for cannon with tear gas projectile
Ammunition for small arms with explosive projectile
Ammunition for small arms with incendiary projectile
Ammunition, non explosive
Argon or Argon, compressed
Argon, refridgerated liquid
Arsine
Asbestos
Asphalt at or above its flashpoint
Automobile, motorcycle, tractor, or other self-propelled vehicle
Automobile, motorcycle, tractor, or other self-propelled vehicle, engine, or other mechanical apparatus, with charged electric storage battery, wet.
Azaurolic acid (salt of), (dry)
3-Azido-1,2- Propylene glycol dinitrate
5-Azido-1-hydroxy tetrazone (mercury and silver salts)
Azotetrazole (dry)
Battery, dry
Battery, electric storage, dry
Battery, electric storage, wet, filled with acid
Battery, electric storage, wet, filled with acid with automobile (or specifically named self-propelled vehicle or mechanical apparatus)
Battery, electric storage, wet, filled with alkali with automobile (or specifically named self-propelled vehicle or mechanical apparatus)
Battery, electric storage, wet, with wheelchair
Battery, electric storage, wet, filled with alkali
Battery fluid, acid
Battery fluid, acid, with electronic equipment or actuating device
Battery fluid, acid, with battery
Battery fluid, alkali
Battery fluid, alkali, with battery
Battery, lithium
Battery parts
Benzene diazonium chloride (dry)
Benzene diazonium nitrate (dry)
Benzoxidiazoles (dry)
Benzoyl azide
Benzoyl peroxide
Black powder
Black powder igniter with empty cartridge bag
Blasting agent, n.o.s.

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Blasting caps, electric
Blasting caps, percussion activated
Blasting caps with detonating cord
Blasting caps with metal clad detonating fuze
Blasting caps with safety fuse
Blasting caps with shock tubes
Blasting gelatin
Blasting powder
Bomb, explosive
Bomb, explosive with gas, smoke, or incendiary material
Bomb, fireworks
Bomb, gas, smoke, or incendiary, nonexplosive
Bomb, incendiary, or smoke without bursting charge
Bomb, practice, with electric primer or electric squib
Bomb, sand-loaded or empty
Booster, explosive
Boron trifluoride
Bromine azide
Burnt cotton, not repicked
Burser, explosive
Butatdiene, inhibited
Butane or Liquefied petroleum gas
1,2,4-Butanetriol trinitrate
tert-Butoxycaronyl azide
Butyl mercaptan
Calcium hypochlorite, hydrated (minimum 5.5% but not more than 10% water, and containing more than 39% available chlorine)
Calcium hypochlorite mixture, dry (containing more than 39% available chlorine)
Calcium, metal
Calcium, metal, crystalline
Calcium oxide
Cannon primer
Caps, blasting
Caps, toy
Carbon dioxide
Carbon dioxide-nitrous oxide mixture
Carbon dioxide-oxygen mixture
Carbon dioxide, refrigerated liquid
Carbon dioxide, solid (dry ice)
Carbon monoxide
Carbon monoxide, cryogenic liquid
Cartridge bags, empty, with black powder igniter

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Cartridge, practice ammunition
Castor beans
Castor pomace
Charcoal briquettes
Charcoal screenings, made from pinon wood
Charcoal, shell
Charcoal, wood, ground, crushed, granulated, or pulverized
Charcoal, wood, lump
Charcoal, wood screenings, other than pinon wood screenings
Charged well casing jet perforating gun
Chemical ammunition, explosive
Chemical ammunition, non-explosive, containing a Poison B, Poison A, or irritating material
Chlorate and borate mixture
Chlorate and magnesium chloride mixture
Chlorate, n.o.s.
Chlorate, n.o.s., wet
Chlorate of potash
Chlorate of soda
Chlorate powder
Chlorinated lime
Chlorine
Chlorodifluoroethane (R-142b) or (Chloro- 1,1-difluoroethane)
Chlorodifluoromethan (R-22)
Chlorodifluoro-methane and chlorpentafluoroethane mixture
Choropentafluoroethane (R-115)
Cigarette lighter (or other similar ignition device)
Cigarette load
Coal gas
Coconut meal pellets containing at least 6% and not more than 13% moisture and not more than 10% residual fat content
Coke, hot
Combination fuze
Combination primer
Commercial shaped charge
Common fireworks
Compressed gas, n.o.s.
Consumer commodity
Copra
Copra pellets
Cord, detonating, flexible
Cosmetics, liquid, n.o.s.
Cosmetics, n.o.s.
Cosmetics, solid, n.o.s.
Cotton

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Cyclotetramethylene
Delay connectors
Delay electric igniter
Denatured alcohol
Detonating fuze, Class C explosive
Detonating primers, Class A explosives
Detonating primers, Class C explosives
Detonators, Class A explosives
Detonators, Class C explosives
Detonators, commercial
1,1'-Diazoaminonaphthalene
Diazoaminotetrazole (dry)
Diazodinitophenol
Diazodinitophenol (dry)
Diazodiphenylmethane
Diazonium nitrates (dry)
Diazonium perchlorates (dry)
Dimethylamine, anhydrous
Dimethyl ether
Disinfectant, liquid
Dispersant gas, n.o.s.
Driers, paint or varnish, liquid, n.o.s.
Drill cartridge
Drugs, n.o.s.
Dry ice
Dynamite
Electric blasting caps
Electric squib
Electrolyte (acid) battery fluid
Empty cartridge bag with black powder igniter
Empty cartridge case, primed
Engine, internal combustion
Engine starting fluid
Ethane or ethane, compressed
Ethanol
Ethylene oxide
Ethyl ether
Explosive auto alarm
Explosive bomb
Explosive cable cutter
Explosive power device, Class B
Explosive power device, Class C

Explosive projectile
Explosive release device
Explosive rivet
Explosive, sample for laboratory examination
Explosive torpedo
Fibers (jute, hemp, flax, sisal, coir, kapok, and similar vegetable fibers)
Film
Fire extinguisher
Fish meal or fish scrap
Flare
Flare, airplane
Flexible linear shaped charge, metal clad
Fusee
Fuse igniter
Fuse, instantaneaous
Fuse lighter
Fusel oil
Fuse, mild detonating, metal clad
Fuse, safety
Fuze, combination
Fuze, detonating
Fuze, detonating, Class C explosive
Fuze, detonating, radioactive
Fuze, percussion
Fuze, time
Fuze, tracer
Grenade, several types
Guided missile without warhead
Guided missile with warhead
Hand signal device
Heater for refrigerator car, liquid fuel type
Helium or helium, compressed
Helium-oxygen mixture
Helium, refrigerated liquid
Hydraulic accumulator
Hydrocarbon gas, liquefied
Hydrocarbon gas, non-liquified
Hydrogen or Hydrogen, compressed
Hydrogen, refrigerated liquid
Hydrogen peroxide solution, several strengths
Hydrogen selenide
Hydrogen sulfide
Igniter
Igniter cord
Igniter fuse, metal clad

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Igniter, jet thrust
Igniter, rocket motor
Illuminating projectile
Infectious substance, human, n.o.s.
Ink
Iron mass or sponge
Iron oxide, spent
Isobutylene (liquefied petroleum gas)
Isopropanol
Jet thrust igniter
Jet thrust unit
Life rafts, inflatable
Lime, unslaked
Liquefied nonflammable gas
Liquefied petroleum gas
Liquid other than one classed as flammable, corrosive, poison, or irritant, charged with nitrogen, carbon dioxide, or air
Lithium metal
Lye (sodium hydroxide)
Magnesium dross, wet or hot
Magnesium granules, coated
Magnesium metal or magnesium aluminum powder
Magnesium scrap
Magnetized material
Matches, block
Matches, safety
Matches, strike anywhere
Medicines, liquid, solid, n.o.s.
Metal borings, shavings, turnings, or cuttings
Methane or methane, compressed
Methanol
Methyl ethyl ether
Mild detonating fuse, metal clad
Mine, empty
Mine, explosive, with gaseous material
Mine rescue equipment containing carbon dioxide
Mothballs
Motion picture film
Motor fuel antiknock compound
Motor, internal combustion
Motor vehicle
Natural gas, refrigerated liquid

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Neon or neon, compressed
Neon, refrigerated liquid
New explosive or explosive device
Nitrogen or nitrogen, compressed
Nitrogen, refrigerated liquid
Nitrourea
Nitrous oxide or Nitrous oxide, compressed
Nitrous oxide, refrigerated liquid
Nonflammable gas
Nonliquified hydrocarbon gas
Oxygen or oxygen, compressed
Oxygen, refrigerated liquid
Paint
Paint related material
Petroleum coke (uncalcined)
Petroleum gas, liquefied
Phosphoric acid
Phosphorus, white or yellow, dry or in water
Phosphorus, (white or red) and a chlorate, mixtures of
Pine oil
Pinwheels
Pressurized products
Propane
Propyl alcohol
Pyroxylin plastic, scrap
Pyroxylin plastic, rods, sheets, rolls, or tubes
Quicklime
Refrigerant gas, n.o.s.
Refrigerating machine
Rifle grenade
Rifle powder
Safety fuse
Safety squib
Samples
Self-propelled vehicle
Ship, distress signal
Signal flare
Small arms ammunition
Small arms ammunition, irritating (tear gas) cartridge
Small arms primer
Smoke candle
Smoke generator
Smoke grenade
Smokeless powder for cannon or small arms
Smoke pot

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Smoke projectile with bursting charge
Smoke projectile with expelling charge
Smoke signal
Soda lime, solid
Sodium hydrate
Sodium hypochlorite
Sodium, metal or metallic
Spent iron mass
Spent iron sponge
Sulfur, solid
Sulfur, molten
Tank car, containing residual phosphorus and filled with water or inert gas
Tank truck, empty
Tear gas ammunition
Tear gas candle
Tear gas cartridge
Tear gas device
Tear gas grenade
Titanium metal powder, dry or wet
Torpedo, railway
Toy caps
Toy propellant device
Toy smoke device
Tracer
Tracer fuze
Tractor
Trailer or truck body with refrigeration or heating equipment
Trick matches
Trick noisemaker, explosive
Turpentine
Very signal cartridge
Water pump system
Wheelchair, battery equipped
X-ray film
Zirconium metal, dry
Zirconium metal, liquid, suspensions
Zirconium metal, wet
Zirconium scrap

#19

University of Massachusetts
Department of Psychiatry
University of Massachusetts Medical Center
55 Lake Avenue North
Worcester, MA 01655
(508) 856-6580

January 6, 1997

Michael Lucas, III
Chief of Engineering Services II
Connecticut Department of Mental Health
and Addiction Services
Connecticut Valley Hospital
Middletown, CT 06457

Dear Mr. Lucas,

I write to you at the request of Mayor Maria Madsen Holzberg and do so in the spirit of "acting as good neighbors and partners" (State Trial Judge Robert Satter, December 6, 1996). I have been familiar with the matter of Maria Madsen Holzberg et.al. vs. Albert J. Solnit, M.D. et.al., for a period of about one and one half years, having been retained by the city as an expert in the matter of the potential for social and economic consequences of the consolidation of Connecticut Department of Mental Health and Addiction Services inpatient facilities to the Connecticut Valley Hospital campus in Middletown, Connecticut. Twice previously I have testified about this matter in Judge Satter's court, once on December 12, 1995 and again on September 5, 1996. My comments follow.

As background for this communication I reviewed the following documents: Court's Memorandum of Decision, August 9, 1996; Notice of Scoping issued by the Department of Mental Health and Addiction Services, November 20, 1996; Letter from John C. King to Maite Baraínca, November 26, 1996; Letter from Mayor Holzberg to Michael Lucas, December 5, 1996; Letter from Mary Palladino to Michael Lucas, December 5, 1996; Letter from Jennifer A. Osowiecki to Mayor Holzberg, December 12, 1996; Letter from Mayor Holzberg to Michael Lucas. December 31, 1996; and a copy of the Description of Early Notification and Scoping Processes under the Connecticut Environmental Policy Act.

The potential economic and social consequences of the consolidation of all public, inpatient, psychiatric and substance abuse beds to the Connecticut Valley Hospital campus in Middletown, Connecticut can best be viewed from two perspectives: 1) The impact of increasing staff and patient census at

Connecticut Valley Hospital as already forecasted by the Connecticut Department of Mental Health and Addiction Services and, 2) The potential for much greater expansion of those services than has already been articulated by the Connecticut Department of Mental Health and Addiction Services. These will be discussed separately.

Planned Expansion. The Connecticut Mental Health and Addiction Services Plan has already increased the Connecticut Valley Hospital staff from 949 (as of July 1, 1995) to 1,336 and has increased the inpatient census from 328 patients (as of July 1, 1995) to 472 patients (as of November 15, 1996). These numbers reflect an increase in Connecticut Valley Hospital staff by 41% and of patients by 43%.

The increased staff may, in fact, have some positive economic influences on the City of Middletown. Staff will use city businesses and restaurants which obviously has positive economic consequences to the city. If staff relocate to the city, they may become productive participants in civic activities and this also has the potential for positive impact. It is important that positive, as well as negative impacts, be considered in any social and economic study of the consolidation of Department of Mental Health and Addiction Services inpatient facilities to Middletown.

Increased patients, on the other hand, largely presents an economic and social burden for the city. While patients may spend some of their discretionary funds in the city, this expenditure will probably be minimal. On the other hand, patients on passes will frequent the city causing some increased burden on law enforcement personnel. Most importantly, however, it has been historically true that patients disproportionately relocate themselves on a permanent basis to the cities that house state hospitals. There is every reason to believe that patients living throughout the state of Connecticut who will be inpatients at Connecticut Valley Hospital will, with some regularity, choose to resettle in Middletown. This has occurred in other states and has occurred despite states' best efforts to return patients to the areas of the state from whence they came. Should Connecticut have any doubts about the validity of this statement, Connecticut need travel no further than its neighbor to the north and speak to city officials in Northampton, Massachusetts to find the degree to which this statement proves true.

The relocation of patients to a city as city residents is a social and economic burden to that city. The vast majority of these patients will be utilizers of entitlement and public services and will not be tax payers. They will use the city's social services including, but not limited to, the public school system which, because many of the patients' offspring will require special education services, becomes a high burden upon the city. Unfortunately this population will also disproportionately use law enforcement services within the city.

There are, therefore, both some positive and some negative economic and social consequences to the planned consolidation to the Connecticut Valley Hospital campus. These are quite significant and therefore, must be included in any environmental impact study.

Potential expansion. The plans developed by the Connecticut Department of Mental Health and Addiction Services is predicated on the current behavioral health care services structure, addiction services structure, federal/state cost sharing equations, and a vast array of entitlement programs available to individuals with either mental disorders or substance use disorders. However, none of this is stable at this time; there are many changes occurring that could lead the state of Connecticut to choose to substantially increase the population residing on the campus of the Connecticut Valley Hospital.

Let me provide some examples. This is not a definitive listing, but examples. Some of these changes have just occurred and others are on the horizon.

Effective in 1997, two substantial groups of individuals who previously were entitled to social security benefits and thereby to either Medicare, Medicaid, or Medicare and Medicaid will no longer be eligible for these benefits. First, individuals whose disability was based on a substance use disorder are no longer eligible for Federal entitlements. This will means that individuals who previously could have been maintained by Connecticut in the community on a federal/state cost share basis, and who would have had health insurance in the community, no longer can be sustained in the community on this basis. This will mean that individuals with substance abuse disorders who previously could have been treated by Connecticut on an inpatient basis and then discharged to the community, can no longer be so discharged with appropriate services in place. Connecticut will grapple with this as will all other states and may decide as some states will, that expanded services on state hospital campuses may be an appropriate resolution to this problem. Individuals with substance use disorders do not need to be maintained on an inpatient status in order to be maintained on a state hospital campus. There are a myriad of alternative designs that allow for cost effective congregate services on a state hospital campus for this population.

A second major population that will no longer be eligible for Federal entitlements in 1997 are *legal* aliens. This means that individuals who previously met the criteria of being a) legal aliens, and b) disabled on the basis of a mental disorder, were eligible for supplement security income (SSI) or social security disability income (SSDI) and their accompanying Medicaid or Medicare, or Medicaid and Medicare. This population is no longer eligible. While previously Connecticut could discharge legal aliens with disabling chronic mental disorders to the community and set them up with residential services supported by their federal entitlement checks, and outpatient services supported by Federally

sponsored and/or Federally/State sponsored insurance, this is no longer possible. One consequence may be that Connecticut, as other states, will arrive at the conclusion that this population can no longer be discharged from state hospitals to the community and alternatives must be designed. One alternative is that some of these individuals will remain as inpatients at state hospitals. Another is that state hospitals will create step-down units on its campus to take care of these individuals. What is absolutely clear, at least at the moment, is that these individuals cannot be discharged in 1997 with the supports that they could have been discharged with during 1996.

Much of the deinstitutionalization efforts in Connecticut, as they have been in every other state in the United States, has been based on the fiscal consideration that individuals maintained in state hospital beds are maintained entirely at state costs while individuals maintained in the community are maintained there with state/federal cost sharing. This has largely been driven by the fact that individuals who are in an institution for mental disorders (IMD) are, with the exception of a few states in the United States, prohibited from receiving SSI and Medicaid. If there are changes in the Medicaid rules through block granting or through other mechanisms (and many of these are under consideration in Washington at this time), the state hospital/community equation could be dramatically altered. It is less expensive for a state to maintain non-hospitalized patients in larger rather than smaller domiciles. Therefore, if the IMD rule is jettisoned, there is every expectation that Connecticut would create large congregate housing and the most cost effective place to locate that housing will be on the grounds of Connecticut Valley Hospital. This will be the most cost effective place to locate that housing because all necessary services will already be located on that campus. Is there evidence that if the IMD rule is not enforced, large congregate housing of those with serious and persistent mental illness results? Yes there is. In one Social Security Administration jurisdiction in the Midwest, court decisions have allowed states to create residences with over 16 individuals (16 is the IMD threshold). And once allowed to do so, these states have preceded to do exactly that.

While these are just three examples, they point out that the potential environmental and social impact of consolidating all inpatient services of the Department of Mental Health and Addiction Services to the Connecticut Valley Hospital, is potentially huge. These populations living on the grounds of Connecticut Valley Hospital will have even a greater impact on the City of Middletown than would inpatients. This is because their greater degree of freedom will move. They are physically present more often in the city and thereby, make greater demands upon the city.

The City of Middletown deserves consideration for these possible outcomes because these possibilities become more probabilities as the months pass. It should be noted that what was considered simply possible in the court hearing

of December 12, 1995 has already begun to occur. Namely, populations that in 1995 and 1996 could have been served in the community in a fiscally responsible way, can no longer be so served in 1997.

Mr. Lucas, I understand that much of what I have said in this communication is brief and glosses over many of the details. I did, however, want to provide you with some background as to the importance of focusing on the environmental and social impacts of what the State of Connecticut's Department of Mental Health and Addiction Services had embarked upon and to encourage Connecticut to ensure that its consultants in this matter have the appropriate expertise to efficaciously evaluate the social and economic impacts. Should you have any questions about what I have written, please feel to contact me via mail, via telephone at 508-856-6527, via fax at 508-856-6426, or by email at jgeller@banyan.ummed.edu.

Respectfully submitted,

Jeffrey Geller, M.D., M.P.H.

JG:vab

cc: Mayor Maria Madsen Holzberg
John C. King

City of Middletown
WELFARE DEPARTMENT
51 Green Street, Basement • Middletown, CT 06457
TEL: (203) 344-3502

#20 (M) 1/8/97
RECEIVED BY DMHAS OOC
JAN - 3 1997
ENGINEERING SERVICES

To: State Department of Mental Health and Addiction services
From: Annette B. Ward, Director
Date: January 2, 1997
Re: Public Meeting/CVH Consolidation Environment Study

The City of Middletown Welfare Department is greatly impacted by the consolidation of State Institutions into Middletown. Patients are discharged into the community to such organizations as Eddy Home, Shepherd Home, Liberty Commons, YMCA, Gilead comunity, etc. They are also being discharged to independent living and the various sober living arrangements in Middletown. The clients are discharged to the above agencies and when they come to the Welfare Department, they state "I am a Middletown resident." After tracing their movement, it is apparent they originally came from other parts of the state to CVH.

Upon discharge they often remain in Middletown due to the many Social Services that are available, as well as, low income housing and good transportation. There also is a very well known support network for Addictive services. Some of these services are but not limited to:

Rushford Center
Salvation Army
Housing Authority
St Vincent DePaul Soup Kitchen,
Connection, Inc
Community Action For Greater Middlesex County, Inc
Eddy Home Shelter,
Shepherd Home,
Hunter's Ambulance
Middlesex Memorial Hospital Emergency
American Red Cross
Gilead Community Services
Liberty Commons
Jones Fund
Park and Recreation
Health Department

The patients are discharged to the above agencies which has an impact on housing, financial, and medical treatment. All of these requests from the community resources has an effect on the city's tax base.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Field Office
22 Bridge Street, Unit #1
Concord, New Hampshire 03301-4986

#18

December 24, 1996

Michael Lucas, III
CT Dept. of Mental Health and Addiction Services
Holmes Drive
P.O. Box 351
Middletown, CT 06457

RECEIVED BY
DMHAS OOC
DEC 27 1996
ENGINEERING SERVICES

Dear Mr. Lucas:

This responds to your letter dated November 20, 1996, for information on the presence of federally-listed and proposed, endangered or threatened species in accordance with environmental planning for proposed improvements at Connecticut Valley Hospital in Middletown, Connecticut.

Based on information currently available to us, no federally-listed or proposed, threatened and endangered species under the jurisdiction of the U.S. Fish and Wildlife Service are known to occur in the project area, with the exception of occasional bald eagles (*Haliaeetus leucocephalus*) that winter along the Connecticut River corridor. We anticipate there will be no adverse effects to wintering bald eagles from the proposed work.

Preparation of a Biological Assessment or further consultation with us under Section 7 of the Endangered Species Act is not required. Should project plans change, or additional information on listed or proposed species becomes available, this determination may be reconsidered.

A list of federally-designated endangered and threatened species in Connecticut is enclosed for your information. Thank you for your cooperation and please contact Michael Amaral of this office at 603-225-1411 if we can be of further assistance regarding endangered species.

Sincerely yours,

Michael J. Bartlett
Supervisor
New England Field Office

Enclosure

FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES IN CONNECTICUT

Common Name	Scientific Name	Status	Distribution
FISHES:			
Sturgeon, shortnose*	Acipenser brevirostrum	E	Connecticut River & Atlantic Coastal Waters
REPTILES:			
Turtle, green*	Chelonia mydas	T	Oceanic straggler in southern New England
Turtle, hawksbill*	Eretmochelys imbricata	E	Oceanic straggler in southern New England
Turtle, leatherback*	Dermochelys coriacea	E	Oceanic summer resident
Turtle, loggerhead*	Caretta caretta	T	Oceanic summer resident
Turtle, Atlantic ridley*	Lepidochelys kempii	E	Oceanic summer resident
BIRDS:			
Eagle, bald	Haliaeetus leucocephalus	T	Hartford, entire state-migratory
Falcon, American peregrine	Falco peregrinus anatum	E	No current nesting; entire state-migratory
Falcon, Arctic peregrine	Falco peregrinus tundrius	T	Entire state migratory-no nesting
Plover, Piping	Charadrius melodus	T	Atlantic coast
Roseate Tern	Sterna dougallii dougallii	E	Atlantic coast
MAMMALS:			
Whale, blue*	Balaenoptera musculus	E	Oceanic
Whale, finback*	Balaenoptera physalus	E	Oceanic
Whale, humpback*	Megaptera novaeangliae	E	Oceanic
Whale, right*	Eubalaena spp. (all species)	E	Oceanic
Whale, sei*	Balaenoptera borealis	E	Oceanic
Whale, sperm*	Physeter catodon	E	Oceanic
MOLLUSKS:			
Mussel, dwarf wedge	Alasmidonta heterodon	E	Hartford County
INSECTS:			
Beetle, puritan tiger	Cicindela puritana	T	Middlesex, Conn. River Valley
Beetle, northeastern beach tiger	Cicindela dorsalis dorsalis	T	Extirpated, coastal beaches
PLANTS:			
Small Whorled Pogonia	Isotria medeoloides	T	Hartford, New Haven, Fairfield, New London, Windham, Tolland, Middlesex, Litchfield Counties
Sandplain Gerardia	Agalinus acuta	E	Hartford

* Except for sea turtle nesting habitat, principal responsibility for these species is vested with the National Marine Fisheries Service

Rev. 7-28-95

#17

City of Middletown

DEPARTMENT OF HEALTH
245 DeKoven Drive, P.O. Box 1300
Middletown, CT 06457-1300
TEL: (860) 344-3474 FAX: (860) 344-3588
TDD: (860) 344-3521

Leon F. Vinci, M.P.H.
Director of Health

December 20, 1996

Michael Lucas, III
Public Scoping Officer
CT DMHAS
Connecticut Valley Hospital
Silver Street
Middletown, CT 06457

RECEIVED BY
DMHAS OOC
DEC 24 1996
ENGINEERING SERVICES

(R)
L09
file

Re: DMHAS 4403-489
DPW #BI-I-489 (4403489)

Dear Mr. Lucas:

Please accept a copy of my remarks which were presented during the public hearing on December 17, 1996.

If you would like any follow-up, or need to contact me, please feel free to do so at your earliest convenience.

Very truly yours,

Leon F. Vinci, M.P.H.
Director of Health

LFV/ss
cc: Honorable Maria Madsen Holzberg
Encs. (1)

City of Middletown
DEPARTMENT OF HEALTH
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Leon F. Vinci, M.P.H.
Director of Health

CDMHAS PUBLIC HEARING

DECEMBER 17, 1996
PROJECT #DMHAS 4403-489

COUNCIL CHAMBER
MUNICIPAL BUILDING

CVH ENVIRONMENTAL STUDY COMMENTS

By: Leon F. Vinci, MPH, RS

Good evening, my name is Leon F. Vinci, MPH, and I am Director of Health for the City of Middletown, Connecticut. I welcome this special opportunity to provide the Environmental Study process with additional insight and data which can help you better visualize the local economic, social, and human service impacts that the CVH consolidation has on the pubic health of our community.

As you are aware, tonight's event is particularly important because the Court not only recognized that a statewide consolidation of mental health services (the three mental health hospital facilities into one) has a direct impact upon the host community, but also required that a careful and detailed analysis of what the impacts are at the local level be conducted. As you indicated in your opening remarks, you will be making a careful, detailed, and factual accounting from a variety of sources including the Scoping Review Meeting, this public hearing, and, hopefully from meetings with local service providers, from field interviews, state statistical reports (CDMHAS, CADAC, CDPH, and so on), as well as from your research with local and state government (especially municipal agencies and area legislators). You don't need me to tell you how to fulfill your charge from the Court, but after reading the Scoping Document: it did not appear to reflect the necessary outreach, assessment, and evaluation that I've just discussed with you.

As Middletown's Health Officer, I sit on the CVH Infection Control Committee as well as the Dutcher Hall "leftover" infection control group (which is continuing to meet during this transition over at Merritt Hall). I also am a member of the Psychiatric Division's Community Advisory Committee. In addition, I participated in the City's North End Task Force project and served as a member of both Middletown's Study Committee to Review State Properties/Facilities and the Legislature's Task Force on CVH.

Each of these groups has generated reports, statistics, and related documents which speak to community impacts. Your review will need "to do your homework" and access these important reference tools as you incorporate the information into the assessment report you are preparing

at the Court's direction.

Before I turn to a few specific areas where there are measurable impacts on our community, I would like to underscore the timing issue. A lengthy time had elapsed from the Judge's ruling to the recent announcement of a hearing at CVH for responding to the Scoping Notice. Then, suddenly, everything had to happen quickly -- with little time to attend the public hearing. Although that date was modified to tonight's meeting, we're in the midst of calendar year close-outs, budget preparation for the next year, and, of course, Holiday shopping along with hectic schedules. I believe there would be a greater turn out, with more community input, if this public hearing was held in early November or January.

At this juncture, I would like to highlight several areas of impact to public health.

COMMUNITY HEALTH ISSUES

Speaking from the community perspective first, I would like to underscore that support systems for psychiatric patients which have been discharged from CVH to half-way houses and/or community settings work for the most part. However, I cannot say the same for the Addiction Services Division. A working support structure in the community has not been developed. Strengthened services with more coordination are needed as an immediate priority by CDMHAS.

This becomes more difficult with the dual diagnosis patient (having both psychiatric and substance abuse problems). I've mentioned the system for psychiatric discharges, yet, when an individual is discharged on the Addiction Services side, it results in little or no support with the individual in the community. This often leaves the patient vulnerable to violence and/or relapse. I am not saying that the left hand does not know what the right hand is doing, however, there is room for improved coordination for these cases.

Our Department tracks communicable diseases through surveillance studies. We continue to see increases in TB, AIDS, and STDs. As we track these cases, we find that one area of increase is directly attributed to patients who have either been directly discharged from CVH or come through the half-way house program. Moreover, many of these individuals are out-of-town residents who have chosen to remain because of familiarity with local services resulting from their stay in a community-based setting. This phenomenon is attributed not only to the half-way house program, but also to certain local programs which provide treatment services. Again, the majority of clients served by these programs originate in the CVH system. Clearly, there is a community burden caused by the presence of CVH.

Other areas of impact include our responsibility to transport individuals during emergencies and to provide emergency medical care. We pay for Emergency Medical Services (EMS) directly out of our City Health Department budget. For the month of November (1996) there were 129 total emergency calls (roughly 4 a day) from the City's central core area. Of the 129, over 25% (36) of these calls were either substance abuse, seizure, assault, or "psyche" in nature. We recognize that these individuals (and others - diabetes, cardiac) have a CVH link.

I mentioned earlier the importance of controlling disease outbreaks through surveillance of incidence and prevalence. Approximately two months ago, during a tour of the renovations at Merritt Hall, I observed that the room designated for patient isolation as part of infection control,

was being utilized as a temporary construction office. Although there are nearly two hundred patients in the building, this area had blueprints, coffee cups and ash trays throughout. As you are aware, an inspection by the CT Department of Public Health or Joint Commission would not view this matter favorably in conjunction with state and federal health care facility regulations. These findings underscore the need to have open dialogue and good communication between the CVH renovation operation and the community. Your report should indicate that the "rush job" being undertaken by CVH should be halted until these important public health issues are addressed to the satisfaction of the Middletown Health Department in concert with CVH employees and other agencies.

In a meeting today with the Infectious Diseases Physician at Middlesex Hospital, it was reported that CVH, in recognition of its need to have infection control isolation rooms available to patients and staff, had requested the availability of the facilities at Middlesex Hospital. We further discussed several cases from the past week which involved CVH discharges with infectious diseases (HIV/AIDS) taxing the Emergency Department and the Infectious Diseases Service.

Other community services have similar impact. Our WIC Program experienced a major setback and I will present a short letter from them after these remarks are concluded.

ENVIRONMENTAL HEALTH

Air, land, and water quality issues have environmental impacts to our locale from the CVH campus. Other individuals, including Mr. Michael Guarini on behalf of Mr. Guy Russo our City Water & Sewer Department Director, have already directly addressed the issues of drinking water supply and sewage treatment. It was only two summers ago that the CADH epidemiological staff was investigating a Legionella episode at CVH. In the interests of safety and the public health of our citizens concerning the City's public water supply, I strongly urge your immediate attention to the resolution of the bulky waste site matter.

Within the CVH Scoping Notice, several function areas go unaddressed and include food services, laundry and day care. I wasn't aware that there would be an apparent relocation of the facility kitchen until I saw it in the Scoping Notice. Food service operations and kitchen layout are regulated by the Connecticut Public Health Code and although the CDPH should be closely involved in this endeavor, public health consequences involve the local department of health. As such, good communication and continuing cooperation should be followed from the design phase through to implementation. Should an unfortunate event such as a food borne illness outbreak develop, not only will patients be affected, but staff and their families too. This unique problem often affects family members in the community as well. There is clearly an impact upon our community services. Proper handling and cleaning of laundry/linens is very important to preventable disease management and good health. Until recently, the laundry was an active part of the CVH campus. Currently, dirty linen (including infectious materials) is shipped off site for cleaning. Several people have indicated that this procedure is more costly to our taxpayers. It is also my understanding that the onsite laundry facility may be reopened resulting in local handling of laundry once again. An onsite child day care center operates within the campus confines. We inspect and license this facility which has direct linkage to our greater community. In fact, a recent giardia outbreak in our community children also involved children from this center. Again, the scoping document does not clearly address this important program, and, as you can see, there are obvious impacts to our community.

Our office receives complaints, and logs in citizen inquiries concerning the black plume being emitted from the power station smokestack. This has been a visible source of concern for area businesses and residents. It is a widely known fact that our air quality is poor in the area of particulates, SOx, and ozone. Although we understand that operating permits allow for "blowdown" for certain boilers, there have been occasions when the smoke emission has continued for extremely long periods.

In the scope, references are made to areas proposed for demolition. In particular, the Ice House, Incinerator Building, the Pig Slaughtering Area, and the Tin Shop come to mind. Metal shavings, metallic fragments, and dust from operations are very likely to contain heavy metals and hydrocarbons from solvent usage. No references were included concerning the proper assessment and environmental sampling which is required by the Connecticut DEP. Again, our office is particularly interested in seeing results from the environmental sampling. Buildings may contain lead products as well as asbestos -- and appropriate evaluation should be conducted prior to the wrecking ball. The Ice House may involve water hook-up connections and potential contamination from the Pig Slaughtering Area also warrant careful intervention.

Numerous residential units under the phraseology "community residences"/"community setting" which house past patients exist throughout the City of Middletown. Estimates range from 500 to 1,000 units relating to those with support services to an additional 500 at large. This "demand" has contributed to the establishment of SRO's, half-way houses, increases of Section 8 utilization, etc. Our Housing Code Enforcement Division has inspected many of these residences over the years and when needed, provided intervention, correction, enforcement, and assistance.

It is also important to note that our neighborhood soup kitchen, food banks, and emergency shelter operate at very high rates for a community of our size.

In closing, the Scoping Plan relies heavily on the Campus Consolidation Plan involving essentially the southern part of the CVH property (Silver Street south to Bow Lane). This leaves Addiction Services to the north in Merritt Hall. At this point, I am not convinced of the advantages of this new geographic arrangement. From a public health perspective, especially with patient care in mind, this concept should have more dialogue with City officials and the community prior to the fast-track implementation that we see through the scoping agenda.

My short remarks and the few examples I've cited clearly demonstrate how the hospital consolidation impacts the community. The information (although condensed for purposes of tonight's public hearing) is quite compelling and warrants your immediate attention and most careful assessment. Clearly a full EIE must be developed.

At this time, I would like to enter testimony from the Middletown Department of Health WIC (Women, Infants & Children) Program Coordinator Cindy Cohen, R.D.

(Letter is attached)

DEPARTMENT OF HEALTH

CITY OF MIDDLETOWN
MUNICIPAL BUILDING
MIDDLETOWN, CONNECTICUT 06457

WIC PROGRAM 344-8014

WIC

Leon F. Vincl, M.P.H.
Director of Health

TO WHOM IT MAY CONCERN:

THIS IS IN REGARDS TO THE ENVIRONMENTAL ASSESSMENT OF CVH ON THE COMMUNITY. I WOULD JUST LIKE TO SHARE A RECENT EXPERIENCE.

THE WIC PROGRAM (WOMEN, INFANTS AND CHILDREN) IS A NON-PROFIT NUTRITION EDUCATION PROGRAM FOR LOW INCOME WOMEN AND YOUNG CHILDREN. WE PROVIDE FOOD CHECKS THAT FAMILIES USE AT THE GROCERY STORE TO PURCHASE SPECIFIC NUTRITIOUS FOODS THAT ARE NECESSARY DURING GROWTH AND DEVELOPMENT AS WELL AS EDUCATE FAMILIES ON PROPER FOOD INTAKE.
ONE NIGHT DURING THE LAST WEEK OF AUGUST, SOMEONE BROKE INTO OUR OFFICE AND STOLE A VIDEO TELEVISION SET THAT WAS USED FOR TEACHING, A LAPTOP COMPUTER, AND A DESK CALCULATOR. THE TV HAD BEEN PURCHASED WITH DONATIONS SAVED FOR TWO YEARS AND WAS USED DAILY TO TEACH YOUNG PARENTS HOW TO PROPERLY FEED THEIR BABIES AND CHILDREN. THE LAPTOP WAS USED FOR STAFF TO TRAVEL THROUGHOUT THE COUNTY TO REACH THOSE INDIVIDUALS WHO DID NOT HAVE TRANSPORTATION TO GET TO OUR OFFICE.
IT WAS LATER DISCOVERED THAT THE INDIVIDUAL WHO ROBBED US HAD BEEN AT CVH AND WAS THEN RELEASED INTO THIS COMMUNITY. IT WAS ALSO DETERMINED THAT THIS INDIVIDUAL HAD COMMITTED AS MANY AS ONE DOZEN ROBBERIES IN THIS AREA. WHILE THIS MAY NOT BE CONSIDERED TO BE A GREAT IMPACT, THIS SMALL CRIME HAS NEGATIVELY EFFECTED OUR ABILITY TO EDUCATE THOUSANDS OF INDIVIDUALS. WE WILL NOT BE ABLE TO REPLACE THIS DONATED TEACHING TOOL.
I AM DESCRIBING ONE INDIVIDUAL. HOWEVER, I BELIEVE IT IS NECESSARY TO RECOGNIZE THAT MANY CVH PATIENTS ARE RELEASED INTO THIS COMMUNITY WITH NO JOB, NO HOUSING, AND POSSIBLY NO INCENTIVE FOR EITHER. UNFORTUNATELY CRIME MAY BE A SIMPLE METHOD TO GAIN INCOME. MANY OF US CANNOT AFFORD TO SUPPORT THIS TYPE OF ENDEAVOR.
THANK YOU.

WRITTEN IN TESTIMONY BY:
CINDY COHEN RD.
WIC DIRECTOR
DEC. 17, 1996

C.C.

RECEIVED
96 DEC 17 PM 2:24
CITY CLERK'S OFFICE
MIDDLETOWN

MEMORANDUM

TO : **State Department of Mental Health and Addiction Services**

FROM: **Guy P. Russo**
Director of Water & Sewer Department

DATE : **December 17, 1996**

RE : **Public Meeting - CVH Consolidation Environmental Study**
Written Submitted Testimony

Ladies and Gentlemen, I am Guy P. Russo, Director of the Middletown Water and Sewer Department. The comments offered herein are in response to the public call for meeting for Tuesday, December 17, at 7:30 p.m.. Due to a previous engagement, which unfortunately could not be rescheduled, I am unable to attend this evening.

The tenor of the comments offered here are to address specific issues which the water and sewer department routinely deals with, and then to address the application of some Thirty Six Million Dollars of the public money in response to work that the Water and Sewer Department believes rightfully and equitably should be performed on the CVH campus. While I personally understand the need to improve facades, improve HVAC systems, and provide other amenities, like athletic fields, roadway, phone service, lighting and associated work, I believe that a portion of the set aside funds should rightfully be directed to infrastructure projects that not only will serve the CVH campus, for now and well into the next century, but will also inure to the environmental benefit of the citizens of the City of Middletown.

1. Adequacy of the Sanitary System

In 1979 the City of Middletown was directed by the DEP to complete a city-wide facility plan to investigate and assess the integrity of the City's sanitary sewerage system. At this juncture the CVH campus, with an aging sanitary system, has not been subject to the same equitable standard as the City of Middletown. The sanitary system of the CVH campus is of equal age, and in many instances predates the age, of many of the City's sanitary systems which have already been scheduled for upgrade or where upgrades have been completed. As a matter of environmental due diligence, with regard to the sanitary system, the Water and Sewer Department recommends that the DEP apply this equal standard to the CVH campus and mandate that a facility plan be completed and assess the integrity of the CVH onsite sewerage collection system.

2. Combined Sewer Overflow

Approximately a year ago, this department reviewed records from the CVH sewerage disposal facility which indicated that the CVH system is subject to problems with combined sewer overflow. That is to say, stormwater which routinely enters the sanitary system. Again, applying the same standard which the City of Middletown has been held to, the water and sewer department would like to see the same standard applied to CVH as the City of Middletown and require that a portion of the Thirty Six Million Dollar public appropriation be set aside to correct problems of combined sewer overflow to enhance areas of the collection system and of the stormwater system. This will ensure that the water quality standards in the Connecticut River will be enhanced as the projects in Middletown go forward and as we would hope that CSO separation projects go forward on the CVH campus. The DEP is strongly urged to review its public policy, and past practice, and mandate CSO correction.

3. CVH Sewerage Treatment Plant (STP)

Approximately a year ago, Purcell Associates completed a report which reviewed the adequacy of the CVH STP. This report came at the direction, and financing, of the DEP and was performed by the Department of Public Works. The outcome of that study indicated that significant work was required at the CVH Sewerage Treatment Plant to upgrade it for the higher anticipated flows with full population on the campus. The report went on further to take a look at a regionalization of the CVH plant with the Middletown sewerage disposal system and treatment system. The report recommended that closure of the CVH sewerage treatment plant should be seriously considered. At this juncture, the City of Middletown, along with the Town of Plainville, as well as the Mattabassett District, has been actively working on a major regionalization effort to combine the outfall of three facilities into one at the Mattabassett District. This effort will minimize DEP oversight in management from three facilities to one, saving taxpayer dollars, as well as directing the flow of two smaller plants to a larger, more sophisticated plant where issues of biological nutrient removal will also be addressed as a function of expansion. The outcome of this regionalization will be a better effluent quality emanating from one facility, which will have the net affect of increasing water quality throughout the stretch of Connecticut River in the Middletown, Portland, Cromwell and Haddam areas. The inclusion of the CVH facility into this regionalization will assist by removing yet one additional effluent outflow to the Connecticut River and, I note, an outfall which, due to its CSO problems, appears to be subject to upset conditions and is likely offering improper biological loading to the Connecticut River immediately north of the John S. Roth Well Facility, which is a public water supply. The DEP is asked to seriously consider the Purcell report and its recommendations and hopefully direct a portion of the Thirty Six Million Dollar public money set aside for the CVH campus improvements to this regionalization effort, and an ultimate closure of the CVH facility.

4. CVH Water Supply Distribution Infrastructure

On Good Friday of 1995 the CVH campus was troubled by a rather significant water main break. As a function of the break the City of Middletown Water Department was called upon to provide emergency supply to the CVH campus from a hydrant to hydrant connection using a soft hose, for the better part of a day. I was advised by my water superintendent at the time that the CVH facility's crew had trouble segregating the break due to the age of valves on its system and, in fact, had lost the majority of water in their 800,000 gallon clear well. While the City of Middletown will remain a good neighbor and assist during catastrophic failures, it raises to mind larger questions as to the age of the CVH facility, its condition, and the fact that apparently none of Thirty Six Million Dollars that has been appropriated for CVH improvement has been set aside for water distribution improvements. The Department of Health Services is asked to closely consider this issue.

5. CVH Water Distribution Fire Flow

As a companion concern with Item 4, above, is the adequacy and condition of the distribution system with regard to fire flow on the CVH campus. It was also noted, at the time, by our water distribution superintendent that the pipe witnessed during the break had substantial internal growth, tuberculation, so as to restrict flow within the system. This condition is caused, traditionally, by the transmission of raw water through the system. We note that the age of a good portion of the CVH facility for water distribution dates back to 1910 and 1920 and that water has only been filtered and conditioned within the last ten years. It is therefore very likely that the condition of the water mains has severely degraded during those intervening years. The City of Middletown would strongly suggest that the Department of Mental Health and Addictions Services review the total adequacy of the distribution system, especially with regard to fire flow so that should a catastrophic fire event ever occur, that the CVH system would be capable of handling this fire flow, initially for sprinklers and then for hydrant connections. While the water department, again, will always act as a good neighbor and supply from its own system fire flow as needed, it is imperative that the CVH system be established as the primary source of fire protection and relies on the City of Middletown water distribution system as its fail-safe backup.

6. CVH Bulky Waste Landfill

Earlier this year, in discussions with the State Department of Mental Health and Addictions Services, the water department had identified a landfill, historic in nature, on the CVH campus which may, and is likely to, affect a portion of the aquifer recharge area for the John S. Roth Wellfield, a public water supply for the City of Middletown. The John S. Roth Wellfield is the city's largest and most substantial source of portable water at nine million gallons a day, total capacity, and is located north from the landfill. At this juncture, the State Department of Mental Health and Addictions Services has agreed to assist the City in modeling for Level A mapping of the Wellfield to see if there is a direct nexus between this historic landfill and the Wellfield, with regards to water supply and water quality. This Level A modeling work had been scheduled for early Fall of this year but has been postponed by the DEP until next Summer due to high river stage conditions and high groundwater conditions caused by a wetter

than normal Summer and early Fall seasons. Should studies next Summer prove that a direct nexus exists between the Wellfield and historic landfill, additional work would be required by CVH likely in the form of interceptor or diversion wells around the landfill to protect the public water supply. The water department feels that it is premature at this juncture to commit the entire Thirty Six Million Dollar allocation without establishing a reasonable and credible financial set aside until this very important public issue can be resolved. The City would request that the DEP Water Resources Unit strongly consider this appeal and mandate that a financial set aside be established by the Department of Mental Health and Addictions Services until a final resolution from the Level A mapping.

7. Closure of the Landfill

As a concomitant to the item above and as a companion to the demolition of the incinerator plant, is the closure of this historic landfill. In the notice and call for this meeting and through the scoping process, there has been no mention of a financial set aside or work from the Thirty Six Million Dollar appropriation for closure of this illegal landfill. This landfill continuing in operation until only recently has historically accepted materials from as far back as the 1930's and is likely to contain materials and substances which could be highly toxic and pervasive. As a matter of respect for the citizens of Middletown, those who frequent the area for recreation, and ultimately, should there be an impact on the public water supply for those who consume our water, it is essential that the DEP require a set aside from the Thirty Six Million Dollars for the immediate and proper closure and post closure of this unregistered, illegal landfill. The City would also request that due to the age and technology of the incinerator to be removed, that a background soil sampling program be undertaken to verify the presence or absence of products of incomplete combustion to include, but not be limited to, dioxin byproducts and dibenzofurenes.

8. Improvements to the Physical Plant

In the notice of scoping there is an identification of "utility analysis testing and repairs". At the scoping meeting I had anecdotally relayed to the members a most egregious but, unfortunately, typical situation which routinely occurs on the CVH campus, and that is the blowing off of the stack at the central boiler facility. I had relayed to all the members of the scoping meeting an incident which occurred last summer at which time my scanner indicated that the police department was looking for an active working fire, that the South Fire District had actually rolled out of station waiting for a destination on an active fire, as black smoke billowed out in the distance, only to ultimately to be informed, to all parties, that the CVH boiler room was blowing off the stack. This common practice places soot into the immediate neighborhood, which is a mix of everything from low and moderate housing, to upscale and large residential housing. The notice of scoping only says that there will be a utility analysis, it does not call for the equal treatment of the CVH boiler house facility as would any other private establishment be treated. On behalf of the City of Middletown, and as Director of its Water and Sewer Department, where many of these products of incomplete combustion will likely land within the

aquifer recharge area, I would recommend that the DEP closely look at and strongly consider mandatory pollution control for the CVH boiler house facility to include best available control technology. Also, due to the fact that Middletown is currently in non-attainment for ozone it would not be unreasonable to require full stack monitoring of this rather substantial boiler facility to include SOX, NOX, total particulates, temperature and mass flow through the stack.

In closing, it is essential that State agencies involved in ultimate oversight of this project, those to which the scoping notice was sent, review these very real concerns. It is my sincere hope that those agencies will be guided by this testimony and will look at the application of public funds to include environmental work seriously warranted at the CVH facility and required absolutely as a function of expanded operations. To turn a blind eye to environmental problems involved in sanitary sewer collection, portable water supply to CVH, the integrity of Middletown's largest single public water supply, and air quality issues would be an abandonment of your public charge as officials of the State of Connecticut.

Thank you very much for your attention and your indulgence during this testimony and should you have any specific questions I will be available through the offices of the Water and Sewer Department for additional testimony, if necessary.

#13

Rec 12/17/96 @ in mail

City of Middletown

PLANNING AND ZONING DEPARTMENT

December 17, 1996

Mr. Michael Lucas III,
Chief of Engineering Services 2
State of Connecticut
Department of Mental Health and Addiction Services
Connecticut Valley Hospital
Middletown, CT 06457

Dear Mr. Lucas:

On behalf of the Planning and Zoning Commission, I would like to express the Commission's concerns with regard to the consolidation of state mental health services on the Connecticut Valley Hospital campus.

Section 8-23 of the Connecticut General Statutes authorizes the local Planning and Zoning Commission to prepare, adopt and amend a Plan of Development for the City of Middletown.

This plan is intended to show the Commission's recommendations for the most desirable use of land within the municipality.

The Plan of Development shall be a statement of policies, goals and standards for the physical and economic development of the municipality.

The plan shall be designed to promote with the greatest efficiency and economy the coordinated development of the municipality and the general welfare and prosperity of its people.

I quote these sections of the Connecticut General Statutes to explain to you the responsibilities that the State of Connecticut has bestowed upon the Planning and Zoning Commission.

is diametrically opposed to our local plans.

On Historic Structures

The proposal calls for the demolition of fourteen (14) structures on the CVH campus. Of the fourteen (14) structures many have historic significance. The most notable demolitions are the Weeks Building; the Woodward Building; and the Smith Building.

This campus is rich in history. Its historic buildings reflect this history. The proposal calls for the demolition of the three of the most historically significant structures, all of which are listed on the National Register of Historic Places. There are many alternatives to their demolition and they must be investigated.

As a means of concluding, it is clear that there are many environmental, economic, social and historic preservation issues which need to be studied in great detail. The Planning and Zoning Commission formally requests that a full Environmental Impact Evaluation be prepared.

Sincerely,

William Warner, AICP
Director of Planning

WW/es

STATE OF CONNECTICUT

OFFICE OF POLICY AND MANAGEMENT

January 24, 1996

Chairman and Members of the Planning & Zoning Commission:

I am writing to express the concerns of the office of the Governor and the Office of Policy of Management concerning the subject matter of the public hearing being held this evening.

As you know, the General Assembly of the State of Connecticut passed Public Act 95-257 which was signed into law. This act represents an agreement regarding the consolidation of inpatient mental health and substance abuse services and services for adjudicated youth in the City of Middletown. The interests of your community were ably represented by your elected officials during this process and in fact, significant concessions were made to the City in a good faith attempt to address the needs of all the parties.

The subject matter of the hearing this evening before the Planning and Zoning Commission jeopardizes a plan which was adopted by the General Assembly and which is in the best interest of the citizens of this State. The moratorium on new medical and mental health related services would, in essence, ban services designed to assist people who live in Middletown and adjacent regions. These services, in many cases, allow individuals to maintain normal lives and keep their employment status. Services similar to these are located in regions all around the State.

I would like to reiterate that we have genuine concerns about the proposed moratorium and as such are seeking the advice of counsel concerning the legal sufficiency of your proposal and its potential impact on state action.

I appreciate your consideration of our position on this matter.

Sincerely,

FOR

Reginald L. Jones, Jr.
Secretary

Phone
80 Washington Street — Hartford, Ct. 06115

An Equal Opportunity Employer

To: Mr. Michael Lucas III, DMHAS, Connecticut Valley Hospital

From: Cynthia G. Wilcox, Project Development Manager
Municipal Development Office, City of Middletown

Date: December 17, 1996

Subject: **CONNECTICUT VALLEY HOSPITAL Consolidation Environmental Study -**
Historic Buildings at Connecticut Valley Hospital

On behalf of the Preservation Community in Middletown which includes the Greater Middletown Preservation Trust, the Middletown Design Review & Preservation Board and many individuals, I would like to emphasize that Middletown cares deeply about its heritage and its historic structures. We have six Historic Districts listed on the National Register of Historic Places and even more Historic Properties on the Register including the entire campus of Connecticut Valley Hospital.

The buildings at Connecticut Valley Hospital which offer the greatest contribution to the historic character of the area are the original Shew Hall with its two annexes, Beers and Dix Halls, Noble, Stanley, Page, Old Woodward and Old Weeks Halls - the latter two of which are slated for demolition in the plan before this hearing.

Connecticut Valley Hospital, or the Connecticut Hospital for the Insane, as it was originally named, was created as a place of great beauty, serenity and tranquility. Its magnificent buildings and landscapes were designed to offer its clientele the greatest possible opportunity for recovery according to the practices of the times. Although those practices may have changed, the heritage of those fine buildings and landscape has become an integral part of Middletown's heritage and they stand as historical and cultural landmarks - probably unique in this State.

Although protected by the Environmental Laws of the State of Connecticut (section 22a -1c), and the National Register of Historic Places, old Woodward and Weeks Halls still seem to be direly threatened by this most recent plan. These buildings were built in 1886 and 1895, respectively; have similar configurations in their floor plans as well as in their handsome exterior facades of native brick and brownstone; and they are both enormous. Weeks Hall has 73,954 and Woodward 79,964 square feet. With their character and charm, 154 thousand square feet of space offers ample opportunities for many kinds of uses - the most like of which is residential. These buildings

would make wonderful apartment houses; and they could be scaled to target any population the owner would wish - from the most needy to the most affluent. There is no need to have these buildings be a liability to the State when intrinsically they are among the greatest assets on the campus; and could easily earn their own way, or maybe even make a profit. Even Smith Hall, built in 1909, at 27,756 square feet is a handsome and easily reusable building which might be leased to an outside agency, similar to the arrangements at Shepherd and Eddy Homes.

In summary, since this is a hearing on Environmental Issues, it should be made amply clear that preservation of Historic Buildings - especially those on a scale as grand as these is clearly an issue protected under the Environmental laws of the State of Connecticut. In addition, their listing on the National register of Historic Places further supports the need to keep them standing and to look for their rehabilitation and suitable adaptive reuses. Finally, and perhaps most important, they are assets of the City of Middletown, which does not want to see them destroyed.

In support of this contention, written communications can be expected before January 10, 1997 from the Middletown Design Review & Preservation Board, the Greater Middletown Preservation Trust and other individuals in Middletown's preservation community.

Thank you for your time and attention to this matter.

cc: Mayor Maria Madsen Holzberg
Greater Middletown Preservation Trust
Middletown Design Review & Preservation Board
John Shannahan, State Historic Preservation Officer
William Warner, Planner
Janice Cunningham, Cunningham Associates
Timothy Beeble, president, Connecticut Preservation Action

G:\MDR&PB\CVHHEAR.MEM

STATE OF CONNECTICUT

DEPARTMENT OF MENTAL HEALTH AND ADDICTION SERVICES
ENGINEERING SERVICES

December 12, 1996

D. Clark Smith
Department of Public Health
Carcinogens/Lead
410 Capitol Avenue
Hartford, CT 06134

Dear Mr. Smith:

This letter confirms your telephone message on December 3 to Jeffrey Cyr for Michael Lucas, Engineering Services, concerning the Response to the Notice of Scoping for Connecticut Valley Hospital. It was indicated that the Department of Public Health would not send a representative, as no involvement is expected on the part of DPH with respect to the $36,000,000 worth of planned projects at CVH. DPH has confidence in the knowledge DMHAS has of regulations with regard to lead paint, asbestos, etc. Also, if these projects are administered by the Department of Public Works, their collective knowledge at DPW is enough to ensure the construction will be handled/completed in accordance with all State laws, regulations and statutes. The Department of Environmental Protection oversees disposal of hazardous materials.

Thank you for your interest in responding to the Notice of Scoping.

Sincerely,

Michael Lucas, III
Chief of Engineering Services II

MLIII:jfk

F:\ENG\WP51\JOYCE\WORK\DPHSMITH.WPD

(AC 860) - 344-3009
FAX - (AC 860) - 344-3016
Holmes Drive, P. O. Box 351 - Middletown, Connecticut 06457
An Equal Opportunity Employer

STATE OF CONNECTICUT

DEPARTMENT OF PUBLIC HEALTH

December 11, 1996

Mr. Michael Lucas III, Chief of Engineering Services 2
State of Connecticut
Department of Mental Health and Addiction Services
Connecticut Valley Hospital
Middletown, CT 06437

Re: Notice of Scoping, Connecticut Valley Hospital, Middletown, CT.

Dear Mr. Lucas,

This is in response to the Connecticut Environmental Policy Act Notice of Scoping for a project at Connecticut Valley Hospital. This notice was dated November 21, 1996.

The Connecticut Department of Public Health, Indoor Air Program appreciates the opportunity to provide comments on this project. Given the nature of the intended renovation and demolition activities, the presence of and possible disturbance to asbestos-containing materials must be considered prior to commencement of these activities. The provisions of the National Emission Standards for Hazardous Air Pollutants for asbestos (40 CFR Part 61) require that a thorough inspection of a facility be conducted where demolition or renovation activities will occur to determine the presence of asbestos. A copy of this regulation is enclosed for your reference. Additionally, I have enclosed copies of asbestos-related regulations administered by the Connecticut Department of Public Health. Any asbestos abatement performed in conjunction with the planned renovation or demolition activities must be performed in accordance with these regulations.

Please contact me should you have any question regarding these comments or the enclosed regulations.

Sincerely,

Ronald Skomro

Ronald Skomro, Supervising Env. Sanitarian
Indoor Air Program

RECEIVED BY
DMHAS OOC
C 17 1996
ENGINEERING SERVICES

cc: Paul Schur

Enclosures

NSCVH.DOC

Phone:
Telephone Device for the Deaf (860) 509-7191
410 Capitol Avenue - MS # _____
P.O. Box 340308 Hartford, CT 06134
An Equal Opportunity Employer

#7

Facsimile Cover Sheet

To: Michael Lucas
Company: Department of Mental Health
Phone: 860-344-3009
Fax: 860-344-3016

From: Ralph D. Steadham Jr.
Company: ConnDOT, Environmental Planning
Phone: 860-594-2924
Fax: 860-594-3028

Date: November 26, 1996
Pages including this cover page: one

Comments: Dear Michael, thank for the opportunity to review the Notice of Scoping for proposed improvements at Connecticut Valley Hospital in Middletown. The Department of Transportation has no comments to offer at this time. Any questions, please feel free to give me a call. Ralph.

RECEIVED BY
DMHAS OOC
NOV 26 1996
ENGINEERING SERVICES

STATE OF CONNECTICUT

DEPARTMENT OF MENTAL HEALTH AND ADDICTION SERVICES
ENGINEERING SERVICES

November 20, 1996

TO: Distribution*

FROM: Michael Lucas, III
Chief of Engineering Services II

SUBJECT: Environmental Assessment for Connecticut Valley Hospital

The Department of Mental Health & Addiction Services (DMHAS) is conducting an environmental assessment of the Connecticut Valley Hospital in Middletown, Connecticut. Attached is a copy of THE NOTICE OF SCOPING for this assessment. If there are any questions, please contact me at (860) 344-3009.

MLIII:jfk

Distribution*
The Honorable Maria Madsen Holzberg, Mayor, City of Middletown
Robert Dakers, Department of Children & Families
Patricia Downs, Department of Economic & Community Development
Chester Camarata, Department of Economic & Community Development
Paul Schur, State of Connecticut Department of Public Health
Barbara Waters, Department of Administrative Services
Edward T. Jones, Department of Administrative Services
David Poirier, Connecticut Historical Commission
Richard Tedder, State of Connecticut Department of Public Works
John Radacsi, Office of Policy & Management
Joseph Dipple, United States Department of Agriculture
Michael Bartlett, USDA Fish and Wildlife Service
Karl Wagener, Council on Environmental Quality
Richard J. Howard, Department of Transportation
Edgar T. Hurle, Department Of Transportation
William Lawless, United States Army Corps of Engineers
Brian Emerick, Department of Environmental Protection

c: Albert J. Solnit, M.D.
Deputy Commissioners Raymond Gorman and Thomas Kirk
Karen Snyder
Peter Mendelson
David A. Crompton
Project Team

F:\ENG\WP51\JOYCE\WORK\ASCOPING.WPD

(AC 860) - 344-3009
FAX - (AC 860) - 344-3016
Holmes Drive, P. O. Box 351 - Middletown, Connecticut 06457
An Equal Opportunity Employer

CONNECTICUT ENVIRONMENTAL POLICY ACT
NOTICE OF SCOPING

PROJECT NAME: Connecticut Valley Hospital, Middletown, Connecticut

DATE: November 21, 1996

I. NOTICE: The State of Connecticut Department of Mental Health and Addiction Services is considering an action, described below, that is subject to review under the Connecticut Environmental Policy Act (CEPA) (C.G.S. Section 22a-1). The purpose of this notice is to inform state agency reviewers and other interested parties of the action, and to solicit comments regarding the potential for significant environmental impacts that might result from the action. The sponsoring agency may use these comments in assessing alternatives, determining whether to prepare an Environmental Impact Evaluation (EIE) or a Finding of No Significant Impact (FONSI), and identifying issues to be addressed in any such document.

II. AGENCY CONTACT:

Mr. Michael Lucas III, Chief of Engineering Services 2
State of Connecticut
Department of Mental Health and Addiction Services
Connecticut Valley Hospital
Middletown, CT 06457
(860) 344-3009; fax (860) 344-3016

III. DESCRIPTION OF ACTION: The proposed action consists of implementing a series of projects at the Connecticut Valley Hospital (CVH) in the City of Middletown, Connecticut. Many of the projects are associated with the plan (prepared pursuant to Public Act 95-257) for the transfer of programs from the former Fairfield Hills Hospital and Norwich Hospital to consolidate with those at CVH. The consolidation plan has resulted in a reduced bed capacity at CVH from 715, as of July 1, 1995, to 615 after completion. The plan has increased CVH staff from 949 (as of July 1, 1995) to 1336, and has increased in-patients from 328 (as of July 1, 1995) to 472 as of November 15, 1996.

A number of renovations of patient-occupied buildings have been proposed for addressing housing and treatment needs. These projects include interior demolition and construction, exterior reconstruction, air conditioning, environmental enhancement, renovation for program requirements, security, elevator repair, roof repairs/reconstruction, and fire and building safety issues. The buildings affected by these projects consist of Merritt, Battell, Dutcher, Woodward, and Leak Hall.

Other improvements have been proposed to buildings housing administrative, functions and patient services. These consist of the following:

Haviland Hall: canteen, offices, records, training, new elevator, roofing.
DAS Regional Warehouse: renovation for campus kitchen
Page Building: planned renovation for campus center
Cotter Building: telephone equipment

No new building space is proposed.

Certain buildings are proposed to be demolished for safety and campus planning purposes. The associated work would include planning, hazardous material remediation, utility relocations, and the actual demolitions. A listing of these buildings is provided below. All of the buildings are located on the main CVH campus, except buildings indicated "off campus" are located one block east of the campus on Silvermine Road.

1. Old Weeks Building
2 Kenniston Building
3. Old Woodward Building (western half of Woodward)
4. Connector Between the Stanley & Page Buildings
5. Old Tin Shop
6. Old Fire House
7. Connector Between Dix & Page Buildings
8. Connector Between Page & Noble
9. Smith Building
10. Duplex Cottage #43 & 44
11. Cottage #12
12. Ice House
15. Old Pig Slaughter House & Adjacent Structures (off campus)
16. Incinerator Building (off campus)
13. Old Wooden Grounds Storage Building
14. Lumber Storage Facility

Proposed site improvements consist of the following:

Athletic playing fields
Campus roadway and parking lot construction and improvements.
New telephone system and security communications network.
Campus lighting improvements
Utility analysis, testing and repairs

The total for all of these projects described herein is estimated at $36,000,000.

IV. SITE MAPS: Attachments 1, 2, and 3 provide respectively a project location map, a campus map, and the proposed roadway/parking scheme.

V. ANTICIPATED PROJECT TIMING: The associated projects are at various levels of completion. Merritt Hall renovations are underway. Other consolidation-related construction/renovation projects are presently on hold pending completion of the CEPA environmental assessment (in accordance with a temporary injunction issued by the State Superior Court on August 9, 1996). The transfer of patients and staff to CVH has been completed.

VI. DISTRIBUTION: This notice has been sent to the following interested parties:

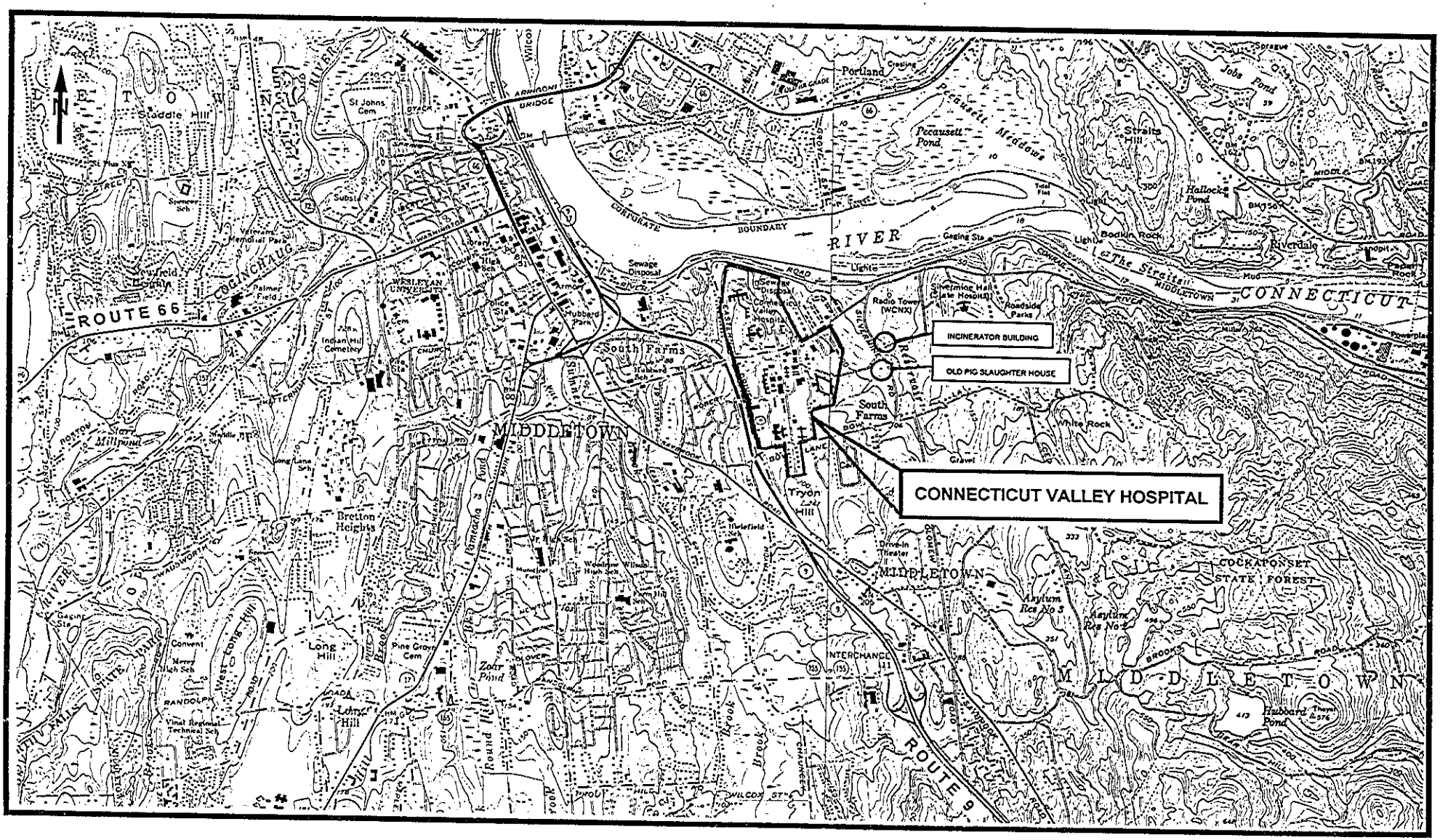
City of Middletown
Department of Administrative Services
Department of Agriculture
Department of Environmental Protection
Council on Environmental Quality
Connecticut Historical Commission
Department of Housing
Office of Policy and Management
Department of Public Health
Department of Public Works
State Traffic Commission
Department of Transportation
Department of Children and Families
U.S. Army Corps of Engineers
U.S.D.A. Fish and Wildlife Service

VII. SCOPING MEETINGS: All agencies in receipt of this notice are invited to attend a scoping meeting to be held 10:00 A.M., Tuesday, December 3, 1996 at Zimmerman Conference Room, Dutcher Hall, CVH, Middletown. A separate public meeting will be held 7:30 P.M., Monday, December 9, 1996 at the Common Council Chambers, Municipal Building, 245 Dekoven Drive, Middletown.

Directions to CVH: From Route 9 Southbound: Take Exit 12 (Silver Street), turn left at end of exit ramp onto Silver Street. Take fourth right (second flashing traffic signal) onto Holmes Drive; Dutcher Hall is third building on the left (see Attachment 3, "Campus Map").

Directions to CVH from Route 9 Northbound: Take Exit 12 (Bow Lane/Harbor Area). At stop sign, take right onto Bow Lane. Take third left onto Holmes Drive. Dutcher Hall is 500 yards ahead on the right.

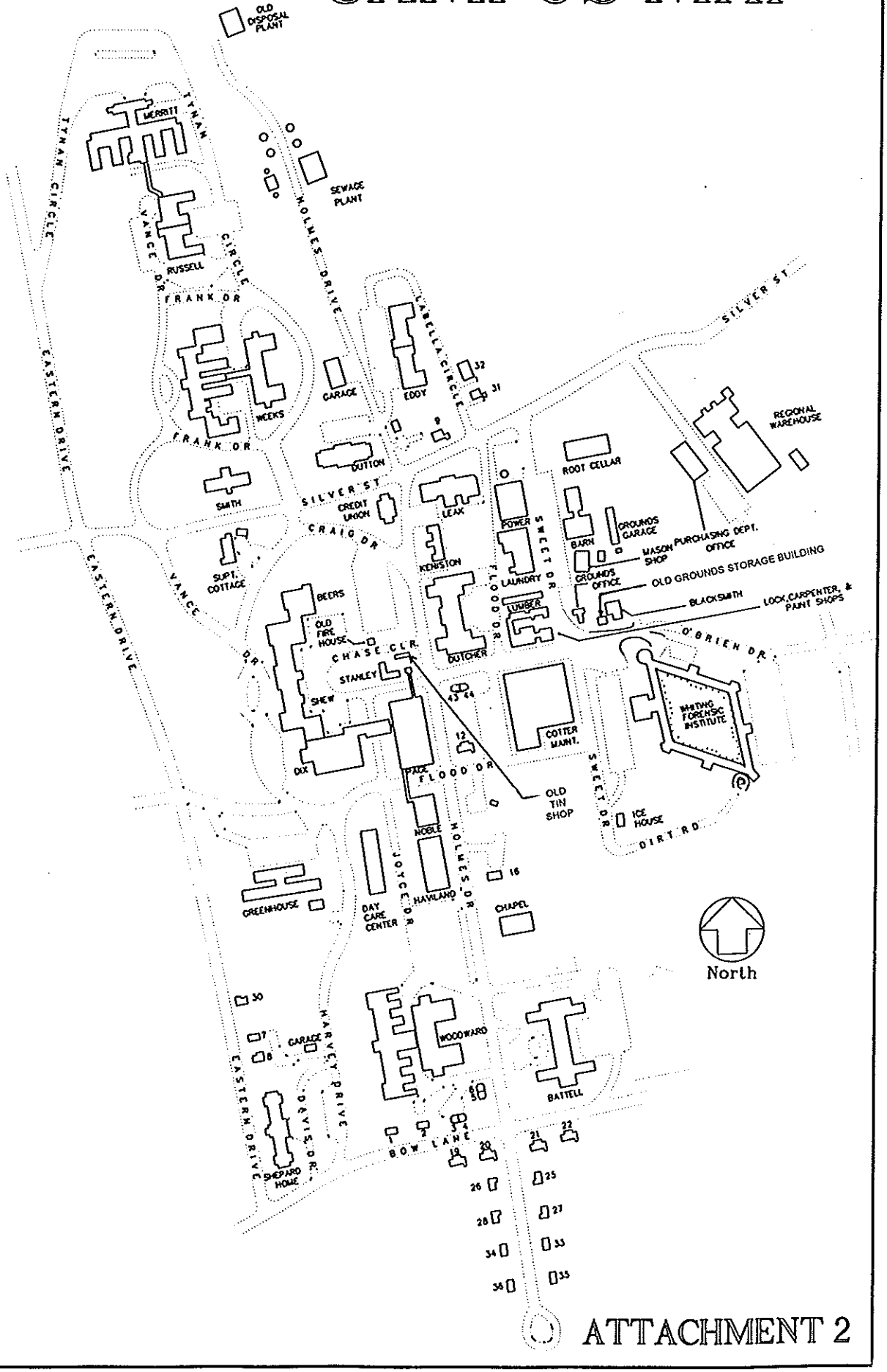
VII COMMENT PERIOD: Comments regarding potential significant environmental impacts and issues to be addressed in the EIE or FONSI will be accepted by the agency contact until Thursday, December 12, 1996. Interested parties may provide written comments in addition to, or in place of, any comments offered at a scoping meeting. The comments should include information about site issues that are of particular interest to the reviewer, about any of their agency's plans that might bear on the proposed action, and about any appropriate impact mitigation measures, including recommended alternatives. The review comments will either be summarized in or appended to the subsequent EIE or FONSI.



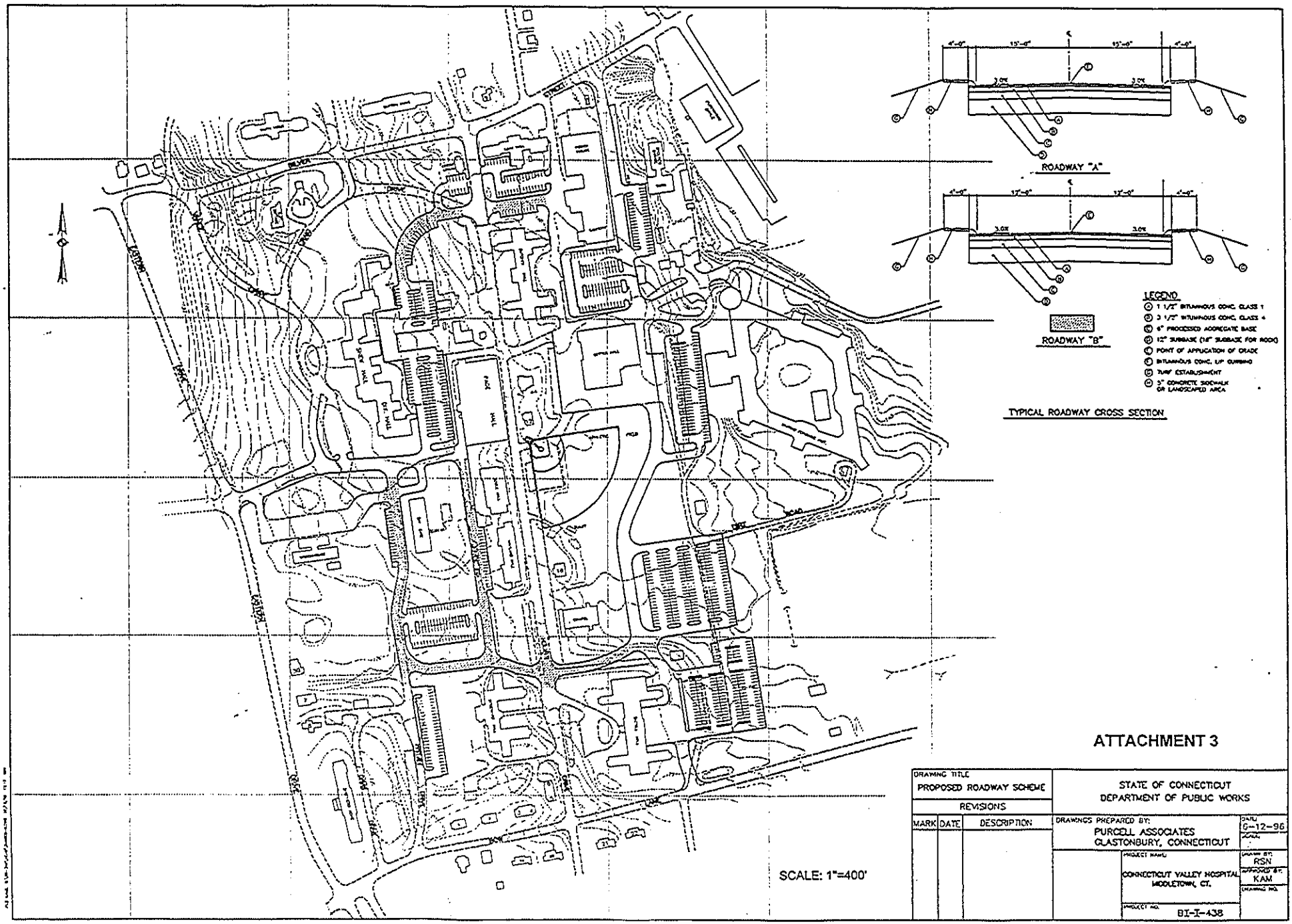
SCALE: 1"=3100'

Attachment 1
CONNECTICUT VALLEY HOSPITAL, MIDDLETOWN, CONNECTICUT
PROJECT LOCATION

CAMPUS MAP



ATTACHMENT 2



ATTACHMENT 3

DRAWING TITLE: PROPOSED ROADWAY SCHEME			STATE OF CONNECTICUT DEPARTMENT OF PUBLIC WORKS	
REVISIONS				
MARK	DATE	DESCRIPTION	DRAWINGS PREPARED BY: PURCELL ASSOCIATES GLASTONBURY, CONNECTICUT	DATE: 6-12-96
			PROJECT NAME: CONNECTICUT VALLEY HOSPITAL MIDDLETOWN, CT.	DRAWN BY: RSN; APPROVED BY: KAM
			PROJECT NO.: BI-I-438	DRAWING NO.

APPENDIX B

Public Meeting
Transcript

TRANSCRIPT OF PROCEEDINGS

OF THE PUBLIC SCOPING MEETING

ENVIRONMENTAL ASSESSMENT AT CONNECTICUT VALLEY HOSPITAL

MIDDLETOWN, CONNECICUT

PROJECT NUMBERS: DMHAS 4403-489
DPW #B1-1-489 (4403489)

TUESDAY, DECEMBER 17, 1996

CITY HALL
DeKOVEN DRIVE
MIDDLETOWN, CONNECTICUT

Michael Lucas III
Chief of Engineering Services
State of Connecticut
Department of Mental Health
And Addiction Services

Dennis L. Miller, P.E.
Associate Vice President
And
Mark S. Foster, P.E.
Senior Civil Engineer
Frederic R. Harris, Inc.
333 Ludlow Street
Stamford, Ct 06902

GUSTAFSON & PIERCE REPORTING SERVICE
5 GEORGE STREET
MIDDLETOWN, CONNECTICUT 06457
TEL. (860) 347-8007

S P E A K E R S:

p. 16 — Hon. Susan Bysiewicz
Rep. District 100

p. 21 — Hon. Maria Madsen Holzberg.
Mayor, City of Middletown

p. 30 — John King
Attorney for City of Middletown

p. 35 — George Aylward
Chief of Police
City of Middletown

p. 39 & 113 — Michael Guarini
Director of Water and Sewer
City of Middletown

p. 44 — William Warner
Director of Planning & Zoning
City of Middletown

p. 52 & 121 — Leon F. Vinci
Director of Health
City of Middletown

p. 57 — Annette Ward
Director of General Assistance
City of Middletown

p. 60 & 134 — Jeffrey D. Pierce, Sr.
Planning and Zoning Comm.
5 Goerge Street
Middletown, Ct 06457

P. 63 — Bill Corvo
776 Ridge Road
Middletown, Ct 06457

P. 67 — Raymond Wing
11 Laurel Street
Middletown, Ct 06457

P. 71 — Krishna Winston
655 Bow Lane
Middletown, Ct 06457

S P E A K E R S:

p. 74	Frank LoSacco Glover Place Middletown, Ct 06457
p. 77 & 131	Syd Libby 251 Court Street Middletown, Ct 06457
p. 80	V. James Russo 281 Old Mill Road Middletown, Ct 06457
p. 84	Domenique Thornton City Council Timber Ridge Road Middletown, Ct 06457
p. 86	Jane McMillan 386 Main Street Middletown, Ct 06457
p. 90	Jan Levine 26 Mansfield Terr. Middletown, Ct 06457
p. 93	Sheila Dorgelch 85 Eastern Drive Middletown, Ct 06457
p. 94	Earl Roberts 785 Bow Lane Middletown, Ct 06457
p. 99	Louis Mazzotta 7 Red Orange Road Middletown, Ct 06457
p 105	Michael Cap 19 Lucinda Lane Middletown, Ct 06457
p 109	Steven Clark 127 Grand Street Middletown, Ct 06457
p. 119	Elaine Kapetan 257 Farm Hill Road Middletown, Ct 06457

MR. MICHAEL LUCAS: Good evening ladies and gentlemen. My name is Michael Lucas. I'm from the Department of Mental Health and Addiction Services. Joining me is our consultants for this environmental study, Dennis Miller and Mark Foster, from Frederic R. Harris, Inc. from Stamford.

The State of Connecticut Department of Mental Health and Addiction Services is considering an action that is subject to review under the Connecticut Environmental Policy Act, (CEPA) (C.G.S. Section 22a-1)

The purpose of this meeting is to solicit comments regarding the potential for significant environmental impacts that might result from these actions. The Department of Mental Health and Addiction Services may use these comments in assessing alternatives, determining whether to prepare an Environmental Impact Evaluation, or EIE, or a Finding of No Significant Impact, or FONSI, and identifying issues to be addressed in any such document.

As I said, I'm Mike Lucas, and I am acting as the facilitator of this project with the consultants and on the handout that you're given will be pretty

much everything that I will be saying today as well as my address, telephone number and fax number. We want very much to get your comments as we go through this process so that we can look at those.

I'm going to introduce Mark Foster who will describe the CEPA process for us. Mark.

MR. MARK FOSTER: Thank you. Can you hear me in the back? I'll assume you can. I just want to read a statement regarding the Connecticut Environmental Policy Act. This is a description based on my experience having been through the process several times.

The Connecticut Environmental Policy Act requires state agencies to evaluate their actions that may result in significant environmental impacts. The evaluation process provides the public with an opportunity to provide input which can better identify the impacts and their significance. The State Statutes and Regulations implementing the Connecticut Environmental Policy Act are cited on Page 3 of tonight's handout.

State Agencies typically initiate an Environmental Assessment under the Connecticut Environmental Policy Act with an outreach effort called the "Early Notification and Scoping Process." The term "scoping" refers to the scope of issues to be addressed in a subsequent environmental document. With the scoping process, a sponsoring State agency informs governmental agencies and other interested parties of the action, and solicits comments regarding the potential for resulting significant environmental impacts and possible mitigative measures for such impacts. The received comments helps to ensure that the agency considers relevant environmental concerns both during the environmental review and when making planning decisions. The agency may also use these comments as an aid in determining whether to prepare an Environmental Impact Evaluation, called an "EIE" or a Finding of No Significant Impact, called a "FONSI". Tonight's meeting is part of the early scoping review phase.

Following the scoping period, the issues raised during the scoping process are documented and reviewed. The scope of identified issues sets the initial course of subsequent work, however the scope of issues may further evolve as the process proceeds and new information becomes known. The Environmental

Assessment then proceeds with an inventory of environmental resources and other data collection, followed by an analysis of issues which identifies potential environmental impacts. Thereafter, the impacts are evaluated as to their significance and an examination is made of viable alternatives to the State actions and possible mitigative measures. The Environmental Assessment effort eventually produces a written report which is released for agency and public review. That report is called either a Draft FONSI or a Draft EIE.

Immediately following the document's release, agencies and the public may comment on the document during a review period, which must last at least 30 days for a FONSI and 45 days for an EIE. If requested by 25 persons, or an organization of 25 persons or more, within 10 days of the document's release, a public hearing is held during the review period.

After the comment period ends, the sponsoring State agency prepares written responses to substantive comments, and may modify the document accordingly.

In the case of an EIE, after considering the impacts, the agency makes a determination whether to

proceed with the action.

Whether an EIE or a FONSI, the process ends when the State Office of Policy and Management reviews documentation of the impact analysis and the review process and determines that the requirements of the Connecticut Environmental Policy Act have been met.

That concludes my statement. I will now take any questions that you may have in regard to the Connecticut Environmental Policy Act Procedures. I won't be taking questions beyond this point. Are there any questions on the Connecticut Environmental Policy Act? Yes sir. Would you identify yourself.

MR. FRANK LoSACCO: I am Frank LoSacco. I have a question Mr. Foster. Either you as a professional engineer and your associate as a professional engineer, civil engineers like myself, I guess you're the only two people from Frederic R. Harris Engineers. Why? We're here to talk about the social impact. Isn't that part of the environmental study, the social impact of dumping people on the streets of Middletown who have just gone through some sort of criminal or mental problems at CVH? Isn't that

part of the study?

MR. DENNIS MILLER: Excuse me. The purpose of this portion of the presentation is to address any questions regarding the process itself. If there is any misunderstandings about the sequence of activities, the timing involved, the subsequent hearings and that type of thing, there will be an opportunity later for people to bring up issues that they feel are important to be evaluated during the process.

MR. LoSACCO: Right. I'll do that later. But My question has to do with if we had a question. You asked about questions on the process. Isn't part of what you're doing here to get, to hear about the social impact. Is that part of the process?

MR. MILLER: That is part of the process, and during the subsequent listing of comments and speakers those types of issues that are identified are what we are here to hear.

MR. LoSACCO: To hear.

MR. MILLER: And then go back into our evaluation process and to starting looking into.

MR. LoSACCO: But as professional engineers, civil engineers, you're qualified to hear this testimony about social impact, or are you just going to make notes and bring them back?

MR. MILLER: Our qualifications are on file with both the state and with the city, and I believe you can get a copy of that from them.

MR. LoSACCO: Okay. So the idea of you two being here is to hear us. We can talk about the social impact, the dumping on. So that's part of the process.

MR. MILLER: We encourage you to bring up whatever issues you folks feel are important.

MR. LoSACCO: And you're qualified to hear that.

MR. POSTER: Thank you sir. Are there any more? I guess now we're back to Mike.

MR. LUCAS: Thank you very much. The next bullet item on the agenda is the Description of the Actions.

The Description of Actions: The Actions consist of implementing a series of projects at the Connecticut Valley Hospital. Many of the projects are associated with the plan for the transfer of programs from the former Fairfield Hills Hospital and Norwich Hospital to consolidate with those at CVH. The consolidation plan has resulted in a reduced bed capacity at CVH from 715, as of July 1, 1995, to 615 after completion. The plan has increased CVH staff from 949, as of July 1, 1995, to 1336, and has increased in-patients from 328, as of July 1, 1995, to 493 as of December 15, 1996.

A number of renovations of patient-occupied buildings have been accomplished or proposed for addressing housing and treatment needs. These projects include interior demolition and construction, exterior reconstruction, air conditioning, therapeutic environmental enhancements, renovation for program requirements, security, elevator repair, roof repairs, reconstruction, and fire and building safety issues. The buildings affected by these projects consist of the Merritt building, the Battell building, Dutcher, Woodward, and Leak.

Other improvements have been proposed or accomplished to the buildings housing administrative functions and patient services. These consist of the following:

At Haviland Hall: We have partial constructions of a canteen, offices, records, training, new elevator, and roofing.

The DAS Regional Warehouse Building: A renovation for campus kitchen.

The Page Building: Planned renovation for campus center.

The Cotter Building: Telephone equipment

No new construction or building additions are proposed.

Certain buildings are proposed to be demolished for safety and campus planning purposes. The associated work would include planning, hazardous material remediation, utility relocations, and the

actual demolitions. A list of these buildings is provided below. All of the buildings are located on the main CVH campus, except buildings indicated as "off campus" which are located one block east on Silvermine Road.

The Old Weeks Building

The Kenniston Building

The Old Woodward Building (The western half of Woodward)

The Connector between the Stanley and Page Buildings

The Old Tin Shop

The Old Fire House

The Connector Between the Dix and Page Buildings

The Connector Between Page and Noble Buildings

Smith Building

The Duplex Cottage #43 and #44

Cottage #12

The Ice House

The Old Pig Slaughter House and Adjacent Structures (That's one of the off campus buildings.)

The Incinerator Building (That's the other off campus building.)

Old Wooden Grounds Storage Building

The Lumber Storage Facility

There are site improvements consisting of the following. Some have been started and some have been proposed.

Athletic playing fields

The Campus roadway and parking lot construction and improvements

New telephone system and security communications network

Campus lighting improvements

Utility analysis, testing and repairs

The total expenditure for all of these projects described herein is estimated at around $36,000,000.

That concludes the prepared text that I have in the handouts which you all have or I hope you all have. If you don't have a handout, there are some people in the back who can get you one.

We'd like to begin with our speakers,

behind me are many skeptical members of the public. And as an elected official I will tell you why I'm skeptical.

I'm skeptical because I was one of the legislators that drafted the consolidation bill that was before the legislature. And I drafted the amendment to the law which was ultimately passed which said that the environmental impact of the consolidation, including the social and economic impact, must be considered before the consolidation was done. And we had a long discussion about this for legislative intent before the bill was passed. The bill was passed and signed into law. So that it was very clear that the State must follow its own law, and that the environmental impact must be considered before the consolidation was done.

Well unfortunately, the entire consolidation has happened. It's done and here we are talking about the impact after the fact. So that is why I'm a little skeptical. I'm also a little skeptical because when we were discussing the consolidation at the legislature and when we wrote the bill, we were talking about the consolidation of the mental health patients and mental

health services at Connecticut Valley Hospital. We weren't talking about consolidating all the forensic patients from all around the state to one central place in Middletown, and that happened without any law. And I don't understand how that happened, but that has happened as well. So forgive my skeptisism, but we and many of my colleagues in the legislature do feel that the state has in the past demonstrated bad faith for some of the reasons that I have given.

On the other hand, I would say that the City of Middletown has demonstrated a tremendous good faith by the fact that we have been a very gracious host to a number of state institutions, including Riverview Hospital, Long Lane, and Connecticut Valley Hospital for many years prior to the consolidation. So I think that we have an opportunity for today and for the future to show good faith on the part of the state.

And how, you might ask, can the state demonstrate good faith? In my opinion the state can demonstrate that good faith by listening to all the people who are here today to talk about the environmental, the social and the economic impact of the consolidation, although after the fact. And you can

also demonstrate good faith by listening and considering fully not only the environmental impact, but the full economic and social impact on the city and around the surrounding areas. Because I must say, as a legislator who represents not only Middletown but also some surrounding towns of Durham and Middlefield, I hear from my constituents in those other towns that they are tremendously concerned because they come to Middletown and it is a reason, the consolidation is a reason for them not to come to Middletown to do their shopping and to do their visiting.

We have the opportunity as a state to do the right thing, and I'm here to encourage you to do that. How can the state do the right thing? The state can do the right thing by removing the substance abuse patients to other locations in the state. One of the discussions we had in the legislature prior to passing the consolidation bill was the need to have substance abuse services available in different parts of the state so that those who needed those services would have better access. It does not seem to me to make tremendous social sense to have those substance abuse services essentially consolidated here in Middletown. And the Middletown legislative delegation, along with the Mayor of the City of Middletown, will be submitting legislation when the legislative session starts in January to do just that. To remove the substance abuse patients from Middletown and make sure that services are available in other parts of the state.

Secondly, it seems to me that the State can do the right thing by limiting the number of patients that will be served at the Connecticut Valley Hospital, and our delegation is also going to introduce legislation to put a cap on the number of patients that can be served at Connecticut Valley Hospital. We also plan to submit a number of other proposals with the intent to make sure that the patients who are at Connecticut Valley Hospital are served well and taken care of appropriately, but legislation which we also believe will protect the public's safety in Middletown because that is of utmost concern to us, and I'm sure that the Mayor will detail some of her other proposals that the Middletown delegation is prepared to support.

Again, I thank you for this opportunity to listen to my comments, and I would urge you to listen very carefully to the speakers that follow. Thank you very much.

MR. MILLER: The next speaker is the Honorable Maria Holzberg, Mayor of the City of Middletown.

HON. MARIA MADSEN HOLZBERG: I'm coming up with my lawyer, John King, who I think is next on the list.

Good evening and thank you for this opportunity to share with you some of the concerns that the City of Middletown has with regard to your study and indeed the consolidation.

As you are probably aware of by now, the City of Middletown took the Department of Mental Health and Addiction Services to court earlier this year and a temporary injunction was issued by State Judge Referee Robert Satter in favor of the City. In granting that temporary injunction the judge stated that there is evidence that concentrating all state mental health patients at Connecticut Valley Hospital is likely to add to the homelessness and drug-addicted population of Middletown, increase the town's general assistance and special education costs, require of it additional social services, and have an adverse impact on the

downtown business district. Accordingly, it is appropriate that your study examine methods which may be employed first of all to identify and then to minimize the adverse impacts on the City of Middletown.

At the hearing for the temporary injunction we did retain an expert, and that expert's name is Jeffrey Geller. And he has extensive experience with consolidation as it occurred in the State of Massachusetts, and I would ask you to consult with him and perhaps to bring him on board to help and assist you with your assessment. I will pledge to you that the City of Middletown is willing to be of whatever assistance it may be to you in this process.

We believe generally that Middletown will be adversely affected in three broad categories. And in each of these categories, we believe, there should be findings and recommendations for each subset, if you will. The first is mental health and the second is addiction services.

Our first broad category are clients coming to Connecticut Valley Hospital from outside of middletown. Some questions that we believe need to be answered are:

What are the geographical boundaries, clinical and economic criteria of clients coming to CVH?

What is the rationale for bringing these clients to Connecticut Valley Hospital?

Are there other facilities in the State which are capable of treating these clients in their communities?

How can resources be deployed so that, if clinically appropriate, more clients can be treated in their communities?

The second category is: Residence Or Clients Residing At CVH During Treatment.

How are clients assessed and categorized for purposes of security?

Are the buildings and wards secured in a manner which is appropriate to their populations?

What is the level of security, and where are the lapses in security?

How is the level system enforced with voluntary clients?

How many instances have there been, and what were the circumstances surrounding clients which leave the grounds without authorization?

What reports should be issued to adequately monitor security?

The third broad category is: What Happens When Clients Were Discharged?

What is the discharge planning process for the various populations?

Are there mechanisms in place which work to ensure placement back into home communities, where clinically appropriate?

How is a client's residence determined?

Is there funding in place to ensure adequate discharge planning both presently and in the future? And this is particularly important for those of us that deal in government. You know that there may be a good faith effort in the beginning, but ten years down the line you are really scrambling to get that money that you need in order to treat your clients.

How many instances have there been, and what have been the circumstances surrounding, discharges against medical advice or for noncompliance?

Is there any way to prevent such discharges against medical advice or for noncompliance from adversely affecting the City of Middletown?

What reports should be issued to adequately monitor the discharge process?

Our expert, Jeffrey Geller, at his hearing stated the following. And I'm going to read this into the record from the transcript of his testimony.

"The concentration of patients in Connecticut Valley Hospital also means the concentration of resources and the concentration of expertise. That means that there is a reasonable likelihood that that expertise would be used by Connecticut for greater than those -- this is an editorial comment estimated during his testimony -- six hundred and twenty inpatients."

"More importantly, patients historically, and it's been true since the first state hospitals, with some frequency tend to choose upon being discharged to live in the area in which they have been hospitalized in part because they have been gradually introduced to the community by using the neighborhood community. So, there is every reason to believe that there will be a migration of patients into the surrounding communities who are no longer inpatients."

The third issue, and it is one which actually, just editorially again, Dr. Geller referred to earlier in his testimony and which I believe Attorney King is going to discuss further, is that along with the consolidation, along with the increase of outpatients, federal funding skews the process so that it encourages the development and building of outpatient housing on the grounds of state hospitals. So I would ask you to consult with Dr. Geller.

With regard to some of the things that we believe will lessen the impact on the community of the consolidation, should it at some subsequent time be found to have no impact on the community there would be the following legislative proposals:

We believe that we should remove substance abuse treatment from Connecticut Valley Hospital campus, and the Department of Mental Health should be prohibited from placing Department of Corrections clients in any of its facilities, perhaps with the exception of Whiting Forensic, which they do currently go to. But none of the substance abuse treatment should be used as alternative beds for the Department of Corrections.

Require all forensic patients to come through Whiting Forensic where they will be evaluated for dangerousness and assigned quarters according to their security risk and dangerousness.

Third, to cap the patient population at 475 to ensure no further growth or development of new patient programs.

Four, to mandate staffing at the hospital to be in accordance with the standards set forth by the Joint Commission on Accreditation of Hospitals and to give the City standing to enforce those adequate staffing levels in court. And this is particularly important. The problems that we have had earlier in the year with patients leaving the wards had to do at times when people were working overtime or when they were short staffed.

Mandate and funding discharge planning to the patients' home community for both mental health and substance abuse treatment. This should be required.

Mandate statewide needs assessment to be conducted to determine the availability of patient

services on a statewide basis. The purpose of this assessment is to determine whether there is sufficient programming in different areas of the state to ensure that patients are not inappropriately committed to Connecticut Valley Hospital and that patients are returned to their home communities and not placed in Middletown.

Require that all patient buildings have 24 hour manned security desk and that no patient be allowed to leave a building without a presentation of a grounds pass issued on the day of the pass and specifying the time and location of the pass. And we would ask that all buildings have cameras for surveillance.

We believe that the City should be monitarily compensated for the hospital at the same rate as presently correctional facilities are, and that means a 100% payment in lieu of taxes payment to Middletown for Connecticut Valley Hospital and Whiting Forensic Institute. And then we would also ask that the City be compensated and be given 33% of the sale price of both Norwich State Hospital and Fairfield Hills Hospital, the two communities which lost state facilities as the

result of the consolidation.

In closing I would just say to you that as Mayor of the City of Middletown we believe the consolidation has a tremendous impact on our community. Besides Attorney King, with me tonight from the City of Middletown is our Director of Planning, William Warner, and he will talk about some of the planning and economic development impacts that we believe the consolidation will have. Also here this evening is the Director of Health, Leon Vinci, who will talk about the public health concerns that we have with regard to the consolidation. Assistant Director of Water and Sewer, Michael Guarini, is here, and he will talk about a number of environmental issues. There is written testimony of the Director of Water and Sewer, Guy Russo, to submit as well. You will be getting written recommendations from Cindy Wilcox, who is our Project Manager for our Office of Municipal Development. Also here is Chief George Aylward, who will talk about the impact of the consolidation on the community's safety, and in addition we have the Director of our Welfare Department, Annette Ward, who will talk about the impact on general assistance. Also here tonight, although I did not see her she is expected, is the

Director of Special Education for the Board of Education, Mariann Rossi-Ondusky, who will talk about the tremendous economic impact that having the hospital here places on our special education budget.

MR. MILLER: Thank you. At this point We'll continue with the city officials and begin the five minute time limitation criteria. So the next speaker is John King, Attorney for the City of Middletown.

MR. JOHN KING: Thank you very much. My name is John King. I'm an attorney with Updike, Kelly and Spellacy in Hartford and represent the City of Middletown in connection with the injunction and mandamus action which was brought to the superior court.

I would first like to refer to the public notice of the meeting not only for my testimony, but I think for the benefit of those who are to receive the testimony. And that is that the public notice says this is a meeting to inform interested parties of the actions that are subject to review under the Connecticut Environmental Policy Act, and to solicit comments

regarding the potential for significant environmental impacts that might result from the actions, and I think that's what you've heard already tonight, specifically from the representatives, Mr. Foster and Mr. Miller from Frederic Harris. And I would like to emphasize that the facts surrounding this particular environmental assessment and the circumstances which has resulted in there being an environmental assessment we believe are unique.

The unique facts are that we are dealing with a consolidation. As statutorily mandated consolidation of mental health services, forensic, and substance abuse patients in the City of Middletown and the closure of two other facilities in the State of Connecticut. Dr. Geller had testified that this is contrary to the decentralization which is going on in many other states, but this is a route that Connecticut has chosen, and I think the mayor has very articulately outlined some of the concerns that Dr. Geller testified to, which concerns were received and acted upon by Judge Satter in his decision.

Secondly, we are looking at a $36,000,000 project, which Mr. Lucas has described, and also was

the subject of some fourteen days of hearings in the superior court, nearly twelve briefs and arguments, numerous arguments before the court. And I think there is a great deal of source material which is available, and again the Mayor has mentioned this and representative Bysiewicz has mentioned it to the consultants, which needs to be looked at in the course of the study.

The unique circumstances of the environmental assessment are that the State initially took the position that no environmental assessment or environmental study was required for the consolidation project and went ahead. The legal action was brought and an injunction was entered and a mandamus was entered requiring that there be an environmental assessment and that this is contrary to the normal manor in which an environmental assessment and/or an environmental impact evaluation or FONSI is undertaken. And I think the consultants need very closely to review and look at the documents that are on file in court and specifically at the court decision.

The court stated, and I would just mention some of the salient points in the memorandum, in its

memorandum of decision the court in quoting both from the statute and the regulations, emphasized the timimg of the CEPA, as noted by Representative Bysiewicz. That is "before deciding whether to undertake or prove such action", quoting from the Connecticut General Statutes. In discussing the regulations the court further emphasized that the CEPA study shall be prepared early enough so that it could practically serve as an important contribution to the decision making process, and shall not be used to rationalize or justify decisions already made. While emphasizing that the action which may significantly affect the environment can be a sequence of planned activities, the court detailed the various ongoing activities, noting that an environmental assessment was not required at a single point of any of the individual activities, but are part of the sequence of planned activities. The court stated, however, when these individual activities are part of a sequence of planned activities proposed to implement consolidation, and when ongoing building or renovations, contemplated road changes, demolition of historic and other buildings, an increased state patient and staff population are so likely to have an environmental and social and economic consequence, then an environmental assessment is called for and the time

to do so is as close as possible to the time that an agency proposes an action. The court specifically stated that the social and economic consequences of the consolidation on Middletown, that evidence was credible. Finally, the court also noted that the regulations themselves contemplate and early and open process for determining the scope of the issues to be addressed. The regulations contemplate the participation of state and local agencies with special expertise or jurisdiction by law with respect to any relavant environmental impact and other interested or affected persons. Specifically an environmental assessment utilized the criteria set forth in the regulations, which are very broad, including economic and social consequences within the regulation, and a study of the disruption where division of an established community, or inconsistency of the project with adopted municipal and regional plans. We believe respectively that all of these considerations need to be looked at during the course of the assessment and that the city is a willing, able and necessary participant in the process. Thank you.

MR. MILLER: The next speaker is George Aylward, Chief of Police.

CHIEF GEORGE AYLWARD: Good evening. I'm George Aylward, the Chief of Police for the City of Middletown. I'm here to talk about the impact of the consolidation on Middletown, on the police and on the public.

There is really two ways you determine the perception of public safety. One is statistically and one is simply by people's perception of reality, of how they feel about a particular town or particular neighborhood. I believe because of the consolidation, because of the past history with the state and some of the facilities they have located in Middletown, they have provided us with what I call, or what police work generally calls, street conditions. So even though our overall crime rate may be under control based upon the level of activity a department is involved in and the level of funding the city has provided, which is really quite high for a city our size, at the same time the perception of safety is not there because of the type of activity that we see on the street.

I can give you some examples in terms of the criminal side of that. For example, in 1996 in the City of Middletown we affected 125 arrests of people selling narcotics, direct buys to police officers, at least two buys from each dealer. That's an extraordinary number for a town of our size and for a department of our size to be able to do. And I can assure you that the majority of those folks were not born and raised in Middletown. They are here from other locations. The perception that we hear from folks is again not borne out by hard crime statitics, but based upon what they feel is reality.

Now, I can give you an example of that, an actual statistical display. This is our 1996 November stats for Middletown, and it breaks down crimes and calls for service and the things you might expect on a police printout. Here's one, intoxicated person. Intoxicated person is a call we get when someone is intoxicated to the degree that they need to be transported to the emergency room or to a facility to be detoxed. In November of '96 we had 32 calls of that nature. 22 of those were on Main Street. So when you ask people are you safe, they're thinking of those 22 people. That's almost one a day in that category on Main Street, and they're equating that with an unsafe condition. Again, all of those folks essentially, they're not people born and raised in Middletown and

suddenly had an urge to have too much to drink one day. Those are people who we speak with and they tell us. We ask them how did you get to Middletown? The answer we generally get is I came here for a program and I stayed. Now, I realize that program might be wider than what's being offered strictly at the addiction services consolidation at CVH, but certainly that's a major part of it.

There's another category here. Service calls, Police assist. Police assist is any other agency might need us to help them. That frequently involves possibly the other side of the coin. You probably see some people with mental illness in the background. City wide in November we had 138 of those. Just under one half were in the Main Street area. That lends itself to more housing, and folks who were living in the housing downtown were in a need of police assistance services at that rate. Just about half of the downtown area. The impact of that, I think, is one where people misunderstand and react to a downtown that they think is not safe. This impacts on the businesses certainly. You can talk to business people in your process, and I'm sure you're going to hear that they have a concern about that. We have a group that's here

tonight that does a fine job called the Downtown Alliance, and they're purpose is to educate these shopkeepers in how to handle people who have a mental illness. The fact that that group is doing the job they're doing is proof that we need a group to do the job that they're doing, and that's because we have that degree of people in the community who have that history.

The other impact on this is certainly in police costs. In our downtown area our assignments are essentially equal to the rest of the city. Much of that is funded on an overtime basis. In fact, probably two thirds of it is funded on an overtime basis. But the reality of it is, we have as many people working in the downtown as we have throughout the rest of the city and that's to address these ongoing street conditions that we come across.

Our street crime unit that I mentioned did 125 drug sale arrests last year. We've been doing that for years, and we seem to be receiving a never ending supply of individuals who have this need and who have this ability to sell drugs, and we're not getting them from inside the city. Some are, certainly, but a

significant portion of those are folks who came here for addiction services, attempted to get themselves straightened out and in fact did not. I think an interesting stat might be what the success rate of addiction service treatment is.

MR. MILLER: The next speaker is Mike Guarini, Director of Water and Sewer.

MR. MIKE GUARINI: I am Mike Guarini, Deputy Director of the Water and Sewer Department. I am here on the request of Mr. Guy P. Russo, our Director, who had another previous engagement tonight and unfortunately could not reschedule. I will be reading into the record though tonight a memorandum, which I will leave with you, written to the State Department of Mental Health and Addiction Services.

"The tenor of the comments offered here are to address specific issues which the Water and Sewer Department routinely deals with, and then to address the application of some thirty-six million dollars of the public money in response to work that the Water and Sewer Department believes rightfully and equitably should be performed on the CVH campus. While I

personally understand the need to improve facades, improve HVAC systems, and provide other amenities, like athletic fields, roadway, phone service, lighting and associated work, I believe that a portion of the set aside funds should rightfully be directed to infrastructure projects that not only will serve the CVH campus, for now and well into the next century, but will also inure to the environmental benefit of the citizens of the City of Middletown.

1. Adequacy of the Sanitary System

In 1979 the City of Middletown was directed by the DEP to complete a city-wide facility plan to investigate and assess the integrity of the City's sanitary sewerage system. At this juncture the CVH campus, with an aging sanitary system, has not been subject to the same equitable standard as the City of Middletown. The sanitary system of the CVH campus is of equal age, and in many instances predates the age, of many of the City's sanitary systems which have already been scheduled for upgrade or where upgrades have been completed. As a matter of environmental due diligence, with regard to the sanitary system, the Water and Sewer Department recommends that the DEP

apply this equal standard to the CVH campus and mandate that a facility plan be completed and assess the integrity of the CVH onsite sewerage collection system.

2. Combined Sewer Overflow

Approximately a year ago, this department reviewed records from the CVH sewerage disposal facility which indicated that the CVH system is subject to problems with combined sewer overflow. That is to say, stormwater which routinely enters the sanitary system. Again, applying the same standard which the City of Middletown has been held to, the Water and Sewer Department would like to see the same standard applied to CVH as the City of Middletown and require that a portion of the thirty-six million dollar public appropriation be set aside to correct problems of combined sewer overflow to enhance areas of the collection system and of the stormwater system. This will ensure that the water quality standards in the Connecticut River will be enhanced as the projects in Middletown go forward and as we would hope that CSO separation projects go forward on the CVH campus. The DEP is strongly urged to review its public policy, and past practice, and mandate CSO correction.

3. CVH Sewerage Treatment Plant (STP)

Approximately a year ago, Purcell Associates completed a report which reviewed the adequacy of the CVH STP. This report came at the direction and financing of the DEP and was performed by the Department of Public Works. The outcome of that study indicated that significant work was required at the CVH Sewerage Treatment Plant to upgrade it for the higher anticipated flows with full population on the campus. The report went on further to take a look at a regionalization of the CVH plant with the Middletown sewerage disposal system and treatment system. The report recommended that closure of the CVH Sewerage Treatment Plant should be seriously considered. At this juncture, the City of Middletown, along with the Town of Plainville, as well as the Mattabassett District, has been actively working on a major regionalization effort to combine the outfall of three facilities into one at the Mattabassett District. This effort will minimize DEP oversight in management from three facilities to one, saving taxpayer dollars, as well as directing the flow of two smaller plants to a larger, more sophisticated plant where issues of biological nutrient removal will also be addressed as a

function of expansion. The outcome of this regionalization will be a better effluent quality emanating from one facility, which will have the net affect of increasing water quality throughout the stretch of Connecticut River in the Middletown, Portland, Cromwell and Haddam areas. The inclusion of the CVH facility into this regionalization will assist by removing yet one additional effluent outflow to the Connecticut River and, I note, an outfall which, due to its CSO problems, appears to be subject to upset conditions and is likely offering improper biological loading to the Connecticut River immediately north of the John S. Roth Well Facility, which is a public water supply.

MR. MILLER: Your five minutes is up.

MR. GUARINI: The DEP is asked to seriously consider the Purcell report and its recommendations and hopefully direct a portion of, the thirty-six million dollar public money set aside for the CVH campus improvements. Let me just, I'll skip over and go to the conclusions here.

MR. MILLER: You're welcome to read the remainder later on, if you'd like.

MR. GUARINI: I can come back and read it later on?

MR. MILLER: You're welcome to do that if you'd like, yes.

MR. GUARINI: I will do that. Thank you.

MR. MILLER: The next speaker is William Warner, Director of Planning and Zoning.

MR. WILLIAM WARNER: My name is William Warner. I am the Director of Planning and Zoning. I'm speaking here on behalf of the elected Planning and Zoning Commission, which is a ten member body, one of the three elected bodies in the City of Middletown. So I would ask a little indulgence in terms of the time because I am speaking for elected officials.

On behalf of the Planning and Zoning Commission, I would like to express the Commission's concerns with regard to the consolidation of state mental health services on the Connecticut Valley Hospital campus.

Section 8-23 of the Connecticut General Statutes authorizes the local Planning and Zoning Commission to prepare, adopt and amend a Plan of Development for the City of Middletown. This plan is intended to show the Commissions's recommendations for the most desirable use of land within the municipality. The Plan of Development shall be a statement of policies, goals and standards for the physical and economic development of the municipality. The plan shall be designed to promote with the greatest efficiency and economy the coordinated development of the municipality and the general welfare and prosperity of its people. I quote these sections of the Connecticut General Statutes to explain to you the responsibilities that the State of Connecticut has bestowed upon the Planning and Zoning Commission here in Middletown. And I believe, based on the State's delegation of these planning responsibilities to municipalities, it seems incumbent upon the State to carefully study and coordinate its planning and its activities in a manner consistent with these local plans.

The Planning and Zoning Commission has fulfilled its responsibilities and has adopted a local

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Plan of Development. Based on the information available, there exists several issues and concerns regarding the Connecticut Valley Hospital consolidation which are in conflict with our local Plan of Development. These concerns are as follows:

On Traffic:

The notice indicates that there will be 387 additional employees on the campus. What will be the impact on area intersections? Will the level of service at each intersection be significantly reduced? Will this congestion have an adverse impact on air quality in and around these intersections? Will carbon monoxide and hydro-carbon levels be increased in close proximity to a hospital where it's understood that patients reside and are more seriously affected than others?

On the Natural Environment:

The campus is located on the City's aquifer recharge area. Will the proposed activities conflict with the new and very stringent State DEP Aquifer Protection Regulations? Will the proposal pose a

threat to the City's public drinking water supply?

On Economic Impacts:

Taken as a whole, the City's downtown area represents the second largest taxpayer. That's 5.2% of the total grand list in the City of Middletown. It is essential that the City maintain and grow this segment of the grand list.

There has been a severe and protracted decline in property values in the downtown over the past decade. As evidence, one only has to examine the various tax appeals, some which have resulted in as much as a 30% reduction in property values. One must question how much of this decline is attributable to the deinstitutionization of CVH patients into the downtown area. Certainly the tragedy with Jessica Short had an impact on property values.

Recently, the Commission prepared and adopted "Downtown Visions 2000 and Beyond". During plan preparation, both the direct and indirect impacts of Connecticut Valley Hospital on the downtown became quite apparent. Whether it be the stigma associated with a state hospital for the mentally ill, or the fact that patients of the hospital are discharged and end up in the downtown area, or the fact that proliferation of social service agencies has attracted a disproportionate share of people in need of support to the downtown, the impacts exist and are very real.

As part of our downtown revitalization efforts the City contracted with a nationally recognized expert in downtown revitalization for the preparation of a downtown market analysis. Two vary significant conclusions of this market study were:

1. There are too many nonprofit, human service functions in the downtown. We are strong supporters of these functions. We recognize the need and applaud the fact that Middletown is committed to helping all of its citizens. However, when these uses are so common as to create a climate where such functions contribute to a withdrawal of a broad customer base, then the retail functions suffers. Based upon our observations and interviews, it is our professional opinion -- and this is a marketing downtown planning expert -- it is our professional opinion that Middletown has allowed too many of these

functions to be located on Main Street. The shopping experience, in order to attract customers, must be easy, psychologically safe, attractive and pleasurable. If there is a climate of fear, real or perceived, then the marketplace suffers.

2. The perception of crime. We have been overwhelmingly reminded of a young girl's murder in downtown eight years ago during the annual sidewalk sale by a CVH patient. What is most surprising is how vivid the memory of this tragedy is. It is as if the people of Middletown have indelibly etched the event in their minds and connected it to downtown. In fact, whenever we asked whether there was a crime problem in downtown, this instance was mentioned. Once again, there is a need to address the problem of perception.

Clearly, in downtown revitalization, if the perception exists, then there is a problem that has to be addressed. In an attempt to address this issue, the Middletown Planning and Zoning Commission adopted a sweeping land use moratorium on medical and mental health facilities, drug and alcohol facilities, and other support facilities.

While the moratorium provides the city with some short term protections, a moratorium cannot last forever and the city recognizes its obligation to provide necessary services.

Will these negative perceptions and realities be intensified by the CVH consolidation? Will more discharged patients remain in downtown Middletown? Will there be an increase in the need for social service agencies to treat these discharged patients? These are all issues that have to be studied.

To answer these questions, one only has to refer to the attached letter dated January 24, 1996 written for the Secretary of Connecticut's Office of Policy and Management. This letter, which is in reaction to the Planning and Zoning moratorium, states clearly that the State Office of Policy and Management recognizes that there will be direct impact on the community in the form of an increase in the need for social services.

Quoting from the letter: "The subject matter of the hearing this evening before the Planning and Zonong Commission jeopardizes a plan which was adopted

by the General Assembly and which is in the best interest of the citizens of this State. The moratorium on new medical and mental health related services would, in essence, ban services designed to assist people who live in Middletown and adjacent regions." So it's clearly saying that a moratorium preventing new support services will jeopardize the State's plan.

Obviously if our moratorium jeopardizes the State's plan, the State's consolidation plan is diametrically opposed to our local plans.

And then finally on Historic Structures, the proposal calls for the demolition of 14 structures on the CVH campus. Of the 14 structures many have historic significance. The most notable demolitions are the Weeks Building, the Woodward Building, and the Smith Building.

This campus is rich in history. Its historic buildings reflect this history. The proposal calls for demolition of the three most historically significant structures, all of which are listed on the National Register of Historic Places. There are many alternatives to their demolition and they must be investigated.

As a means of concluding, it is clear that there are many environmental, economic, social and historic preservation issues which need to be studied in great detail. The Planning and Zoning Commission formally requests that a full Environmental Impact Evaluation be prepared. Thank you.

And I have another letter which I will just submit to you. It is from Cynthia Wilcox, Project Development Manager, which goes into great detail about the buildings and listing on the National Register of Historic Places.

MR. MILLER: The next speaker is Leon Vinci, Director of Health.

MR. LEON F. VINCI: Good evening. I am Leon Vinci, and I am the Director of Health for the City of Middletown, Connecticut. I welcome this special opportunity to provide the Environmental Study process with additional insight and data which can help you better visualize the local economic, social, and human service impacts that the CVH consolidation has on

the public health of our community.

As you are aware, tonight's event is particularly important because the Court not only recognized that a statewide consolidation of mental health services -- the three mental health hospital facilities into one -- has a direct impact upon the host community, but also required that a careful and detailed analysis of what the impacts are at the local level be conducted. As you indicated in your opening remarks, you will be making a careful, detailed, and factual accounting from a variety of sources including the Scoping Review Meeting, this public hearing, and, hopefully, from meetings with local service providers, from field interviews, and some statistical reports that I know the State Department of Mental Health and addiction Services, one of its predecessors, CADAC, the Connecticut Department of Public Health, and other agencies have done as well as from your own, hopefully, research with local and State government, especially municipal agencies and area legislators and so on. You don't need me really to tell you how to fulfill your charge from the Court, but after my reading of the Scoping Document, it did not appear to reflect the necessary outreach assessment and evaluation that I've

just referenced.

As Middletown's Health Officer, I sit on the CVH Infection Control Committee as well as the Dutcher Hall leftover infection control group, which happens to currently be meeting during the transition process at Merritt Hall. I also am a member of the Psychiatric Division's Community Advisory Committee. In addition, I participated in the City's North End Task Force project and served as a member of the Connecticut Legislature's Study Committee to review State properties and facilities.

Each of these groups has generated reports, statistics, and related documents which speak to community impacts. Your review and part of your homework will be to access those important reference tools as you incorporate the information into the assessment report you are preparing at the Court's direction.

Before I turn to a few specific areas where there are measurable impacts on our community, I would like to underscore the timing issue one last time. A lengthy time had elapsed from the Judge's ruling to the

recent announcement of a hearing at CVH concerning and responding to the Scoping Notice. Then, suddenly, everything had to happen quickly, with little time to attend the public hearing, etc. Although that date was modified to tonight's meeting, we're in the midst of calendar year closeouts, budget preparation for next year, and, of course, Holiday shopping along with hectic schedules. I believe there would be a greater turnout, with more community input, if this public hearing was held in early November or later January.

At this juncture I'd like to touch on some impacts to public health starting with community health issues.

Speaking from the community perspective first, I would like to underscore that support systems for psychiatric patients which have been discharged from CVH to halfway houses and/or community settings actual work for the most part. However, I cannot say that the same is true for the Addiction Services Division. A working support structure in the community has not been developed. Strengthened services with more coordination are needed as an immediate priority by the Connecticut Department of Mental Health and Addiction

Services.

This becomes more difficult with the dual diagnosis patient with that patient having both psychiatric and substance abuse problems. I've mentioned the system briefly for psychiatric discharges, yet, when an individual is discharged on the Addiction Services side, it results in little or no support with the individual in the community. This often leaves the patient vulnerable to violence and/or relapse. I am not saying that one side, the psychiatric side, doesn't know what the Addiction Services side is doing, but the procedures and programs are inconsistent and there certainly is room for improved coordination for these cases.

Our local department tracks communicable diseases through surveillance studies. We continue to see increases in TB, AIDS, and STDs in our community. As we track these cases, we find that one area of increase is directly attributed to patients who have either been directly discharged from CVH or come through the half-way house program. Moreover, many of these individuals are out-of-town residents who have chosen to remain because of familiarity with local

services resulting from their stay in a community based setting. This phenomenon is attributed not only to the half-way house program, but also to certain local programs which provide treatment services. Again, the majority of clients served by these programs originate in the CVH system.

MR. MILLER: Your five minutes is up.

MR. VINCI: Clearly, there is a community burden caused by the presence of CVH. And I do have some more remarks that I'll wait for.

MR. MILLER: The next speaker is Annette Ward, Director of General Assistance.

MS. ANNETTE WARD: My name is Annette Ward, Director of City Welfare for the City of Middletown. Some of the impacts that I see happening as a result of the CVH consolidation is the discharging into the Shepard Home, to the Y.M.C.A., Eddy Home, Liberty Commons and the Gilead Homes in general. Those numbers cannot be accounted for because a lot of times those clients do not access the general assistence, but they do access the many services that we have in the town.

One of the reasons, I think, that people stay here once they are discharged from CVH is due to the many services that we have available. The service being available also accommodates their transportation. If they were to go back to their surrounding towns, they would not be able to come back to their night programs or some of their day programs. And I've sat in on meetings where I've heard some of the counselors say to the clients you're better off staying in Middletown. You can access the service. Transportation is more available in the town. You would be able to keep up with your programs.

A lot of times they are discharged from CVH and they are discharged into the Eddy Home, and as a result, when they come to us we're not actually seeing all of those numbers because the client would give us their residence as being Middletown, when in fact they've been discharged from the CVH into the Eddy Home because I think CVH has an agreement with the Shepard Home that they would not take clients out of the hospital into the Shepard Home. So some of them are being discharged into the Eddy Home, they're giving their residence as being Middletown, then they're getting into the Shepard Home. So in order for them to

have funds they have to come to us, but their address might have been Middletown when they're actually not Middletown residents. They've been discharged from CVH, but into the Eddy Home for one night maybe to get in and access Shepard Home. Liberty Commons is another place that they've accessed.

Also there's staffing time due to the town of origin. The town of origin is that they may be discharging to another facility for an ongoing or continued program, however, they have to have some funding to pay for that program. So in lieu of the client going back to their town to have this paperwork done, Middletown has to do all of the paperwork, fax the paperwork to the town where they will be taken care of. So there is taxing on the staff's timing.

In terms of affordable housing, a lot of them will stay in town because if they come from down towards the shore there's not affordable housing, so they stay in Middletown due to affordable housing. The expenditure increases in the sense that if a person is discharged and they have a set back and they have to go into another program, then the town has to pay eighty percent of that cost.

Some of these facts that I've given to you I've given to you based on information from a client. The client sometimes tells the case workers that some of their counselors are telling them that you have to say that you're from Middletown, when in fact they are not from Middletown. Some of it has been from personal conversations that I've, you know, gotten to know different people in the community after they've been in here in town for awhile and they're telling me that well, I came from Waterbury, but, you know, I came on assistance, and I was told not to say that I wasn't from Middletown because this will have an impact. It will be a town of origin. And even if it's a town of origin, the only thing the town of origin means is that the town will take care of them for sixty days. Once the town has provided finances for them for sixty days, then Middletown has to take over the expenses thereafter. So the consolidation does have a great social impact on the town of Middletown.

MR. MILLER: Thank you. The next speaker is Jeffrey Pierce, Planning and Zoning Commissioner.

MR. JEFFREY PIERCE: Good evening. My name is Jeff Pierce. I am a member of the Planning and

Zoning Commission. I'm here on my own tonight and not representing the Commission.

I'd like to reaffirm everything that I've heard here so far. I have first hand knowledge of a great deal of the substance of the discussion. Mr. Warner mentioned something that I think that you need to take a hard look at. It probably requires you to do some investigating. And I think what it has to do with is not what we know, but what we don't know, and it speaks to the degree to which the State has not been forthcoming with the true intent and the substance of what this consolidation is all about. The record is rather replete with facts that speak to the State's encouraging of expansion and development of existing and new mental health services of addiction services in the way of so-called, and I use that advisedly, so-called nonprofit organizations. And I'll give you a fact.

We have a nonprofit here in the City of Middletown. It's called River Valley Services. River Valley Services is nothing more than Connecticut Valley Hospital. It has past CVH employees running it, and it's one hundred percent funded by the Department of

Mental Health Services. So, you know, you can call it a nonprofit and you can call it private. It seems a little ridiculous, doesn't it. A hundred percent of the funding from the same source that's writing the checks for CVH with really the same people. And they tried to move this facility out into the community once already. I think if the State, if its only intentions were to have one or two or three more of these so-called nonprofits, they'd probably would have put that on a record. I'm a little suspect. I think I've heard that earlier from a representative. I think maybe their intentions are more along the lines of twenty-five or more of these, and I would tell you that the citizens of this community feel that way. They see these popping up, you know, on every street corner. And I'll tell you, the people who are here now running these organizations are chomping at the bit to expand. I think you have to look not at what has been reported to be the facts, but look at what the intent is of the State. And I think that with a little research you can discover this. It's not complicated. It's right there in front of you.

And I think it's been stated, you know, this hearing probably should have been held two or three

years ago. We were never given any consideration in this process. A judge declared that there be an injunction to halt the process for awhile, and then someone decided that while he was indisposed, he was in a rest home or something, they'd run out and find themselves a judge that's a little bit more inclined to see things their way and lift the injunction. Except Judge Satter now, the Honorable Judge Satter, he wouldn't have any part of that though, would he. I think that there is a little slight of hand going on here, and I think that with a little effort that you can discover that. Thank you.

MR. MILLER: Are there any other public officials who would like to speak? I don't have any others that have signed up. Any other's that would like to speak before we go to the general public? Okay. At this point in time then, Bill Corvo.

MR. BILL CORVO: Thank you. My name is William Corvo. I reside at 776 Ridge Road, Middletown, Connecticut. I come before you this evening as a former councilman from 1991 to 1993 where I chaired a special State Properties and Facilities Task Force reviewing all of the state properties and all of the

non-profit agencies working in the City of Middletown, and also as the former Chairman of the North End Task Force, which did a one year evaluation of problems in our north end.

First, let me begin by saying that I don't like this format. I understand you have to have time constraints, but five minutes for the Health Director and other Directors to convey what I believe are extremely serious concepts to you, and then having them come back up so that it is disjointed, could have been resolved if you had had contact with the Mayor's office and worked out something a little better. And that's really part of the problem. It's symptomatic of the relationship between the State of Connecticut and the City of Middletown. I think that you have to do better, and we have to work harder to inform you of what the realities are.

Now, as former chairman of both of those committees that I told you about, there are copious documents. The North End Task Force was over eleven hundred pages of testimony in transcript form, which is available to you at the public library and also at the Economic Development office. The State Properties and

Facilities Task Force report, which shows the State of Connecticut owns more property in Middletown than the City of Middletown does, is available through the Health Director. The consensus of opinion of both of those groups was that there is a noticeable impact of Connecticut Valley Hospital on Middletown.

The timing on the North End Task Force report was such that the situation had hit what we thought was bottom. We don't know if we hit bottom yet because of this tremendous expansion of drug and alcohol assistance programs that you're going to have up there. There were cocaine houses on Rapallo Avenue. There was heroine trafficking on Ferry Street. There was public urination and defecation and panhandling to beat the band. What once was the Arrowani Hotel had 87 apartment units. One room apartment units. It was a disastrous situation, but the City of Middletown pulled up its socks bipartisanly and did something about it. I'm here to let you know that we have a situation where the horse is already out of the barn. Let's not play games. Go ahead and spend the thirty-six million dollars on the bricks and mortar. Quite frankly, I think that the State Department of Mental Health has conducted itself in a very trashy manner in the

maintenance of its facilities on the hill, and it's about time that they did something about those facilities up there. But don't think that at the end of thirty-six million dollars that you're done. You're just starting. Because we spend that on a couple of school buildings in our community, and we don't think that's a lot of money. So we think that that's just a drop in the bucket.

I know that you're not going to give us a third of what Fairfield Hills and the other, Norwich Hospital, are going to get when the Governor is going to sell them off to private investors. We don't want that money. We want more than that money. If we're going to be the center for mental health activities for the State of Connecticut, then the message you have to give everybody, the Governor the Legislature, the Department of Mental Health and all of the others, is that let's open the wallet and keep it open to resolve the problems that we're going to create for the poor people in Middletown, Connecticut.

Personally, I doubt very strongly that much will come of your report. I don't say that to be malicious towards either of you gentlemen from the

consulting or the representative of the State of Connecticut. I say it based on real life experience in dealing with the Department of Mental Health where they have basically held up their sleeve all of their plans and let us know about it after the fact. If you want to improve relations, I would suggest that the Mayor of Middletown get all of her department heads together and write a comprehensive report and hand it to you as a book, so that you don't have to work too hard, expressing our point of view in unambiguous terms and then you take that and give us the mitigating measures which we are going to need to confront the sociological and economic problems that you're foisting upon us. Thank you very much.

MR. MILLER: The next speaker is Raymond Wing.

MR. RAYMOND WING: Good evening. My name is Raymond Wing. I live at 11 Laurel Street in Middletown. I live a block and a half away from the CVH campus. I am married and have a three year old daughter. I have also been honored by the Commissioner of the Department of Mental Health and Addiction Services, Dr. Albert Solnit, to be appointed by him as

a member of the legislatively mandated CVH Advisory Council. My wife and I both receive services from DMHAS. I do not work for DMHAS and never have, but I am an advocate for people with a mental illness.

I have several comments I wanted to bring before this body today about the scoping. Now, we all know about the two parties that are involved here, the City of Middletown and the Department of Mental Health and Addiction Services. However, there is a third party that is also involved that I feel is the most impacted and yet unable to be heard, and that's the patients at the hospital. Regardless of what impact is going to happen to the city, the impact is already being felt on them. They are in situations that I would not want to live in right now, and the department is doing its best efforts. You know, I could go on forever on that, but it's probably best not to.

Also, I have talked with other people in the community that do have a mental illness and they are too intimidated to be here to talk because the biggest reason is the attitude of the city. Whether or not it's real, they feel that way. And because they feel that way, it is real. Just like it was said earlier

about the city talking about it. The fear that the people with the mental illness have towards people in the city is very real. And the moratorium that's being issued directly impacts upon all the people receiving mental health services. I don't want to get into any detail of that either, but it's obvious that the moratorium is directly linked with this injunction.

Now, I was personally insulted by the speaker that talked about the people up at CVH and called them criminals. I understand there is a forensic population there. Yes. But to be called a criminal for being ill really bothers me, and I wish that people would refrain from that language.

And in terms of consolidating the hospital, right now CVH, after all this consolidation, has a population less than what it was five years ago. And the main reason for consolidating the hospital was to save the State millions of dollars from operating these huge campuses. There is three huge campuses encountering basically hundreds of millions of dollars, and due to this consolidation the State's been able to save major money. In fact, up until I think three years ago the State was spending, the Department of Mental Health

was spending over fifty percent of its budget inpatient, which was treating less than one half of one percent of its population.

Also, I want it just be known that the concerns that the Mayor expressed here, that list that she had, it has been presented to the CVH Advisory Council and the council members are looking at that and working on ways to address it. And one of the committees, there is a discharge planning committee that is looking exactly on the discharges being placed throughout the state and in Middletown, and even the Mayor's representatives on that body have concluded that on the mental health side at least, it's working as well as it really can be, and on the addiction services, while there is more work to be done, they do feel that the Department of Mental Health and Addiction Services is working in good faith and working on those.

The next issue I want to bring up quickly is the demolition of buildings. Many of the older buildings at CVH are unsafe and some of them have even started falling down. Yes, these are Nationally Historic buildings, but many of them have been condemned and vacated for decades. And even if we did

repair them and put them back up to codes, what would be the use in them? I mean, I could see the City coming back if we did do that and say why did you upgrade the buildings?

And I just wanted to correct a statement that was made earlier by one of the Planning and Zoning Commissioners. River Valley Services is not a nonprofit agency. Is is a state agency working under the Department of Mental Health and addiction Services. It has never represented itself as a nonprofit agency, and I do feel somewhat sad that a city official would be either disinformed or speaking out inconsistent with the facts. That really bothers me that a Planning and Zoning Commission member does have the wrong information and using that in such a way. That's all I have to say. Thank you very much.

MR. MILLER: The next speaker is Krishna Winston.

MS. KRISHNA WINSTON: Good evening. My name is Krishna Winston. I live in Middletown, and I teach at Wesleyan University. Wesleyan University is a major employer in Middletown and an institution of

great distinction with a fine faculty, and it attracts a very good student body.

Wesleyan is also located in Middletown, and Middletown is, unfortunately, not doing very well. Middletown is not thriving. I think a large part of the problem in Middletown has to due with the fact that the downtown area is economically struggling and that people don't really enjoy coming downtown to shop, to use restaurants and simply walk around and enjoy the view of the river.

Unfortunately, nowadays we're not doing a very good job with treating the mentally ill and treating people with addiction problems. I'm very appreciative of what the last speaker said, and I have absolutely no desire to see patients with mental problems banned from Middletown. I was very unhappy about the moratorium on the opening of institutions to help the mentally ill and people with addiction problems because I felt that it was reactive and that it was based on misperceptions about these people. These people need help in our society, but we're not doing a very good job with helping them. Unfortunately the deinstitutionalization policies are resulting in our taking patients who have

not delt successfully with their problems and putting them out on the streets. There may be halfway houses. There may be residences for them, but very many of them end up in distress. Many of them end up needing the kind of assistance that the police chief referred to because they get in trouble. They get in trouble with alcohol. They get in trouble with drugs. They simply get in trouble in their dealings with other people in their surroundings. And it's this perception of Middletown as having an excessive number of people in trouble, unhappy and in distress that makes the downtown not attractive to Wesleyan students, Wesleyan faculty, and people from our surrounding areas who might otherwise be interested in coming to Middletown.

It could become, as the consultant has recently told us, a magnet for towns as far as the shore. Middletown is trying to pull up its straps, make uses of its wonderful location, it's ethnically rich population and its great resource in Wesleyan University to become the kind of town that it should be, and I'm afraid that this consolidation at CVH is going to put us back in the wrong direction.

Now you may say that this is much fuss about

nothing. The hospital used to be much bigger in population than it is now. In fact, in its heyday it had three or four thousand patients and that's true. But that was in a time when mental patients were kept there. Not when they were kept for a few weeks or even a few days and then sent packing. And we did not in those days have the kinds of addiction problems that we have nowadays and the attendant crime. So the population at CVH was much more stable and didn't represent the problem for Middletown that it does today.

I really hope that you will be able to reconsider this unfortunate decision to consolidate the forensic, mental health and addiction services at CVH and think about the Town of Middletown and think about the impact on all the other institutions in Middletown. Thank you very much.

MR. MILLER: The next speaker is Frank LoSacco.

MR. FRANK LoSACCO: Picking up what I spoke about before, you two gentlemen are from Frederic Harris, Inc. in Stamford. I asked you earlier, and you

both said you're professional engineers, civil engineers. It's just bizarre when the judge makes an order that a hearing such as this has to take place, and it's an outgrowth of Judge Satter's order, and then the State hires Frederic Harris, who has been around for thirty or more than thirty years, and they send two engineers to hear complaints about the social impact of dumping forensic patients who I called criminals before. Yes.

You know I resent, I resent in fact the opposite, a fellow like Peterson being called a client. A client! People who commit crimes and then come here and then get dumped out on our streets. That wouldn't happen where you fellows come up from, right? You come up from Stamford.

I had an office at 159 Main Street thirty years ago right opposite your building, Frederic Harris. A gray building. Maybe you moved to Ludlow Street. Remember Curly's Diner there? There was a little triangular piece of grass there where some Viet Nam veterans, I remember, came back from the war and were sitting there and the police jostled them because get them out of there. You can't stay there. This is

Stamford. We people are important. We Darien and Greenwich people are important. Let's not have this kind of dumping. This kind of hospital where us important people live, such as where Frederic Harris comes from down in Stamford. No. Let's put it up there where those Middletonians live. Let's dump everything, all three million population of the State of Connecticut, all of their woes, all of their forensic people, all of their addiction, put them in Middletown.

Now, one of you fellows, Dennis Miller over here, you're watching the clock and the other fellow is taking notes. At least we have Lynn Pierce over here who's doing the notes, and she's going to transcribe that and it's going to be a thick document, but nobody is going to read it. Nobody is going to listen. You're only going through the motion. This is a facade. This is a slap in the face to everybody who is here.

I was particularly slapped in the face by the very first speaker, Susan Bysiewicz, who didn't even get up and vote against this consolidation and then she comes here and speaks about it. Never even voted

against this and then she says she represents the City of Middletown. Listen, to put all of these forensic problems and all of these, yes, quasi criminals -- not all of them. Not the mental patients. Not those people who are addicted. Certainly they have mental problems. They have abuse problems. Yes. And they have to be taken care of. But not all in one institutionally dumped city right here in Middletown. Take your share Stamford, Darien, Greenwich, Fairfield. Take your share. Take that back.

MR. MILLER: Sidney Libby.

MR. SIDNEY LIBBY: I was incarcerated in CVH for 23 days in August of last year because I'm an outspoken government critic. And I'm not the first outspoken government critic to be sent to a mental institution. Our mental institutions are full of outspoken government critics. And in fact, there may be even more outspoken government critics in mental institutions than there are sick people. So I know of what I speak when I say these things.

Many years ago a conscious decision was made to do away with the conventional methods of psycho-

therapy. We were supposed to go on to what has been euphemistically called deinstitutionalization. No more therapy is to be administered in these mental hospitals. If you go into a mental hospital these days you immediately go to drugs. Drugs like Haldol and Lithium and Perphenazine, and especially Haldol which in effect lobotomizes you. It is just like a surgeon was to cut open your skull and remove part of your brain. That's what Haldol does to people. So people are no longer cured with psychotherapy, which they ordained is too expensive and too time consuming, so they lobotomize you now with Haldol.

Haldol works most of the time, but there are times when it doesn't work. Peterson was on Haldol when he killed Jessica Short. I observed patients up there who had been on ever increasing amounts of Haldol for over ten years and they told me that they were speaking to God, and God would still tell them to kill certain people. So Haldol patients are a walking time bomb. And then, when they are released onto the streets of Middletown and they don't always receive the Haldol because they're not quite right, they're dysfunctional. And they don't receive many times their dose of Haldol and they're walking time bombs. Walking

time bombs these people who are dysfunctional, who have been lobotomized and will never be able to be creative again for the rest of their lives and they're dumped on the streets of Middletown.

Now let's go into the conditions up at CVH in which I was a first hand observer. First of all, it's the law that for every twenty-three hours of incarceration you're to have one hour on the outside. It was deemed that it's extremely unhealthy to keep people cooped up twenty-four hours a day. And a law was passed -- it's a law -- that an incarcerated person must have at least one hour outside for every twenty-three hours

MR. MILLER: One minute.

MR. LIBBY: I think you're playing games with that clock of yours. I haven't spoken for no four minutes.

MR. MILLER: You're welcome to speak some more at the end.

MR. LIBBY: Yeah, I know. When you get up here it's all disjointed and you're not cohesive anymore.

You guys have done a done deal. You've already made this consolidation final. There is nothing that we can do about it, so you get us up here to criticize and to talk about it and it's a done deal. It's a fait a compli. You people are going to destroy the entire character of Middletown. The inmates are going to run Middletown while millions of dollars are being poured into Middletown to make the downtown more productive. It's no use. It's the inmates from CVH, the lobotomized, brain dead, dysfunctional, dangerous time bombs who will be ruling Middletown.

MR. MILLER: James Russo.

MR. JAMES RUSSO: My name is V. James Russo, and I live in the city. I have a prepared statement which I'll leave for you.

I have a lot of the same feelings that have already been expressed, and I don't think you need to hear them again. However, there is a couple of important points that have not been expressed at this

point.

The consolidation. According to the figures in your presentation, there is going to be an increase in personnel, if it's not already there, in the CVH. Obviously a percentage, if not all of those numbers, these people are going to be professionals, or let's hope there is a fair percentage of professionals in those numbers. This could very drastically affect the education cost sharing grants that we receive from the State because those grants are based in part on the number of professional residents in the city. Now, if we are moved into a higher ECS, (Educational Cost Sharing) group, our grants from the State of Connecticut are going to be reduced drastically.

We are right now in the 3 Group, I believe, which is just about in the middle, and if we get into the next higher group we're going to lose a lot of money from the State for education. We will have to educate the children of the city, and the only way that's going to happen is that the tax payers are going to have to make up the difference. The Education Cost Sharing based on the professional people in this town, when you start looking at the halfway houses and all of

the social services that are here now and are sure to come later, could have a disastrous affect on the citizens of Middletown, especially the citizens on fixed incomes. It is not unconscionable to think or happen that these citizens will be contributing thirty percent of their social security benefits to taxes. And if you take the national average of $750.00 for people on social security, and you take the average in this town of people with property assessed at about $100,000.00, they're paying about $2,000.00 in taxes. In a state that already has a tax burden forty percent higher than the national average, now you want to put that burden on the citizens of Middletown.

When I moved back to Middletown about three years ago, I bought a home in what was considered to be a very desirable neighborhood. There were no halfway houses anywhere near me. Right now there are two less than a half a mile from my front door. And I found out tonight that there's a third one just behind me. This has had a serious affect on the property value of my home as well as the entire neighborhood. One of those halfway houses is within a football field length of a primary grade school.

Now Middletown has been more than sensitive to the needs of the people with mental health problems as well as addiction problems for over a hundred years. Well over a hundred years. To say that we don't care is unconscionable. We do care, but we also care about our people.

I hesitate to mention the young child that was brutally murdered on the Main Street of our city a few years ago by an inmate, or a patient I should say, that was certified as not to be dangerous to himself or to others. If you came into town tonight you saw the Main Street one week before Christmas, and I purposely drove down the whole length of that street to count the people out there. There were ten. Six of which were drunks. Well, I say drunks. They appeared to be drunk. Is this reasonable? Do you feel that this is something that is normal for a city like Middletown a week before Christmas to have their Main Street totally deserted?

One last thing that I want to mention is that the State now wants to take all of the citizens in Connecticut requiring Department of Mental Health services and put them in Middletown. Chief Aylward has given you some statistics on what goes on in Middletown. If we're going to put all of those people in Middletown, these statistics have to rise. If it's one percent or three percent for the state, all of that one or three percent is going to be here in Middletown and the incidence of violence has to increase. Thank you.

MR. MILLER: Next is Domenique Thornton.

MS. DOMENIQUE THORNTON: Good evening. My name is Domenique Thornton. I'm a resident of Middletown, and today I sit as a member of the Common Council. But I was a parent first, and I raised three daughters in this town, and I always took my children to the sidewalk sale. In fact, I was present at the sidewalk sale that July day, when Jessica Short was brutally murdered, with my three daughters who were not much older than she was at that time. And I came down here this evening to convey to you my personal feelings of shock and horror of what happened that day. And I also wanted to tell you that even though many years have passed since that time, those feelings have not diminished, because to this day CVH patients do roam the streets of Middletown, and my own daughters, who are now more grown, have witnessed and told me that

they have seen patients being administered medications in public places and on the streets of Middletown, because we know this is the custom now. And they know that the reason that Mr. Peterson did what he did was because he was unhappy with his medication, and they wonder, if not today, is this particular patient not getting the proper medication that is required for their benefit? And could the same thing happen again? And I wish to tell you that just as you cannot give back the life of that young child to her parents, you cannot give back the peace, enjoyment, the security to the people of the City of Middletown that they once had in their own Main Street to walk, to shop, to live freely without looking over their shoulders. And I say to you that just as the State of Connecticut had to give back compensation to the parents, although they could not give back the child, I say that you should compensate the City of Middletown for what it has lost and cannot be returned because to put all of the psych patients, all of the sexual abusers, all of the substance abusers, all from every town in the State of Connecticut, to put that burden on one town in the State of Connecticut is an unfair burden. Without compensation it's outragious and it continues to this day.

And another thing is about the patients themselves. Substance abuse, in particular alcohol and substance abuse is something that permeates every section of society, every community. It knows no boundaries. And patients need care throughout the State of Connecticut, not just in one location. It's unfair to the patients. It's unfair to the City of Middletown. I thank you.

MR. MILLER: The final speaker before we take a break will be Bob Santangelo. Is Mr. Santangelo here? I can come back to him later. We'll take one from the next list. Jane McMillan.

MS. JANE McMILLAN: Good evening. I am a Middletown resident and I have an office on Main Street.

In response to Judge Satter's order the required study should, in my opinion, consider the following matters:

1. The effect of the increased discharges of substance abuse patients into the Middletown area.

A recent article in the Middletown Press quoted Mr. Mullaney as saying that "between February and August only fourteen who are not from Middletown remained in the community and used local services." The number, assuming for purposes of argument that it is correct, is deceptively small because it tracks only those who used "local services". We need to know where all the discharged substance abusers are from and where they end up. Moreover, when the number of fourteen, during a short period when CVH was admittedly making an extra effort to return patients to their communities, is multiplied over a three year period, the increase is substantial and potentially disastrous to the fragile economic environment in Middletown at this time.

Coincidentally, since my office is on Main Street and my window overlooks the parking lot between the city hall and Main Street, during the past six months I have observed an increasing number of individuals walking across the parking lot towards the harbor area with liquor bottles in paper bags.

2. In order to accept the anticipated increase in discharged patients many social service agencies may seek to expand their capacity. Any environmental impact study should study the effect that the expansion of social service providers will have on the community in the long run.

I personally have already been approached for funds by one agency in connection with their proposed expansion.

3. A study should be made of the number of beds in Middletown as compared with other Connecticut towns.

Many of the prior studies have compared the number of beds at CVH with the number of beds in the past. However, at this time when most treatment is community based rather than institutional, such comparisons are meaningless.

4. A study should be made of the ghettoizing effect of concentrating all the substance abuse programs in one location and its effect on the patients as well as the city. I believe that the State could come up with a much more humane solution, and it's incumbent upon the State to do so, and that no amount of compensation can make up for what is in effect an

inadequate plan. Thank you.

MR. LUCAS: At this point We will take a break for ten minutes. I have, I believe, four or five additional names of people who have not yet spoken.

(Whereupon a recess was taken.)

MR. LUCAS: Ladies and Gentlemen, we'd like to get started. As soon as we get settled, before we get started I have one announcement and then we'll get right back into our scheduled speakers.

By agreement with the City we have extended the previously published due date for all comments to January 10th. You might have seen in the original notice a different date. We have agreed with the City that they needed to the 10th to get the comments in, and we will accept comments from the public through that time. So I'd like to thank you.

I'd also like to take this opportunity to thank the City for providing us with this setup and arrangement here. I think it has made this process go a lot better and has allowed us to take a look at some

of the people's concerns so that we can go forward. But I do appreciate all the effort that went into this.

With that I think we should start with our next speaker. We have about ten to go, but please feel free to sign back up if you'd like to continue with your discussion for the record. Dennis, do you have another speaker?

MR. MILLER: Yes. Has Mr. Santangelo returned? Okay. We'll go on to Jan Levine.

MS. JAN LEVINE: My name is Jan Levine, and I am a resident of Middletown. I was appointed by the Mayor to the Catchman Area Council for Mental Health as a representative from Middletown, and I would like to say that I have tried to get involved and learn to be objective and try to get all sides of the story. And I would like to talk about safety issues, and they are not perceived. They are actually my own.

The first meeting that I went to at CVH for this Catchman Area Council I was not sure where I was going, but I got there and it was dark. I have to tell you that I was frightened to go from the parking lot

where I put my car to the front door of Shew Hall because there was no lighting. When I got inside someone directed me and another woman, who didn't know where she was going either, to take the elevator and go to the second floor. Well, the elevator didn't go to the second floor that he had told us to take, and we wound up in a stairwell, and we had no idea where we were. There was no one to ask for directions. There was no one who saw us. And frankly, we were afraid that there could have been someone behind the staircase that shouldn't have been there either. This isn't a perception. This really happened.

I also happen to be a counselor, and I'm the executive director of the Coping Center, which is on Washington Street. We are a very small non profit agency. I call us the no profit agency, but that's besides the point. There are many patients that I have, and one of the reasons I relocated from out on Saybrook Road to Washington Street was so that I could avail myself to my patients more easily. There are some who will not walk to Washington Street. There is one young man who is 18 years old who comes to see me. He is a very nice young black man who is afraid to come to my office after 2:00 o'clock in the afternoon. If

he does so, I drive him home. He lives on Liberty Street. I think that says a great deal. He is at least six feet tall. He certainly isn't afraid of too much, but he is afraid to be on Main Street after school gets out or whatever he perceives to be the time when he feels not safe. I do bring him home. I have tried to get him into a program where he can leave Middletown and learn how to be on his own. That's pretty sad.

I'd also like to say that I have a patient who works at CVH and this continues my real concern for safety issues. I don't think that patients -- I know the patients. Some of them do not feel safe at CVH, and I know that when the restructuring occurred people with more seniority were plugged into positions that were vacant or vacated by people with less seniority, and in reality what happened was I have a patient who worked in geriatrics. She was now thrown on a forensic floor with forensic patients she knew nothing about. It was frightening to her. She was going through some other problems of her own and going to work wasn't exactly what she needed at that time. She related to me one particular day when she went to work and someone was missing from the unit who was a forensic patient.

She told me that when she got there, and she worked second shift, on the day shift there was no regular employee on that floor that day who knew the routine. When she asked where the clipboard was for patient sign in, you know, so she could check off patients, nobody knew where it was. That, to me, is very unsafe not only for me as a resident, but for the patients and for the employees. And I think that there are a lot of things that I see that just don't seem to have been very well thought out. And the patient staff that are working in substance abuse, who are really very good at what they do, they really don't belong working in geriatrics. Thank you.

MR. MILLER: Sheila Dorgelch.

MS. SHEILA DORGELCH: My name is Sheila Dorgelch, and I'm from Eastern Drive, Institution Town. My concerns aren't only with what you want to do to the city now, but how come nobody is taking care of the problems that already exist? Some of the problems that do exist are, because I live right across the street from CVH we can't tell a mental patient from any other patient on the street. We don't know what halfway houses they're from, and nobody seems to tell us when

we tell them that groups are walking down the street. And I have problems with them coming in my yard picking flowers. I can't even go up there to take film of the river if I'm on their property. I get kicked off. But they can come on my property. Right?

I said I have children, too, that I'm concerned with. I was also attacked, and I have permanent nerve damage thanks to your patients up on the hill, and I don't appreciated having any more dumped in my lap. Right now nobody wants to take care of my medical expenses due to this, and I am very concerned for my safety, my children and everybody else in this town.

I said I lived also next to a halfway house next door to me, Connection Inc., and their clients seem to like to urinate in my yard during broad daylight. I don't appreciate this property damage to myself or the citizens of Middletown, and I'd appreciate it if you can go back to them and tell them to stop dumping. Thank you.

MR. MILLER: Earl Roberts.

MR. EARL ROBERTS: Greetings. Earl

Roberts, Bow Lane, Middletown, which is a street quite close in proximity to the campus.

Right up front I've got to tell you I hope that we really truly go somewhere with this hearing and these minutes and so forth, because it's been many, many years and we've really beat this horse to death. I mean, if we had to mobilize a crisis in the mental health area, we would fail. We've been at this for so long. I just want to give that right up front. And try and be objective and positive about what you're trying to achieve.

In the infrastructure issues, I was just taking some notes because I really didn't have a grip on the format and the agenda tonight, but since I live in close proximity, there's some concerns about water-shed protection. The State put in a two and a half million dollar treatment plant. There has been constant issues in the local stream of which the State discharges materials from that treatment plant that I've complained with the local health departments. It's a public record. The State has been brought in on it and the problem still exist. The brook, the local brook which is there which is public watershed of which

you regulate through your DEP, has not been satisfied to my way of thinking. I know the brook well. There's no longer little creatures in it. It's been bleached. And these things, as you're going to have need for more potable water, my common sense would tell me that what's existing now will just escalate. It's just a matter of numbers.

On Silvermine Road on campus you've had a dump that was a legitimate dump in years when dumps were legitimate just to dump. I read in your report for the thirty-six million you're going to take apart the old incinerator there, but my complaint to you is that that is in the Middletown Aquifer Recharge Area, of which you people have regulated the City of Middletown not to even do a recycling of leaves in that area, that we're paying a hundred thousand dollars to someone else to do, and here you are, even up to today, discharging materials in that dump. I, as a citizen, am appalled, and you should have no wonder why the public has such a cynical attitude against bureaucracy because when you can't even regulate your own selves, how can you ask for regulations for us to follow that you don't follow yourselves? And I'm sure there are probably innocent reasons and so forth, but common sense is it's

happening.

The issue of trafficking in this proposal, I find it somewhat curious that you talked about, I think, topping off at thirteen hundred employees. I heard that figure. And I recall in other numbers, and correct me if I'm wrong, the number of patients will be in the nine hundred area, and then you're going to have visitation issues. And I think the traffic studies that were asked for are imperative. I live there and I'm witnessing them already. I'm not going to waste a lot of time. They're there. Take my word for it, the problems are there. And these are simple things. I mean, this is the 21st century, as Bill Clinton our President tells us, and we can't even seem to get stop signs and so forth in place and get trafficking in proper order, and I know I employ a lot of people on that campus with the trafficking division.

The condition of your power house for this campus is totally out of date. And in the middle eighties, when you were trying to cooperate with the CCRA or CRRA to put a trash incinerator on the campus, public testimony with the siting council on behalf of the State of Connecticut was that the disrepair of that

boiler and furnace was a health issues. Well, to my knowledge, they haven't changed. We have a period every day when they fire up heat of about fifteen minutes to thirty minutes of black soot that just emanates from there like you wouldn't believe. It'd be like the 1920's smoke stacks. It's hard to believe that I have to follow regulations when you, the State -- You got to see this stuff. I mean it's right there. It's visible. All this soot is dumping down on the housing nearby. There's a housing project in close proximity. I'm southeast of it and prevailing winds blow it in my direction for the last forty years. I think that ought to be addressed and the infrastructure issue.

Lastly, the social issues. I think when the State of Connecticut tries seriously with the Governor through its Economic Development Commission and recognizes the hardships that this state is really in and why business doesn't want to be generated here for costs, appearances, problems such as this -- We have an obligation to mental health and I totally support it, but we are doing a lousy job of it. I have said at public hearings before that you people out to triage your own selves through recognizing other state mental

health facilities, how they deal with institutionalization and/or deinstitutionalization and maybe come back to more institutionalization. Bite the big bullet. Break your own bureaucracy. Put in perspective what you're there to do, and that is to treat mental health even if it includes institutionalization.

Years ago, when my parents worked at that facility when it was peaking at thirty-seven hundred, I recall eleven hundred employees. You're telling me now with nine hundred you're going to have thirteen hundred employees. And the problems, from what I'm hearing here, is it's getting worse. So you have a problem internally. It's either unions, or the American Civil Liberties Union, or policy, or all of the above, and someone better shake that tree and get back to common sense so this thing can move on, my community can become healthy, and business can get here and have a rising tide which will float all our vessels, and do mental health more justice. Thank you.

MR. MILLER: Louis Mazzotta.

MR. LOUIS MAZZOTTA: Thank you. My name is Louis Mazzotta. I reside at 7 Red Orange Road in the city. In response to the gentleman who spoke earlier about using the word criminal and mental illness in the same sentence, it's really inconsequential. If someone commits a crime, whether mentally ill or not is not the point. The point is if you break the law you could be a criminal. Sugar coating of words is not going to change problems, and the fact is the field of mental illness itself is loaded with old icons which should be destroyed.

The first one is what you call yourself. You call yourself the Department of Mental Health and Addiction Services. That used to be two departments. It's been combined into one for one reason only, so that Governor Roland could get a federal grant by having the number of beds located all under one roof. That's fine and dandy. Now what's going to happen when the Republicans in Congress, you know, keep going the way they're going and the funds dry up? Let's get one thing straight. I may talk like I'm not a mental health advocate, but I am. And the biggest problem we have is the Department of Mental Health in this state. All right? Don't call yourself the Department of Mental Health. Call yourself the Department of Mental Illness Treatment because that's what it is. You can't

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even form the words in your mouth. You can't even say what you're mission is, and it's alcohol and drug abuse addiction. Don't sugar coat the words. Do your job and call it the Department of Mental not Health, but Illness Treatment.

Now, I'd like Mr. Lucas, if he could, to just give us one minute of my time telling us what your qualifications are as the social advocate here for mental health. Your educations and, you know, experience just briefly.

MR. LUCAS: We will not respond to that. We are here to listen to you.

MR. MAZZOTTA: Why? Why? No. Why aren't you going to respond? I want confidence in you that you are qualified as my representative. Couldn't you do that? I mean, it's a simple request.

MR. MILLER: This is not the correct forum for that type of questioning.

MR. MAZZOTTA: Right. Right. Okay. So, then, let me ask you then, Mr. Lucas, do you consider

drug abuse a temporary or a permanent disability.

MR. MILLER: This is not a forum for questioning. It is to receive your comments on the issues.

MR. MAZZOTTA: Well, thank you very much. The question is on the record. I'm not trying to override you, but I want to get my time in. What is my time now?

MR. MILLER: You have two and a half minutes.

MR. MAZZOTTA: All right. Thank you. Is it mental? Because if it is you're not doing a very good job. Why has drug abuse never been considered under mental illness before this consolidation was considered? Why, if it's only a social problem, why isn't it treated in local hospitals? Why do you intend to uproot people from their homes, their communities, and drag them here? Transport them against their will in some cases to treat them and then release them in Middletown? How dangerous is a manic depressive who is on pills and social behavioral medicine and he's

considered okay and then released into the community? How safe are we? What's the recidity rate of drug abuse on our streets? What is the increase in the number of homeless on our streets due to drug abuse and alcohol and mental illness? I guess we have a right to our safety, and I'm very concerned about our safety on the streets because of those questions. I'm very concerned about what happens when the matching funds dry up for this program. How much money has been saved so far? How much have you spent so far? Thirty-six million plus over to transport people. You have to add the cost of transporting people from their homes to this town and then dropping them off in this town or driving them back against their will, which is, you know --

MR. MILLER: One minute.

MR. MAZZOTTA: One minute? Fine. All right. I hope you checked the Middletown Press for all the escapes and problems that we've had. It's all down on tape there. You'll be delighted.

I feel that there was an editorial in the paper that I want to get across, that Governor Roland,

because he was defeated in the primary by the Middletown delegation in his first attempt at governor, -- he was defeated by the Middletown delegation of Republicans forcing a primary which was a real problem to him -- it's been reported in an editorial in the Middletown Press that this is a personal vendetta of Governor Roland that this is occurring, and that we are taking a stand as a state, which is in direct opposition to every mental health program, new program in every state in the union. They're all decentralizing. They're all treating patients locally and regionally and not centrally. This, according to the editorial, -- and I'm not saying that it's true or untrue -- is what has happened, and I think that, you know, by the same token we've got zoning by exclusion where the legislators of our --

MR. MILLER: Five minutes.

MR. MAZZOTTA: Thank you. Just let me finish this sentence. The legislators of our wonderful state, not including the ones that spoke here today, but all the others, ganged up at one o'clock in the morning to pass legislation, which is in violation of my civil rights and the civil rights of all individuals

who become mentally ill. This was passed without any foreknowledge. There was no community assessment. It was just passed. And by them mutually excluding themselves from the zoning this might be of interest to Janet Reno, the Secretary, or CBS 60 minutes. It could be very embarrassing to Governor Roland.

MR. MILLER: We have two more people who have signed up as first time speakers. After that we'll ask if there is anyone else as a first time speaker who would like to speak and then we'll go into second rounds for anyone. I have a couple of people who have signed up and then we'll take hands from the audience. At this time Michael Cap.

MR. MICHAEL CAP: Good evening. My name is Michael Cap. I am a resident of the Town of Middletown, and to be also completely honest and disclose here, I have been working as a pharmacist at Connecticut Valley Hospital for approximately the past seven years. I just wanted to say, listening to a lot of the comments that are here, there are a lot of things that are said that are based not completely on fact, but we are dealing with perceptions and reality is perception. If you believe something, it's real to you whether or not the actual evidence is there.

I would just like to comment that the reason that Connecticut Valley Hospital is were it is located, where Norwich Hospital was where it was located, and fairfield Hospital was where it was located, was due to the fact that it was in the middle of nowhere, along a river for easy transportation, so that people that so-called normal people did not want to be around, those who had illnesses, could be put out of sight, out of mind. The basically not in my back yard or NIMBY phenomenon that existed a long, long time ago.

Now the two other state hospitals have closed due to basically the Governor's plans for trying to consolidate and save money by centralizing inpatient services in a single location. And it's very expensive to maintain these huge campuses which are not being utilized. And unfortunately the State, with the three major hospitals, most of the campuses or parts of the campus were not being utilized, and there is a lot of money just on upkeep of grounds and maintenance that simply was going to waste and not being put into taking care of people.

I think Middletown has been extremely hospitable to patients throughout the history of Connecticut Valley Hospital here and people with mental health and other problems, and I think that one of the problems that Middletown is suffering from is that the rest of the state simply doesn't want to deal with the problem. I think that there is a need for inpatient services and recent trends show that there has been a move for deinstitutionalization, but many of the states, particularly out west in California that started the deinstitutionalization trend in the first place, are going back to centralized services because they cannot afford the deinstitutionalization. They can provide better services in a consolidated manner more efficiently, and also because of the fact that many people in many areas of the State of California simply did not want anyone with mental illness or addiction problems to be located and treated near where they were living. So the trend in mental health in the United States is to go back to more centralized services due to efficiencies in costs.

Now the problem we have here is that not everybody needs to be hospitalized. And I would think that again, Middletown has excellent services in the

community, and unfortunately people come here because a lot of communities do not provide services, and I think Middletown needs to stress the fact that they've been more than hospitable, but they need community services elsewhere so that those people who do need to be institutionalized to get their lives back together and return to society can, in fact, return to their own communities and get the support that's there. That is a problem. I also think that Middletown should embrace the idea of building a bigger, better Connecticut Valley Hospital, and that it should be done properly, providing the best of services, and that instead of saying we don't want it or we want less, Middletown should be saying we want more.

And just to conclude, since we are talking about perceptions, I know this may not be true, but in talking to people throughout the state and, in fact, in other states who have read newspaper articles about this, the impression is that Middletown is against having mental health patients and addiction services patients here, of having a hospital here. And I think that the people of the government of the city and citizens of the City of Middletown need to stress that, since perception is reality, that if your argument is

with the process of the State, you seem to be arguing publicly and perhaps part of it is the press not representing you well, that you are against the services and the patients, and I think that I haven't heard anybody really stand up and try and stress that.

MR. MILLER: Steven Clark.

MR. STEVEN CLARK: My name is Steven Clark. I relocated down here in Middletown from Norwich. I worked at Norwich Hospital. I transferred up to CVH. I think we're all here a little too late. There was a cry from us for the State to do the right thing. It's too late for the State to do the right thing. I know down in the Norwich area that we went to our local representatives. They joined the bandwagon too late. We went to the capitol. We went to the Appropriation Committees, Safety Committees and everything. We couldn't get nobody to join them. To join our side. Our Commissioner of Mental Health, Al Solnit, he had a study done in the State of Connecticut about five or six years ago. It was called the Thomas Commission. It was to look into downsizing the hospitals or closing one or two of them. The Commission came up with we'll downsize all three

hospitals to about a hundred, a hundred and fifty beds. Our Commissioner was appointed by Governor Weicker. Governor Roland ended in office and all of a sudden our Commissioner had a three-sixty. So we kind of more or less feel that we have a yes man there. I don't know what happened in Middletown, but I think this town waited a little too long to put in an injunction to try to put a stop to this. This has been going on the last four or five years.

There's some other things I wanted to talk about. If anybody else tried to do this without doing the studies that they were supposed to, they would have been run out of town by now. You know. How can the State put themself above the law? It's not right. I'm kind of picking on the representatives in my area in Norwich and up here. I don't know what took them so long to really get involved. I'm not real familiar with Middletown, but you're going to start seeing me at some of these meetings. I like to be involved in my local politics. That's about it. It's not too much. It was just a couple of statements that I wanted to make.

MR. MILLER: I believe I have one other

name here of someone who hasn't spoken. Elaine Kapetan.

MS. ELAINE KAPETAN: Good evening. My name is Elaine Kapetan, and I'd like to tell you that I think you've heard a lot of facts and statistics tonight, all of them compelling. There have been people who have tried to give Middletown a face rather than have it be some abstraction or amorphous thing, and to that end I would like to tell you a story, a true story, about some friends that I have that owned a restaurant just off Main Street in Middletown.

Notice the use of the past verb tense. Well, as you can imagine I did like this place, as did many others. It was a place that attracted people from all walks of life. It was known for its good will and not just a little good wit. The warmth of the soup was matched by the warmth of the hosts. It was a lovely place. Notice I'm still using the past tense. Well, one night not too long ago in the recent past the bar was full, the tap room was full, there were clients drinking and enjoying themselves talking, playing darts. The back room was filled with diners. Regulars. This was an institution. This restaurant

had been in this town for many, many years. Decades. Well, someone strolled in off the street. A well dressed person, a patient from Connecticut Valley Hospital. He went into the mens room. He came out, pulled out a knife, and went over to a patron who was sitting at the bar and slashed that person's face across the forhead, down across the nose, the brow of the nose, cut his tear duct, barely missed the eye. This man is scarred for life.

Well, as you can well imagine, the people, the regular patrons, the people who had been there, who had been coming there for years with their children, grandchildren and whatever, heard of it. They were in the back room. They never went to this place again. Now you can call this a misperception, but it's not. It was triggered by an actual event, and people were petrified and they stayed away. And eventually the restaurant closed, and so now on this little side street in Middletown it's a little bit darker because there's nothing there anymore but an empty building.

And I think that the previous speaker, I'd like to say something that he mentioned. I think that Middletown has done its share. It certainly has taken

on the burden. No one here is advocating forgetting about mental health services or drug addiction programs. I think it's the preponderence, the number of people who are brought here. It's a disproportionate number. It is not fair to have all this in one town. So I think you should share the burden or the luxury or however you want to look at it. If this was such an asset or a boon, if having such institutions in ones town were such an asset, then why aren't more municipalities vying to have these institutions in their towns? They're not. I hope I have given you a little bit of an idea of the face and the character of Middletown. How people have suffered. They've lost their gathering place, and they've lost their sense of comfort in some respects. Thank you.

MR. MILLER: Okay. At this point I have three names of people who have signed up as second time speakers. After that we'll take hands from the audience. Michael Guarini.

MR. MICHAEL GUARINI: Again for the record, Michael Guarini, Deputy Director of the Water and Sewer Department. And also for the record, let it be noted that this is just a continuation of the

previous reading.

4. CVH Water Supply Distribution Infrastructure

On Good Friday of 1995 the CVH campus was troubled by a rather significant water main break. As a function of the break the City of Middletown Water Department was called upon to provide emergency supply to the CVH campus from a hydrant to hydrant connection using a soft hose for the better part of a day. I was advised by my water superintendent at the time that the CVH facility's crew had trouble segregating the break due to the age of the valves on its system and, in fact, had lost the majority of water in their 800,000 gallon clear well. While the City of Middletown will remain a good neighbor and assist during castastrophic failures, it raises to mind larger questions as to the age of the CVH facility, its condition, and the fact that apparently none of the thirty-six million dollars that has been appropriated for CVH improvements has been set aside for water distribution improvements. The Department of Health Services is asked to closely consider this issue.

5. CVH Water Distribution Fire Flow

This is extremely important, gentlemen. As a companion concern with Item 4, above, is the adequacy and condition of the distribution system with regard to fire flow on the CVH campus. It was also noted, at the time, by our water distribution superintendent that the pipe witnessed during the break had substantial internal growth, tuberculation, so as to restrict flow within the system. This condition is caused, traditionally, by the transmission of raw water through the system. We note that the age of a good portion of the CVH facility for water distribution dates back to 1910 and 1920 and that water has only been filtered and conditioned within the last ten years. It is therefore very likely that the condition of the water mains has severly degraded during those intervening years. The City of Middletown would strongly suggest that the Department of Mental Health and Addiction Services review the total adequacy of the distribution system, especially with regard to fire flow, so that should a catastrophic fire event ever occur, that the CVH system would be capable of handling this fire flow, initially for sprinklers and then for hydrant connections. While the water department, again, will always act as a good

neighbor and supply from its own system fire flow as needed, it is imperative that the CVH system be established as the primary source of fire protection and relies on the City of Middletown water distribution system as its fail-safe backup.

16. CVH Bulky Waste Landfill

You've heard other speakers refer to this. This is very important. Earlier this year, in discussion with the State Department of Mental Health and Addiction Services, the water department had identified a landfill, historic in nature, on the CVH campus which may, and is likely to, affect a portion of the aquifer recharge area for the John S. Roth Wellfield, a public water supply for the City of Middletown. The John S. Roth Wellfield is the city's largest and most substantial source of potable water at nine million gallons a day, total capacity, and is located north from the landfill. At this juncture, the State Department of Mental Health and Addiction Services has agreed to assist the City in modeling for Level A mapping of the Wellfield to see if there is a direct nexus between this historic landfill and the Wellfield with regards to water supply and water quality. This

Level A modeling work had been scheduled for early fall of this year, but has been postponed by the DEP until next summer due to high river stage conditions and high groundwater conditions caused by a wetter than normal summer and early fall seasons. Should studies next summer prove that a direct nexus exists between the Wellfield and historic landfill, additional work would be required by CVH likely in the form of interceptor or diversion wells around the landfill to protect the public water supply. The water department feels that it is premature at this juncture to commit the entire thirty-six million dollar allocation without establishing a reasonable and credible financial set aside until this very important public issue can be resolved. The City would request that the DEP Water Resources Unit strongly consider this appeal and mandate that a financial set aside be established by the Department of Mental Health and Addiction Services until a final resolution from the Level A mapping.

7. Closure of the Landfill

As a concomitant to the item above, and as a companion to the demolition of the incinerator plant, is the closure of this historic landfill. In the

notice and call for this meeting and through the scoping process, there has been no mention of a financial set aside or work from the thirty-six million dollar appropriation for closure of this illegal landfill. This landfill continuing in operation until only recently has historically accepted materials from as far back as the 1930's and is likely to contain materials and substances which could be highly toxic and pervasive. As a matter of respect for the citizens of Middletown, those who frequent the area for recreation, and ultimately, should there be an impact on the public water supply for those who consume our water, it is essential that the DEP require a set aside from the thirty-six million dollars for the immediate and proper closure and post closure of this unregistered, illegal landfill. The City would also request that due to the age and technology of the incinerator to be removed, that a background soil sampling program be undertaken to verify the presence or absence of products of incomplete combustion to include, but not be limited to, dioxin byproducts and dibenzofurenes.

8. Improvement to the Physical Plant

In the notice of scoping there is an identi-

fication of "utility analysis testing and repairs". At the scoping meeting I had anecdotally relayed to the members a most egregious but, unfortunately, typical situation which routinely occurs on the CVH campus, and that is the blowing off of the stack at the central boiler facility. I had relayed to all the members of the scoping meeting an incident which occurred last summer at which time my scanner indicated that the police department was looking for an active working fire, that the South Fire District had actually rolled out of station waiting for a destination on an active fire, as black smoke billowed out in the distance, only to ultimately be informed, to all parties, that the CVH boiler room was blowing off the stack. This common practice places soot into the immediate neighborhood, which is a mix of everything from low and moderate housing to upscale and large residential housing. The notice of scoping only says that there will be a utility analysis, it does not call for the equal treatment of the CVH boiler house facility as would any other private establishment be treated. On behalf of the City of Middletown, and as Director of its Water and Sewer Department, where many of these products of incomplete combustion will likely land within the aquifer recharge area, I would recommend that the DEP

closely look at and strongly consider mandatory pollution control for the CVH boiler house facility to include best available control technology. Also, due to the fact that Middletown is currently in non-attainment for ozone, it would not be unreasonable to require full stack monitoring of this rather substantial boiler facility to include SOX, NOX, total particulates, temperature and mass flow through the stack.

In closing, it is essential that state agencies involved in ultimate oversight of this project, those to which the scoping notice was sent, review these very real concerns. It is my sincere hope that those agencies will be guided by this testimony and will look at the application of public funds to include environmental work seriously warranted at the CVH facility and required absolutely as a function of expanded operations. To turn a blind eye to environmental problems involved in sanitary sewer collection, potable water supply to CVH, the integrity of Middletown's largest single public water supply, and air quality issues would be an abandonment of your public charge as officials of the State of Connecticut.

Thank you very much for your attention and your indulgence during this testimony, and should you have any specific questions, I will be available through the offices of the Water and Sewer Department for additional testimony, if necessary. I will be leaving you a written copy, which I would like to give you formally and on the record. Thank you.

MR. MILLER: Leon Vinci.

MR. LEON F. VINCI: Good evening. My name is Leon Vinci and I'm the Director of Health for the City of Middletown. This is part 2. I started earlier, and I'm hopefully about to finish.

I left off talking about communicable diseases, most notably TB, AIDS and STDs and how in our tracking process and surveillance systems we have seen and linked differences in terms of increases to individuals that have a CVH involvement.

Other areas of impact include our responsibility to transport individuals during emergencies and to provide emergency medical care. We pay for Emergency Medical Services, (EMS) directly out of our City

Health Department budget. For the month of November, this past November '96, there were 129 total emergency calls, roughly 4 a day, from the City's central core area. Of these particular 129 calls, over 25%, that is 36 of them, were either substance abuse, seizure, assault, or "psyche" in nature. We recognize that these individuals, and others that weren't in that category yet were in the overall counts, such as diabetes and cardiac, have a CVH link.

I mentioned earlier the importance of controlling disease outbreaks through surveillance of incidence and prevalence. Approximately two months ago, during a tour of the renovations at Merritt Hall, I observed that the room designated for patient isolation as part of infection control was being utilized as a temporary construction office. Although there are over one hundred patients in the building, and I believe that's upwards of two hundred, this area had blueprints, coffee cups and ash trays throughout this office area. As you are aware, an inspection by the Connecticut Department of Public Health or the Joint Commission would not view this matter favorably in conjunction with state and federal health care facility regulations. These findings underscore the

need to have an open dialogue and good communication between the CVH renovation operation and the community. Hopefully your report will indicate that the rush job being undertaken by CVH should be halted until these important public health issues are addressed to the satisfaction of the Middletown Health Department in concert with CVH employees and other agencies.

In a meeting today with the Infectious Diseases Physician at Middlesex Hospital, it was reported that CVH, in recognition of its need to have infection control isolation rooms available to patients and staff, had requested the availability of the facilities at Middlesex Hospital. We further discussed several cases from the past week which involved CVH discharges with infectious diseases. And in the particular discussion that we had it had to do with patients with HIV and AIDS. They were taxing the Emergency Department at Middlesex Hospital and the Infectious Diseases Service there.

Other community services have similar impact. Our WIC Program experienced a major setback, and I will present a short letter from them after these remarks are concluded.

The next section is Environmental Health.

Air, land and water quality issues have environmental impacts to our locale from the CVH campus. Other individuals, including Mr. Michael Guarini on behalf of Mr. Guy Russo, have spoken more directly to certain issues of drinking water supply and sewage treatment. But let me remind you, it was only two summers ago that the Connecticut Department of Public Health had to send epidemiologist down to CVH for purposes of a Legionella episode. And in the interest of safety and the public health of our citizens concerning the City's public water supply, I strongly urge your immediate attention to the resolution of the bulky waste site matter that you've just heard about.

Within the CVH Scoping Notice, several function areas go unaddressed and include food services, laundry and day care. I wasn't aware that there would be an apparent relocation of the facility kitchen until I saw it in the Scoping Notice. Food service operations and kitchen layout are regulated by the Connecticut Public Health Code, and although the Connecticut Department of Public Health should be

closely involved in this endeavor, public health consequences do involve the local department of health. As such, good communication and continuing cooperation should be followed from the design phase through to implementation. Should an unfortunate event such as a food borne illness outbreak develop, not only will patients be affected, but staff and their families too. This unique problem often affects family members in the community as well. There is clearly an impact upon our community services.

Proper handling and cleaning of laundry and linens is very important to preventable disease management and good health. Until recently, the laundry was an active part of the CVH campus. Currently, dirty linen, including those that are of an infectious nature, are shipped off site for cleaning. Several people have indicated that this procedure actually adds up and is more costly to taxpayers than the prior system. It is also my understanding that the onsite laundry facility may now be reopened resulting in local handling of laundry once again.

An onsite child day care center operates within the campus confines. We inspect and license

this facility which has direct linkage to our greater community. In fact, a recent giardia outbreak in our community children also involved children who attended this center. Again, the scoping document does not clearly address this important program, and, as you can see, there are obvious impacts to our community.

Our office receives complaints, and logs in citizen inquiries concerning the black plume being emitted from the power station smokestack. This has been a visible source of concern for area businesses and residents. It is a widely known fact, confirmed by DEP, that our air quality is poor, especially in the areas of particulates, sulfur dioxides, and ozone. Although we understand that operating permits allow for "Blowdown" for certain boilers, there have been occasions when the smoke emmission has continued for extremely long periods of time. You've heard from the previous speaker of a particular episode about that.

In the Scope, references are made to areas proposed for demolition. In particular, the Ice House, Incinerator Building, the Pig Slaughtering Area, and the Tin Shop come to mind. Metal shavings, metallic fragments, and dust from operations are very likely to

contain heavy metals and hydrocarbons from solvent usage. No references were included concerning the proper assessment and environmental samplings which is required by all environmental regulations. Again, our office is particularly interested in seeing results from the environmental sampling that should take place. Buildings might contain lead products as well as asbestos, and appropriate evaluation should be conducted prior to the wrecking ball. The Ice House may involve water hook-up connections, and there may even be potential contamination from the Pig Slaughtering Area which warrant additional careful intervention.

Numerous residential units under the phraseology "community residences or community setting" which house past patients exist throughout the City of Middletown. Estimates range from 500 to 1,000 units relating to those with support services, and another additional 500 just at large. With these units there, there is a demand which has developed and it is contributed to the establishment of SRO's, single resident occupancy units, halfway houses, rooming houses, and increases of Section 8 services and utilization within the community. Our Housing Code

Enforcement Division has inspected many of these residences over the years, and when needed, we provided intervention, correction, enforcement and assistance.

It is also important to note that our neighborhood soup kitchen, our food banks, and our emergency shelters operate at very high rates for a community of our size.

In closing, the Scoping Plan relies heavily on the Campus Consolidation Plan involving essentially the southern part of the CVH property, and that's from Silver Street south to the Bow Lane area. This leaves Addiction Services to the north in Merritt Hall. At this point I'm still not convinced of the advantages of this new geographic arrangement. From a public health perspective, especially with patient care in mind, this concept should have more dialogue with City officials and the community prior to the fast-track implementation that we see through the scoping agenda.

My short remarks and the few examples I've cited clearly demonstrate how the hospital consolidation impacts the community. The information, although in here condensed for the purpose of tonight's

hearing, is quite compelling and really warrants your immediate attention and most careful assessment. Clearly a full EIE must be developed. And that ought to be your ruling after hearing some of this imput.

Lastly, I'll close on behalf of Cindy Cohen, who is the Director of our WIC program. WIC is Women, Infants and Children. It's a State Department of Public Health grant initiative that's available to all Connecticut citizens. Our local office in Middletown is administered by the Health Department and serves all of Middlesex County, roughly two thousand clients.

"To whom it may concern:

This is in regards to the Environmental Assessment of CVH on the community. I would just like to share a recent experience.

The WIC program, (Women, Infants and Children) is a nonprofit nutrition education program for low income women and young children. We provide food checks that families use at the grocery store to purchase specific nutritious foods that are necessary during growth and development as well as to educate

families on proper food intake.

One night during the last week of August, someone broke into our office and stole a video television set that was used for teaching, also a laptop computer, and a desk calculator. The T.V. had been purchased with donations saved for two years and was used daily to teach young parents how to properly feed their babies and children. The laptop was used for staff to travel throughout the county to reach those individuals who did not have transportation to get to our office.

It was later discovered, through police intervention, etc., that the individual who robbed us had been at CVH and was then released into this community. It was also determined that this individual had committed as many as one dozen robberies in the area. While this may not be considered to be a great impact, this small crime has negatively effected our ability to educate thousands of individuals. We will not be able to replace this donated teaching tool.

I am describing one individual. However, I believe it is necessary to recognize that many CVH

patients are released into this community with no job, no housing, and possibly no incentive for either. Unfortunately crime may be a simple method to gain income. Many of us cannot afford to support this type of endeavor. Thank you."

And it's submitted by the Director of the WIC program, Cindy Cohen, Registered Dietician. That concludes my remarks for the evening. Thank you for your attention.

MR. MILLER: Sid Libby.

MR. SID LIBBY: I would like to make one thing clear. It's not only the people who have criminal charges that are put on to Haldol, it's all the patients, even the ones with minor illnesses such as depression. There is absolutely no thought given to cure these people by psychotherapy or other means. They're just simply put on to Haldol and lobotomized. And parents bring their children up there with the expectation that they're going to be cured and they're not cured. They're lobotomized and shipped out.

I would like to dwell a little bit more on the

health problems there I spoke about. Well, first of all, the first two weeks you're up there you're not allowed to go out under any circumstances. Even though there's a law that says you must be allowed an hour out, for the first two weeks you never see the daylight. After two weeks you're allowed, you're supposed to be allowed out for one hour for every twenty-three hours of incarceration, but that never happens. The most you're given is probably about fifteen minutes and only then when there's guards available to watch over you while you're in a confined area. So people are, for all practical purposes, are penned in there like animals for days and weeks and months and even years at a time.

The conditions up there are terrible. When I was up there in my ward there was about thirty-five people. There was only one john. There was also four women in that ward. The bathroom had to be closed down for long periods of time to accommodate the women. Even when the women were not using the john the huge population using that one john forced long lines. The inmates up there were urinating and defecating on the floors, in the hallways, in the shower stalls because they couldn't relieve themselves otherwise. So we were

living in terrible filth my whole time up there. They would only come through down the hallways and they would just sweep the hallways. They would never scrub the floors. They would never clean the rooms. The entire twenty-three days I was up there my room was never cleaned. Inmates got so sick of that that we were scrubbing the floors ourselves and the window-sills, and then we caught hell from the guards and from the maintenance people because we were using dis-infectant. They didn't want us to use disinfectant.

The food up there sucks. It's terrible. At times it isn't even fit for human consumption. And keep in mind that it isn't only people who are up there on criminal charges. It was sick innocent people with often times just minor mental disabilities. People who had nothing to do with any criminal background. And we were all forced to live in these horrible unsanitary conditions wallowing in our own filth for twenty-four hours a day.

Now I'm saying right now we've heard Mr. Vinci, we've heard Mr. Guarini, and they have outlined to you the terrible health problems that are existing with CVH. Now, if our Mayor had any integrity and any

sincerity at all, she would send Mr. Vinci up there and she would have them close down this facility. It's horrible up there. It's unspeakable. And with the construction going on, I'm sure it's even many times worse. If our mayor was really sincere and she really had integrity she would go up there and she would have Mr. Vinci close this place down for health reasons instead of passively accepting this consolidation. Thank you.

MR. MILLER: Are there any people from the audience now who would like to speak either initially or as a second time?

MR. JEFFREY PIERCE: My name is Jeff Pierce. Earlier this evening someone corrected me and said that the River Valley Services is a branch, if you will, of the Department of Mental Health Services. Well, that may be true. It was represented to me at one time that it was other than that. But sometimes the simplest things give us the best answers.

If River Valley Services is a branch of the Department of Mental Health Services and you gentlemen have been told and we've been told, the public, that

this consolidation is a consolidation of mental health services at Connecticut Valley Hospital, well, then I would ask you this. If that's the case, why is it that River Valley Services, and if it is a branch of the Mental Health Services Department, they could not do anything without the blessing of the Department, then why is it that during the same time frame that the state is so-called consolidating mental health services at CVH, why is River Valley Services making application to this town to move into the vacant Stop and Shop building on South Main Street in Middletown? I think that that solves and eliminates the need for you to investigate or make inquiry into what the State's intent is. The State's intent is clear. They want to divest themselves of the mental health services in this state. What they want to do is privatize it. And what they want to do in this particular instance is spread it around the City of Middletown. Now that's not me talking. That's the record. And I think that probably if we're looking at social and economic inpacts, you know, that's like putting a gun to the town's head and killing it. I don't suggest for a minute that the Governor -- The Governor might have been misinformed as to the intent. Maybe he thought he was consolidating services on the campus of CVH.

Now, this isn't the only thing that's going on here. The State has another facility here called Long Lane School. They don't have enough beds. So they're sending kids down to the Lake Grove School in Durham. I suppose when they run out of room down there they'll find a place for them in Middletown. Maybe on the street that one of these good people lives on and they can steal their cars. Of course we have these services. You know we got an empty, I said the empty Stop and Shop building. That's where River Valley Services wanted to go. And there's a record and you can look. Go to the Planning and Zoning Director and he'll tell you. But there's an empty building next door here. It used to be a court house. You might want to move Whiting over there. You know, or one of the other sections.

Now, one thing that seems to be accepted that these patients are all from Connecticut. All the mental health patients of Connecticut. I think if you examine the record, and you'd have to go back some because a lot of them now are residents of the City of Middletown, but you'd find they're from Maine and God knows where. I just want to clear that up. It doesn't mean much. But you know, we were told that this was a

consolidation of these facilities at that facility, Connecticut Valley Hospital, and there's nothing further from the truth. Thank you.

MR. MILLER: Anyone else wish to speak this evening? Okay. Thank you very much. We will now close the hearing.

(Whereupon the hearing was concluded.)

STATE OF CONNECTICUT)

)ss., Middletown, Jan. 9, 1997

COUNTY OF MIDDLESEX)

I, Linda Pierce, a Notary Public in and for the State of Connecticut, do hereby certify that the foregoing is a true and correct transcript of my stenographic notes taken of a public hearing held on December 17, 1996 in the matter of the Public Scoping Meeting on the Environmental Assessment at Connecticut Valley Hospital, held at City Hall, DeKoven Drive, Middletown, Connecticut.

Linda Pierce

LINDA PIERCE

Notary Public in and for

the State of Connecticut

My Commission Expires: September 1, 2001

APPENDIX C
Correspondences

CORRESPONDENCES

Date	Name
10/21/97	Dawn Maddox, Deputy State Historic Preservation Officer, Connecticut Historical Commission
10/1/97	Neal Millane, Millane Nurseries
4/25/97	R.C. Miller, Building and Fire Safety Inspector, Bureau of Engineering, Office of State Fire Marshall
2/4/97	Dawn Maddox, Deputy State Historic Preservation Officer, Connecticut Historical Commission
1/28/97	William P. Wilson, Building and Fire Safety Inspector, Bureau of Engineering, Office of State Fire Marshall
7/14/97	Dawn M. McKay, Biologist/Environmental Analyst III, Natural Resources Center, State Department of Environmental Protection
6/30/97	Pamela E. Scully, Sanitary Engineer III, Water Supplies Section, State Department of Public Health
6/13/97	Sidney J. Holbrook, Commissioner, State Department of Environmental Protection
3/26/96	Stan Gormley, Environmental Analyst, Waste Management Bureau, State Department of Environmental Protection
5/23/96	Stan Gormley, Environmental Analyst, Waste Management Bureau, State Department of Environmental Protection
5/20/97	Vincent Avino, Division of Traffic Engineering, Connecticut Department of Transportation
12/14/95	Carol D. Shull, Keeper of the National Register of Historic Places, US Department of the Interior, National Park Service
11/28/95	Walter Sinnott, Senior Sanitary Engineer, State Department of Environmental Protection

STATE OF CONNECTICUT
CONNECTICUT HISTORICAL COMMISSION

October 21, 1997

Mr. Mark S. Foster
Frederic R. Harris Inc.
333 Loudlow Street
Stamford, CT 06902

Subject: Connecticut Valley Hospital
Middletown, CT
DMHAS #4403-489, DPW #BI-I-489

Dear Mr. Foster:

The State Historic Preservation Office has reviewed the archaeological reconnaissance survey report prepared by the Public Archaeology Survey Team Inc. regarding the above-named project. This office believes that the archival and archaeological methodologies employed by PAST Inc. are consistent with our *Environmental Review Primer for Connecticut's Archaeological Resources.*

In the opinion of the State Historic Preservation Office, the Athletic Field Site (#83-11) and the Battell Hall Site (383-12) lack scientific integrity and archaeological significance and are not eligible for the National or State Register of Historic Places. This office concurs with PAST Inc.'s evaluation that the proposed undertaking will have no effect upon the state's archaeological heritage. In addition, we believe that no further archaeological investigation is warranted with respect to the proposed improvements.

This office looks forward to continued coordination vis-a-vis the historic and architectural character of Connecticut Valley Hospital. We also note that undeveloped CVH property, located outside the proposed project boundaries, possesses moderate to high archaeological sensitivity and should be professionally evaluated prior to future modification.

For further information please contact Dr. David A. Poirier, Staff Archaeologist.

Sincerely,

Dawn Maddox

Dawn Maddox
Deputy State Historic
Preservation Officer

cc: Dr. Nicholas Bellantoni/OSA
Mr. Philip McLellan/OPM

TEL: (203) 566-3005 *FAX: (203)566-5078*
59 SOUTH PROSPECT ST. - HARTFORD, CONN. 06106 - 1901
AN EQUAL OPPORTUNITY EMPLOYER

Millane Nurseries, Inc.
"Trees Since 1929"
604 Main Street
Cromwell, Connecticut 06416-1435
Telephone: (860) 635-5500
Fax: (860) 635-3685

October 1, 1997

State of Connecticut
Connecticut Valley Hospital
PO Box 351
Middletown, CT 06457
Attn: Robert Spector

Dear Mr. Spector;

As per your request, the following is a list of pesticides applied by our CT DEP licensed pesticide applicators to our nursery plants growing on state property, located at CVH in Middletown.

Herbicides:

Pendulum
Surflan AS
Roundup Pro
Poast
Gallery DF
Pennant
Goal 1.6 E
Stinger

Insecticides:

Horticultural Oil 6E
Cygon 2E
Kelthane 50w
Maurik
Sevin SL
Morestan 4
Dursban Pro
Orthene
Marlate 50w
Tempo 2E
Talstar 10wp
Di-Syston 15% G

Fungicides:

Daconil 2827
Mancozeb DG
Zyban
Dithane DE
Cleary 3336

Please feel free to call if you have any questions or need more detailed information regarding the above list.

Very truly yours,

Neal A. Millane
Vice President

L91-03435

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC SAFETY
DIVISION OF FIRE, EMERGENCY AND BUILDING SERVICES

April 25, 1997

Mr. Gerard P. Brown, P.E.
Project Manager
Department of Public Works
Accelerated Projects Unit
30 Trinity Street, 3rd Floor
Hartford, CT 06106

RE: Project # BI-I-333B Emergency Consolidation
Merritt Hall, Connecticut Valley Hospital

Dear Mr. Brown:

The Office of State Fire Marshal's Bureau of Engineering witnessed a re-test of a portion of the Fire Alarm System on April 22, 1997. This test was required due to the updating of the Fire Alarm System.

The Fire Alarm System appears to be installed and operating in the manner required by NFPA 72, the applicable standard. This office finds that it can support acceptance of the Fire Alarm System.

If this office can be of any further assistance, please feel free to contact me at (860) 685-8350.

Sincerely,

William P. Wilson
Building and Fire Safety Inspector
BUREAU OF ENGINEERING
OFFICE OF STATE FIRE MARSHAL

RC Miller

WPW/jo/update

c: Michael Lucas, III, Dept. of Mental Health
Doug Shearer, FUSCO Corporation

STATE OF CONNECTICUT

CONNECTICUT HISTORICAL COMMISSION

February 4, 1997

Mr. Mark S. Foster
Frederic R. Harris Inc.
333 Ludlow Street
Stamford, CT 06902

Subject: Connecticut Valley Hospital
Middletown, CT
DMHAS #4403-489, DPW #BI-I-489 (4403489)

Dear Mr. Foster :

The State Historic Preservation Office has reviewed the "Proposed Roadway Scheme" prepared by Purcell Associates regarding the above-named project. This office notes that grounds and lands associated with Connecticut Valley Hospital possess moderate to high sensitivity for archaeological resources. Therefore, we recommend that a professional reconnaissance survey be undertaken to identify and evaluate all archaeological resources which exist within proposed project limits, especially new roadways, parking areas, equipment storage, and associated work areas. All archaeological studies must be undertaken in accordance with our *Environmental Review Primer for Connecticut's Archaeological Resources.* A list of professional archaeologists has been enclosed for the information of Frederic R. Harris Inc.

No ground disturbance or construction-related activities should be initiated until this office has had an opportunity to review and comment upon the recommended archaeological survey report.

We anticipate working with Frederic R. Harris Inc., DMHAS, OPM, and all interested parties in the expeditious furtherance of the proposed undertaking as well as in the professional management of Connecticut's archaeological heritage.

For further information please contact Dr. David A. Poirier, Staff Archaeologist.

Sincerely,

Dawn Maddox

Dawn Maddox
Deputy State Historic
Preservation Officer

cc: Dr. Nicholas Bellantoni/OSA
Mr. Phillip McLellan/OPM
Ms. Susan Chandler/CHC

TEL: (203) 566-3005 *FAX: (203)566-5078*
59 SOUTH PROSPECT ST. - HARTFORD, CONN. 06106 - 1901
AN EQUAL OPPORTUNITY EMPLOYER

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC SAFETY
DIVISION OF FIRE, EMERGENCY AND BUILDING SERVICES

January 28, 1997

Mr. Gerard P. Brown, P.E.
Project Manager
Department of Public Works
Accelerated Projects Unit
30 Trinity Street, 3rd Floor
Hartford, CT 06106

RE: PROJECT # BI-I-333B EMERGENCY CONSOLIDATION
MERRITT HALL, CONNECTICUT VALLEY HOSPITAL

Dear Mr. Brown:

The Office of State Fire Marshal's Bureau of Engineering witnessed a test of the Standby Generator and the Emergency Lighting System on December 10, 1996 and on January 23, 1997.

These systems appear to be installed and operating in the manner required by NFPA 101 and NFPA 110. These systems were placed on line at the conclusion of the test.

If this office may be of any further assistance, please feel free to contact me at (860) 685-8350.

Sincerely,

William P. Wilson

William P. Wilson
Building and Fire Safety Inspector
BUREAU OF ENGINEERING
OFFICE OF STATE FIRE MARSHAL

R.C. Miller

WPW/ACCPGEN

C. Larry DeVito, Lawrence Mechanical P.C.
Doug Shearer, FUSCO
Michael Lucas, DMH

RECEIVED BY
DMHAS OOC
DEC 3 - 1997
ENGINEERING SERVICES

1111 Country Club Road
P.O. Box 2794
Middletown, CT 06457-9294
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STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

NATURAL RESOURCES CENTER
79 Elm Street, Store Level
Hartford, Connecticut 06106-5127
Natural Diversity Data Base

July 14, 1997

Mark S. Foster, P.E.
Frederic R. Harris, Inc.
333 Ludlow Street
Stamford, CT 06902

Re: CT Valley Hospital
Middletown, Connecticut
DMHAS # 4403-489
DPW # BI-489

Dear Mr. Foster:

I have reviewed Natural Diversity Data Base maps and files regarding the area delineated on the map you provided. According to our information, there are no known extant populations of Federal or State Endangered, Threatened or Special Concern Species that occur at the site in question.

Natural Diversity Data Base information includes all information regarding critical biologic resources available to us at the time of the request. This information is a compilation of data collected over the years by the Natural Resources Center's Geological and Natural History Survey and cooperating units of DEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the Data Base should not be substituted for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Data Base as it becomes available.

Please contact me if you have further questions (424-3592). Thank you for consulting the Natural Diversity Data Base. Also be advised that this is a preliminary review and not a final determination. A more detailed review may be conducted as part of any subsequent environmental permit applications submitted to DEP for the proposed site.

Sincerely,

Dawn M. McKay
Biologist/Environmental
Analyst III

DMM/dmd

STATE OF CONNECTICUT

DEPARTMENT OF PUBLIC HEALTH

Mr. Mark Foster
Fredric R. Harris
333 Ludlow Street
Stamford, CT 06902

June 30, 1997

RE: Water Quality - Connecticut Valley Hospital
Middletown

Dear Mr. Foster:

As follow-up to our phone conversation on June 26, 1997, I am enclosing a copy of last month's water quality report from Connecticut Valley Hospital (CVH), Middletown. CVH is a public water supply system and therefore is required to monitor their potable water in accordance with Public Health Code Section 19-13-B102 (copy also enclosed).

At this time CVH is in full compliance, both in monitoring requirements and water quality standards, with the regulations cited in the Public Health Code Section 19-13-B102.

The only concern this office has with the water system at CVH is with regards to the issue that several of the buildings are not utilized to their full capacity and therefore stagnant water may become a problem. CVH attempts to rectify this situation by having an active flushing program.

If I can be of any further help please do not hesitate to call.

Sincerely,

Pamela E. Scully
Sanitary Engineer III
Water Supplies Section

PS/ps

cc: Sam Mannhardt, CVH

Phone: (860)509-7333
Telephone Device for the Deaf (860) 509-7191
410 Capitol Avenue - MS # 51 WAT
P.O. Box 340308 Hartford, CT 06134
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TABLE 6-8

RECEIVED

MONTHLY REPORT TO PRIMACY AGENCY FOR
COMPLIANCE DETERMINATION – FILTERED SYSTEMS

97 JUN 12 AM 1:08

Month MAY
Year 1997

System/Treatment Plant CVH Water Filtration Plant
Type of Filtration Multi-Media Filters
Turbidity Limit 0.50 NTU
PWSID _____

DEPT. OF HEALTH SERVICES
WATER SUPPLIES

Turbidity Performance Criteria

A. Total number of filtered water turbidity measurements = 372

B. Total number of filtered water turbidity measurements that are less than or equal to the specified limits for the filtration technology employed = 372

C. The percentage of turbidity measurements meeting the specified limits = B/A x 100 = 372/372 x 100 = 100 %

D. Record the date and turbidity value for any measurements exceeding 5 NTU: If none, enter "none".

Date	Turbidity, NTU
	None

Disinfection Performance Criteria

A. Point-of-Entry Minimum Disinfectant Residual Criteria

Date	Minimum Disinfectant Residual at Point-of-Entry to Distribution System (mg/L)	Date	Minimum Disinfectant Residual at Point-of-Entry to Distribution System (mg/L)	Date	Minimum Disinfectant Residual at Point-of-Entry to Distribution System (mg/L)
1	0.80	11	0.90	21	1.0
2	0.81	12	1.08	22	0.86
3	0.96	13	0.89	23	0.76
4	0.90	14	0.67	24	0.72
5	0.98	15	1.07	25	0.84
6	0.90	16	0.50	26	0.96
7	0.84	17	0.60	27	0.46
8	0.54	18	0.64	28	0.54
9	0.68	19	0.68	29	1.0
10	0.86	20	1.0	30	0.84
				31	0.96

Days the Residual was <0.2 mg/L		
Day	Duration of Low Level (hrs.)	Date Reported to Primacy Agency
	None	

B. Distribution System Disinfectant Residual Criteria

The value of a, b, c, d, and e from Table 6-5, as specified in 40 CFR 141.75 (b)(2)(iii)(a)-(e):

a = 0, b = ____, c = 34, d = ____, e = ____

$V = \frac{c + d + e}{a + b} \times 100 = 0$ %

For previous month, V = 0 %

Prepared by [signature]
Date 6-9-97

TABLE 6-5

DISTRIBUTION SYSTEM DISINFECTANT RESIDUAL DATA FOR UNFILTERED AND FILTERED SYSTEMS
MONTHLY REPORT TO PRIMACY AGENCY

Month MAY
Year 1997

System/Treatment Plant CVH Water Filtration Plant
PWSID _____

Date	No. of Sites Where Disinfectant Residual was Measured (=a)	No. of Sites Where Disinfectant Residual Measured, but HPC Measured (=b)	No. of Sites Where Disinfectant Residual Not Detected, no HPC Measured (=c)	No. of Sites Where Disinfectant Residual Not Detected, HPC > 500/ml (=d)	No. of Sites Where Disinfectant Residual Not Measured, HPC > 500 ml (=e)
1	1		0		
2	1		0		
3	1		0		
4	1		0		
5	1		0		
6	1		0		
7	1		0		
8	3		0		
9	1		0		
10	1		0		
11	1		0		
12	1		0		
13	1		0		
14	1		0		
15	1		0		
16	1		0		
17	1		0		
18	1		0		
19	1		0		
20	1		0		
21	2		0		
22	1		0		
23	1		0		
24	1		0		
25	1		0		
26	1		0		
27	1		0		
28	1		0		
29	1		0		
30	1		0		
31	1		0		
Total	a = 34	b =	c = 0	d =	e =

V = (c+d+e)/(a=b)x100 = (0 + ___ + ___) / (34 + ___) x 100 = 0 %

Prepared by P Payne

Date 6-2-97

TABLE 6-7

DAILY DATA SHEET FOR FILTERED SYSTEMS

(For system use only)

Month MAY

Year 1997

System/Treatment Plant CVH Water Filtration Plant

Filtration Technology Multi-Media Filters

PWSID _____

Date	Minimum Disinfectant Residual at Point-of-entry to Distribution System (mg/L)	(1) Maximum Filtered Water Turbidity		No. of Turbidity Measurements	No. of (2) Turbidity Measurements < or = specified Limit	No. of Turbidity Measurement > 5 NTU
		Filter #1	Filter #2			
1	0.80	0.15	0.16	12	12	0
2	0.81	0.18	0.24	12	12	0
3	0.96	0.18	0.09	12	12	0
4	0.90	0.24	0.10	12	12	0
5	0.98	0.15	0.10	12	12	0
6	0.90	0.16	0.09	12	12	0
7	0.84	0.11	0.18	12	12	0
8	0.54	0.13	0.27	12	12	0
9	0.65	0.26	0.12	12	12	0
10	0.86	0.14	0.11	12	12	0
11	0.90	0.08	0.08	12	12	0
12	1.08	0.09	0.07	12	12	0
13	0.89	0.10	0.09	12	12	0
14	0.67	0.10	0.08	12	12	0
15	1.07	0.12	0.07	12	12	0
16	0.50	0.11	0.11	12	12	0
17	0.60	0.15	0.12	12	12	0
18	0.64	0.14	0.08	12	12	0
19	0.68	0.13	0.07	12	12	0
20	1.0	0.12	0.10	12	12	0
21	1.0	0.18	0.12	12	12	0
22	0.86	0.17	0.08	12	12	0
23	0.76	0.20	0.07	12	12	0
24	0.72	0.17	0.07	12	12	0
25	0.84	0.09	0.07	12	12	0
26	0.76	0.10	0.07	12	12	0
27	0.46	0.10	0.08	12	12	0
28	0.54	0.10	0.07	12	12	0
29	1.0	0.12	.40	12	12	0
30	0.84	0.16	0.14	12	12	0
31	0.96	.30	.08	12	12	0
			Totals:	372	372	0

Notes:

1) Continuous monitors used, each 4 hour period counted as one sample.
2) Specified limit for our filters is 0.50 NTU

CONNECTICUT VALLEY HOSPITAL WATER TREATMENT PLANT

MONTH MAY , 19 97

DATE	RAW WATER TOTALIZER READING	RAW WATER FLOW (MGD)	TOTAL FLOW DIST. (MGD)	INSTANTANEOUS FLOW FILTER #1	INSTANTANEOUS FLOW FILTER #2
1	1498179	.3552	.3341	.17	.17
2	1501731	.3054	3148	.16	.16
3	1504785	.3515	.3094	.18	.18
4	1508300	.3520	.3105	.18	.17
5	1511820	.3559	.3619	.17	.17
6	1515379	.3485	.3525	.17	.17
7	1518864	.3548	.3599	.17	.17
8	1522412	.2964	.3621	.17	.17
9	1525376	.4070	.3632	.20	.20
10	1528796	.3368	.2975	.20	.20
11	1532764	.4576	.3993	.20	.20
12	1537340	.4918	.3610	.22	.22
13	1541658	.3358	.3669	.19	.19
14	1545016	.3276	.3755	.20	.20
15	1548300	.3884	.3677	.20	.20
16	1552222	.3922	.3939	.19	.19
17	1556118	.3635	.3591	.19	.19
18	1559753	.3457	.3475	.18	.18
19	1563210	.3585	.3712	.18	.18
20	1566716	.3506	.3781	.18	.18
21	1570301	.3550	.3913	.18	.18
22	1573851	.3726	.3928	.18	.18
23	1577577	.3939	.3720	.20	.20
24	1581516	.3862	.3567	.20	.20
25	1585378	.3734	.3355	.20	.20
26	1589112	.3827	.3611	.20	.20
27	1592439	.3912	.3863	.17	.17
28	1596951	.3722	.3706	.17	.17
29	1600573	.3887	.3622	.17	.17
30	1604460	.3923	.3708	.17	.17
31	1608383	.3915	.3489	.18	.18

DATE	TEMP. RAW WATER	CHLORINE FREE RES. mg/l	FLUORIDE mg/l	NAME Initial
1	12°	0.6	.87	DB
2	13°	0.4	.91	DB
3	12°	0.5	.82	STM
4	12°	0.5	.82	STM
5	12	0.5	.82	"
6	13	0.6	.80	"
7	13	0.6	.88	"
8	13	0.5	.81	"
9	13	0.6	.77	"
10	13	0.6	.80	"
11	13.5	0.65	.87	"
12	14°	0.4	.92	DB
13	15°	0.6	.96	DB
14	16°	0.6	.94	DB
15	15°	0.6	.98	DB
16	15°	0.7	.84	DB
17	15°	0.7	.85	DB
18	15°	0.7	.80	DB
19	15°	0.6	.90	DB
20	16°	0.7	.82	DB
21	15°	0.7	.80	"
22	15	0.7	.81	"
23	15	0.5	.80	"
24	15	0.6	.82	"
25	16	0.6	.84	"
26	16	0.6	.82	"
27	16	0.5	.82	"
28	16	0.5	.80	"
29	16	0.6	.80	"
30	17°	0.6	.92	DB
31	17.5°	0.6	.90	DB

DATE	RAW WATER Alkalinity	RAW WATER Dissolved Oxygen	FINISH WATER Ortho-phosphate	NAME Initial
5/2	2.4	10.1	1.4	DB
5-9	3.4	10.4	1.5	"
5/16	2.8	9.9	0.9	DB
5-23	3.2	10.8	1.5	"
5/30	3.0	9.9	1.2	DB

^(WEEKLY TEST)

TOTAL RAW WATER FLOW 11,020,400

DIST. FLOW INV. END 56787.8

DIST. FLOW INV. START 45297.6

TOTAL DISTRIBUTION FLOW 11,490,200

97 JUN 12 AM 1:03
DEPT. OF PUBLIC SERVICES
WATER SUPPLIES

CONNECTICUT VALLEY HOSPITAL WATER TREATMENT PLANT

MONTH MAY, 1997

				.552			.643			.0295			.3045			.075		
	CHLORINE			SODIUM ALUMINATE			ALUM			POT. PERMANGANATE			SODIUM HYDROXIDE			ORTHOPHOSPHATE		
DATE	DOSAGE RATE lbs/day	WT. Of CYLS.	DIF. IN WT. OF CYLS.	TANK LEVEL GAL.	AMOUNT USED GAL.	DOSAGE RATE mg/l	TANK LEVEL GAL.	AMOUNT USED GAL.	DOSAGE RATE mg/l	TANK LEVEL GAL.	AMOUNT USED GAL.	DOSAGE RATE mg/l	TANK LEVEL GAL.	AMOUNT USED GAL.	DOSAGE RATE mg/l	TANK LEVEL GAL.	AMOUNT USED GAL.	DOSAGE RATE mg/l
1	2.7	10	2	44.0	5.0	7.8	55.0	7.5	13.6	45.5	7.0	0.6	28.5	3.0	2.6	20.0	8.0	1.7
2	2.5	8	3	39.0	5.0	9.0	47.5	7.0	14.7	38.5	6.5	0.6	25.5	1.5	1.5	12/52	5.0	1.2
3	3.8	5	2	34.0	6.5	10.2	40.5	8.0	14.6	32.0	7.0	0.6	24.0	2.5	2.2	47.0	7.0	1.5
4	3.7	4/149	3	27.5	5.5	8.6	32.5	7.5	13.7	25.0	7	0.6	21.5	4	3.4	40.0	7.5	1.6
5	3.1	146	2	22	7	10.8	25	7.5	13.5	18/55	5	0.4	17.5	2.5	2.1	32.5	7.5	1.6
6	2.9	144	3	15/25	5	8.0	17.5	7.5	13.8	50	5	0.4	15	1	0.8	25	7	1.5
7	3.3	141	1	20/55	5	7.7	10/55	7	12.6	45	4	0.3	14/42	2	1.7	18	8	1.7
8	3.4	140	2	50	5	9.3	48	5	10.8	41	6	0.6	40	2	2.0	10/50	5	1.2
9	3.6	138	4	45	5	6.8	43	8	12.8	35	7	0.5	38	3	2.3	45	10	1.8
10	4	134	2	40	5	8.2	35	6	11.4	28	4	0.3	35	1	0.9	35	7	1.5
11	3.4	132	3	35	6.0	7.2	29	9.5	13.3	24	9.5	0.6	34	3.0	2.0	28	9.5	1.6
12	4.0	129	4	29.0	6.5	8.3	19.5	8.5	12.7	14.5/54.5	6.5	0.4	31.0	3.0	2.1	18.5	9.0	1.6
13	3.4	125	3	22.5	4.5	7.4	11.0/55	7.0	13.4	48.0	4.5	0.4	28.0	2.0	1.8	12.5/50	6.0	1.3
14	3.8	122	3	18.0	4.5	7.5	48.0	6.5	12.7	43.5	4.5	0.4	26.0	2.0	1.8	44.0	6.5	1.5
15	3.7	119	3	13.5/55	5.0	7.1	41.5	7.5	12.4	39.0	5.5	0.4	24.0	3.0	2.4	37.5	8.5	1.6
16	3.7	116	3	50.0	7.0	9.8	34.0	9.0	14.7	33.5	6.0	.5	21.0	3.5	2.7	29.0	9	1.7
17	3.6	113	3	43	5.5	8.3	25	7.5	13.3	27.5	5.0	.4	17.5	2.5	2.1	20	7.5	1.5
18	3.8	110	3	37.5	5.0	8.0	17.5	7.5	13.9	22.5	4.5	.4	15.6	1.5	1.3	12.5/52.5	8.0	1.7
19	3.7	107	3	32.5	6.0	9.2	10.0/55	7.0	12.6	18.0	5.0	0.4	13.5	2.0	1.7	44.5	7.5	1.6
20	3.0	104	4	26.5	4.5	7.1	48.0	8	14.6	13.0/53	7	0.5	11.5/55	3	2.6	37.0	7	1.5
21	3.4	100	2	22	7	10.8	40	8	14.4	48	4	0.3	52	2	1.7	30	8	1.7
22	3	98	2	15/37	5	7.4	32	7	12.1	44	5	0.4	50	2.5	2.0	22	7	1.4
23	2.9	96	2	32	5	7.0	25	7.5	12.2	39	6	0.4	47.5	2.5	1.9	15/55	8	1.5
24	2.6	94	4	27	7	10.0	17.5	7.5	12.5	33	4	0.3	45	3	2.3	47	8	1.5
25	2.7	90	2	20	5	7.4	10/50	7.5	12.9	29	4	0.3	42	2	1.6	39	9	1.8
26	3	88	2	15/55	5	7.2	42.5	5.5	9.2	25	3	0.2	40	3	2.3	30	7.5	1.5
27	2.5	86	2	50	5	7.0	37	7	11.5	22	7	0.5	37	2	1.5	22.5	7.5	1.4
28	3	84	4	45	5	7.4	30	7.5	12.9	15/55	7	0.5	35	1	0.8	15/55	8	1.6
29	3.2	80	6	40	5	7.1	22.5	7.5	12.4	48	8	0.6	34	2	1.6	47	7	1.4
30	3.3	74	3	35	6.5	9.1	13/27	7	11.5	40	6.5	0.5	32	3	2.3	40	9	1.7
31	3.3	71	4	28.5	5.0	7.2	20	7	11.8	33.5	7.5	0.6	29	3	2.4	31	8.5	1.7

CONNECTICUT VALLEY HOSPITAL WATER TREATMENT PLANT

MONTH MAY ; 19 97

DATE	APPARENT COLOR			TURBIDITY (NTU)			pH					IRON (mg/l)			MANGANENE (mg/l)			NAME
	RAW WATER	FILTER #1	FILTER #2	RAW WATER	FILTER #1	FILTER #2	RAW WATER	COAG. PH	FILTER #1	FILTER #2	FINISH WATER	RAW WATER	FILTER #1	FILTER #2	RAW WATER	FILTER #1	FILTER #2	INITIAL
1	16	0	0	.65	.06	.06	5.65	cleaned calibrate	6.83	6.76	7.16	.060	0	0	.170	.044	.026	DB
2	14	0	0	.75	.05	.05	5.82	6.71	6.37	6.38	7.13	.098	0	0	.166	.014	.010	DB
3	8	0	0	.62	.03	.035	5.56	6.82	6.57	6.65	7.31	.048	0	0	.180	.009	.008	STM
4	9	0	0	.42	.03	.03	5.52	6.83	6.32	6.38	7.49	.042	0	0	—	—	—	STM
5	8	0	0	.43	.04	.05	5.54	6.92	6.35	6.36	7.47	.040	0	0	.176	.011	.010	AP
6	9	0	0	.46	.06	.06	5.96	7.43	7.70	6.86	7.75	.040	0	0	/	/	/	AP
7	10	0	0	.39	.07	.11	6.17	6.77	6.56	6.43	7.61	.038	0	0	.172	.035	.040	AP
8	33	0	0	.63	.05	.06	6.75	6.86	6.72	6.63	7.68	.053	0	0	/	/	/	AP
9	9	0	0	.34	.03	.03	6.18	7.19	6.82	6.84	7.30	.030	0	0	.165	0	.002	AP
10	8	0	0	.32	.03	103	6.11	6.83	6.71	6.68	7.33	.030	0	0	/	/	/	AP
11	6	0	0	.37	.04	.04	5.74	6.80	6.83	6.36	7.30	.026	0	0	169	.025	.009	AP
12	8	0	0	.60	.05	.05	6.0	6.9	7.08	6.85	7.50	.052	0	0	—	—	/	DB
13	10	0	0	.62	.05	.05	5.89	6.92	6.95	6.84	7.45	.106	0	0	.182	.008	.009	DB
14	7	0	0	.56	.04	.04	5.88	6.67	6.98	6.95	7.30	.044	0	0	—	—	—	DB
15	9	0	0	.35	.06	.07	6.03	6.75	6.52	6.48	7.47	.032	0	0	.190	.020	.024	DB
16	14	0	0	.45	.07	.07	5.95	6.80	6.35	6.54	7.25	.056	0	0	—	—	—	DB
17	12	0	0	.40	.05	.06	6.05	7.02	6.65	6.75	7.31	.032	0	0	.198	.024	.016	DB
18	10	0	0	.35	.05	.05	6.07	7.00	7.05	7.42	7.42	.028	0	0	—	—	—	DB
19	11	0	0	.38	.06	.06	6.10	6.97	6.54	6.52	7.40	.034	0	0	.212	.016	.012	DB
20	9	0	0	.35	.05	.05	6.15	6.99	6.61	6.65	7.25	.016	0	0	—	—	—	DB
21	12	0	0	.42	.06	.06	6.08	6.87	6.65	6.57	7.36	.064	0	0	.219	.029	.013	AP
22	10	0	0	.45	.06	.07	6.00	6.55	6.61	6.50	7.31	.055	0	0	—	—	—	AP
23	12	0	0	.36	.06	.07	6.10	6.43	6.20	6.32	7.69	.032	0	0	.231	.033	.018	AP
24	13	0	0	.35	.05	.05	6.18	7.15	6.27	6.30	7.57	.032	0	0	/	/	/	AP
25	10	0	0	.33	.04	.05	6.17	7.16	6.41	6.44	7.78	.032	0	0	.227	.023	.015	AP
26	8	0	0	.35	.04	.04	6.18	7.15	6.40	6.40	7.75	.033	0	0	/	/	/	AP
27	9	0	0	.34	.04	.05	6.10	7.32	6.49	6.60	7.50	.031	0	0	.233	.018	.014	AP
28	5	0	0	.34	.04	.05	6.01	7.06	6.45	6.51	7.75	.028	0	0	/	/	/	AP
29	6	0	0	.33	.05	.05	6.03	7.05	6.48	6.50	7.67	.030	0	0	.226	.021	.033	AP
30	7	0	0	.34	.07	.07	6.04	7.0	6.56	6.64	7.52	.038	0	0	—	—	—	DB
31	5	0	0	.35	.05	.06	6.01	7.01	6.49	6.57	7.51	.048	0	0	.187	.024	.017	DB

STATE OF CONNECTICUT
Dept. of Public Health
Bureau of Laboratories Services
10 Clinton St.
P.O. Box 1689
Hartford, CT 06144
TELEPHONE: (860) 566-5063

I.D.	ACCESSION NO.	ACCOUNT NO.	AGE	S		PA
NR: 01	22212623	A99981	0			1

INFORMATION

033MIDDLETOWN
CT. VALLEY HOSP.
BATTELL HALL
MIDDLETOWN CT

PUBLIC WATER
C.V.H./WATER DEPT.
SAMUEL MANNHARDT
SILVER ST. 8351
MIDDLETOWN CT 06457

COLLECTED	RECEIVED	REPORTED
05/08/97 07:30	05/08/97 12:00	05/09/9 15:16

REPORT: FINAL REPORT

COMMENT

TEST(S)	RESULT(S)
	RES. WELL OR SPRING NAME:
	COLLECTOR: PAGANI
***	
DATE/TIME ANALYZED	5/8/97 1215
ANALYZED BY	RG
ANALYTICAL METHOD	MINIMAL MEDIUM ONPG-MUG TEST
TOTAL COLIFORM	ABSENT PER 100 ML
COMMENT	PLEASE NOTE THAT IF THESE SAMPLES WERE COLLECTED FROM A PUBLIC DRINKING WATER SYSTEM FOR COMPLIANCE PURPOSES IT IS YOUR RESPONSIBILITY TO SUBMIT THE RESULTS TO: DPH C/O REGIONAL ENGINEER WATER SUPPLIES SECTION P. O. BOX 340308 HARTFORD, CT 06134-0308 THE RESULTS MUST BE SUBMITTED NO LATER THAN 9 DAYS FOLLOWING THE END OF EACH MONTH IN ACCORDANCE WITH PUBLIC HEALTH CODE SECTION 19-13-B102(H) (4). THE BUREAU OF LABORATORIES WILL NOT SUBMIT THESE FOR YOU. PLEASE CALL THE WATER SUPPLIES SECTION AT (860) 509-7333 IF YOU HAVE QUESTIONS REGARDING THIS MATTER.
***	
APPARENT COLOR	0
TRUE COLOR	0
ODOR	NONE
TURBIDITY	<0.2
PH	7.1

FORM NO. OL-6A REV. 12/95

STATE OF CONNECTICUT
Dept. of Public Health
Bureau of Laboratories Services
10 Clinton St.
P.O. Box 1689
Hartford, CT 06144
TELEPHONE: (860) 566-5063

I.D.	ACCESSION NO.	ACCOUNT NO.	AGE	S		PAGE
NR: 02	22212624	A99981	0			1

INFORMATION

083MIDDLETOWN
CT. VALLEY HOSPITAL
MERRITT HALL
MIDDLETOWN CT 06457

PUBLIC WATER
C.V.H./WATER DEPT.
SAMUEL MANNHARDT
SILVER ST. 8351
MIDDLETOWN CT 06457

COLLECTED	RECEIVED	REPORTED
05/08/97 07:50	05/08/97 12:00	05/09/97 15:16

REPORT: FINAL REPORT

COMMENT

TEST(S)	RESULT(S)
	RES. WELL OR SPRING NAME:
	COLLECTOR: PAGANI TITLE: PLANT OPERATOR
***	
DATE/TIME ANALYZED	5/8/97 1215
ANALYZED BY	RG
ANALYTICAL METHOD	MINIMAL MEDIUM ONPG-MUG TEST
TOTAL COLIFORM	ABSENT PER 100 ML
COMMENT	PLEASE NOTE THAT IF THESE SAMPLES WERE COLLECTED FROM A PUBLIC DRINKING WATER SYSTEM FOR COMPLIANCE PURPOSES IT IS YOUR RESPONSIBILITY TO SUBMIT THE RESULTS TO: DPH C/O REGIONAL ENGINEER WATER SUPPLIES SECTION P. O. BOX 340308 HARTFORD, CT 06134-0308 THE RESULTS MUST BE SUBMITTED NO LATER THAN 9 DAYS FOLLOWING THE END OF EACH MONTH IN ACCORDANCE WITH PUBLIC HEALTH CODE SECTION 19-13-B102(H) (4). THE BUREAU OF LABORATORIES WILL NOT SUBMIT THESE FOR YOU. PLEASE CALL THE WATER SUPPLIES SECTION AT (860) 509-7333 IF YOU HAVE QUESTIONS REGARDING THIS MATTER.
***	
APPARENT COLOR	0
TRUE COLOR	0
ODOR	NONE
TURBIDITY	<0.2
PH	7.2

FORM NO. OL-6A REV. 12/95

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

June 13, 1996

Albert J. Solnit, Commissioner
Mental Health and Addiction Services
410 Capital Avenue
P.O. Box 341431
Hartford, CT 06134

Re: Unpermitted Solid Waste Disposal Area
Connecticut Valley Hospital, Middletown, CT

Dear Commissioner Solnit:

While assisting the town of Middletown in evaluating another public water well in the John S. Roth Well Field system the Water Management Bureau of the Department of Environmental Protection became aware of a solid waste disposal area located on the grounds of the Connecticut Valley Hospital (CVH) located in Middletown, Connecticut (site). The existence of that landfill was referred to the Waste Management Bureau and upon further investigation it was determined that the site had been used for incinerator residue disposal and was still in use for bulky waste. The site has no permits to operate from this department as required by statute.

Members of my staff from the Waste Management Bureau investigated the site with Michael Lucas, Chief of Engineering Services, and John Tuz, Plant Facilities Engineer of the Department of Mental Health and Addiction Services staff. Attached are reports of inspection and test hole excavation conducted on March 22 and April 8, 1996 from Stan Gormley, Environmental Analyst, and his recommendations regarding completion of site closure. The close proximity of the landfill to the well field makes it very important that the landfill be properly closed and its impact on ground water be monitored.

Please contact John England, Supervising Environmental Analyst, from the Waste Management Bureau at 424-3366 regarding submittal of engineering plans for DEP approval for the site closure work, recording information on land records, and well installation for upgrade and down grade long term water monitoring.

We appreciate your prompt discontinued use of the site for bulky waste disposal and look forward to your anticipated cooperation in completion of this matter.

Sincerely,

Sidney J. Holbrook
Commissioner

cc: John England, WMB,WEED

interoffice MEMORANDUM DEPARTMENT OF ENVIRONMENTAL PROTECTION

to: Thomas Pregman - Supervising Environmental Analyst
Waste Engineering and Enforcement Division
Waste Management Bureau

from: Stan Gormley - Environmental Analyst
Waste Engineering and Enforcement Division
Waste Management Bureau

subject: Solid Waste Complaint Investigation of SW-650, regarding illegal landfill on the grounds of Connecticut Valley Hospital, Middletown, Connecticut, conducted on March 22, 1996

date: March 26, 1996

On March 22, 1996, I investigated Solid Waste Complaint No. SW-650, regarding allegations of an illegal landfill on the grounds of the Connecticut Valley Hospital, (CVH) a State of Connecticut Department of Mental Health and Addiction Services (DMHAS) facility in Middletown, Connecticut. The complaint states that the landfilling activity is taking place between Silvermine Road and Reservoir Brook.

On my arrival I observed what appeared to be an old incinerator at the intersection of Silvermine Road and O'Brien Road. Next to the incinerator was a storage and/or staging area for solid waste, specifically automobile tires and metals. There were several signs with instructions and directions. Adjacent to the storage area was an active construction and demolition landfill. The area was approximately a couple hundred feet long by 50 to 70 feet wide in size. The depth could not be determined but appeared to be up to 50 feet in some areas. The solid waste appeared to be pushed down a hill which toed into Reservoir Brook. The waste was approximately 20 feet from the brook in some areas. The waste was not compacted or covered for the most part. I observed the following items: used lumber, pallets, various pieces of wooden furniture (chairs, tables), cardboard, picnic table, rug fragments, metal objects, and land clearing debris, i.e., clippings, prunings, brush, shrubs, and large chunks of trees.

I then met with Messers John G. Tuz and Warren B. Reed, Plant facilities Engineer II and I, respectively. Mr. Tuz informed me that as long as he has been at CVH, approximately three years, that area has been used for disposal. He stated the state has a contract for garbage disposal but DMHAS, for whatever reason, failed to make provisions for bulky waste disposal. Mr. Reed explained that the incinerator was built in the mid 1950's and closed in the mid 1970's. They were unsure but speculate that the ash residue from this

incinerator was disposed of on site and may be in the same area as the landfill. However, they have no proof of this.

Mr. Tuz and I then met with his Supervisor, Michael Lucas, Chief of Engineering Services, and Jeffrey Cyr, Design Engineer, from DMHAS. According to Mr. Lucas DMHAS closed a similar landfill at the Fairfield Hills facility in Newtown, Connecticut. He added that DMHAS is prepared to close this site as well. I explained that I was on a fact finding mission and that the DEP would be getting back to DMHAS in the near future.

SG:ehd

interoffice MEMORANDUM DEPARTMENT OF ENVIRONMENTAL PROTECTION

to: Thomas Pregman - Supervising Environmental Analyst
Waste Engineering and Enforcement Division
Waste Management Bureau

from: Stan Gormely - Environmental Analyst
Waste Engineering and Enforcement Division
Waste Management Bureau

subject: Test hole digging at the Department of Mental Health and Addiction Services, Connecticut Valley Hospital Facility, Middletown, Connecticut conducted on April 8, 1996.

date: May 23, 1996

On April 8, 1996, I observed several test pits which were dug as a follow-up to solid waste complaint No. SW-650. The Department of Health and Addiction Services (DMHAS), Connecticut Valley Hospital (CVH) facility located in Middletown, Connecticut had an active solid waste disposal area located off of O'Brien Road, Middletown, CT (site). Seven test holes were dug, at my direction, using CVH's John Deer D-410 backhoe. Once the excavations were made the holes were then back filled. On site were Larry Maye, Grounds Supervisor, Warren Reed, Facility Engineer, and Howard Soobitsky, Maintainer, from CVH. The following was observed.

Test Hole 1:
This hole was approximately 3' X 8' X 10-12' deep. Minimal amounts of solid waste was observed. Specifically, a couple of beer cans, paper cups, and paper items. The waste appeared to be recently buried.

Test Hole 2:
This hole was approximately 3' X 8' X 10'-12' deep. The first 6' to 8' was predominately clean fill. The last 4' to 6' showed signs of what appeared to be old solid waste deposition. Specifically uncovered were charred and/or burnt lumber fragments, rusted metal cans, and charred and/or melted plastics.

Test Hole 3:
This hole was approximately 3' X 8' X 10-12' deep. As in test hole 1, minimal amounts of solid waste was uncovered, specifically beer cans, and paper cups. The upper 6 to 8' was predominately clean fill with the solid waste being in the bottom portion of the hole.

Test Hole 4:
This hole was approximately 3 X 8 X 6-8' deep. A large piece of concrete was struck and the hole was discontinued. Only clean fill was uncovered.

Test Hole 5:
This hole was approximately 3 X 6' X 10' deep. Sporadic amounts of solid waste material were uncovered similar to test holes no. 1 and 3.

Test Hole 6:
This hole was approximately 3 X 8 X 10 -12' deep. The first 6 feet of material excavated was clean fill. However the last 4 to 6 feet showed signs of what appeared to be older solid waste disposal. Charred and/or burnt lumber fragments, and rusted metal cans were observed.

Test Hole 7:
This hole was approximately 3 X 8 X 10 - 12' deep. The first 4 feet of material excavated was clean fill. However from then on and to the bottom of the excavation ash residue was encountered. Charred and/or burnt waste items, slag, glass fragments, and various metals ranging from food containers to utensils were uncovered.

While talking with Howard Soobitsky, he recalls dumping the ash from the incinerator at this location. Mr. Soobitsky stated the following: the road to the dump stopped at a wetlands where the ash and/or other wastes were deposited. The ash landfill was approximately 100 X 150' X several feet deep. Once the incinerator was closed the trash was hauled to the Middletown municipal landfill located off Dekoven Drive, Middletown, Connecticut. He stated that everything and anything could be buried here. After a hurricane in the 1970's, numerous trees on the grounds were damaged and as a result several cords of firewood were cut and stored at this location. Attempts to sell the fire wood were unsuccessful and after a few years the wood became rotten and was subsequently pushed over the bank. Eventually the wood was covered with excess fill from various CVH projects. Although no test holes showed signs of buried tree wastes, the side slopes in some areas do substantiate Mr. Soobitsky statements.

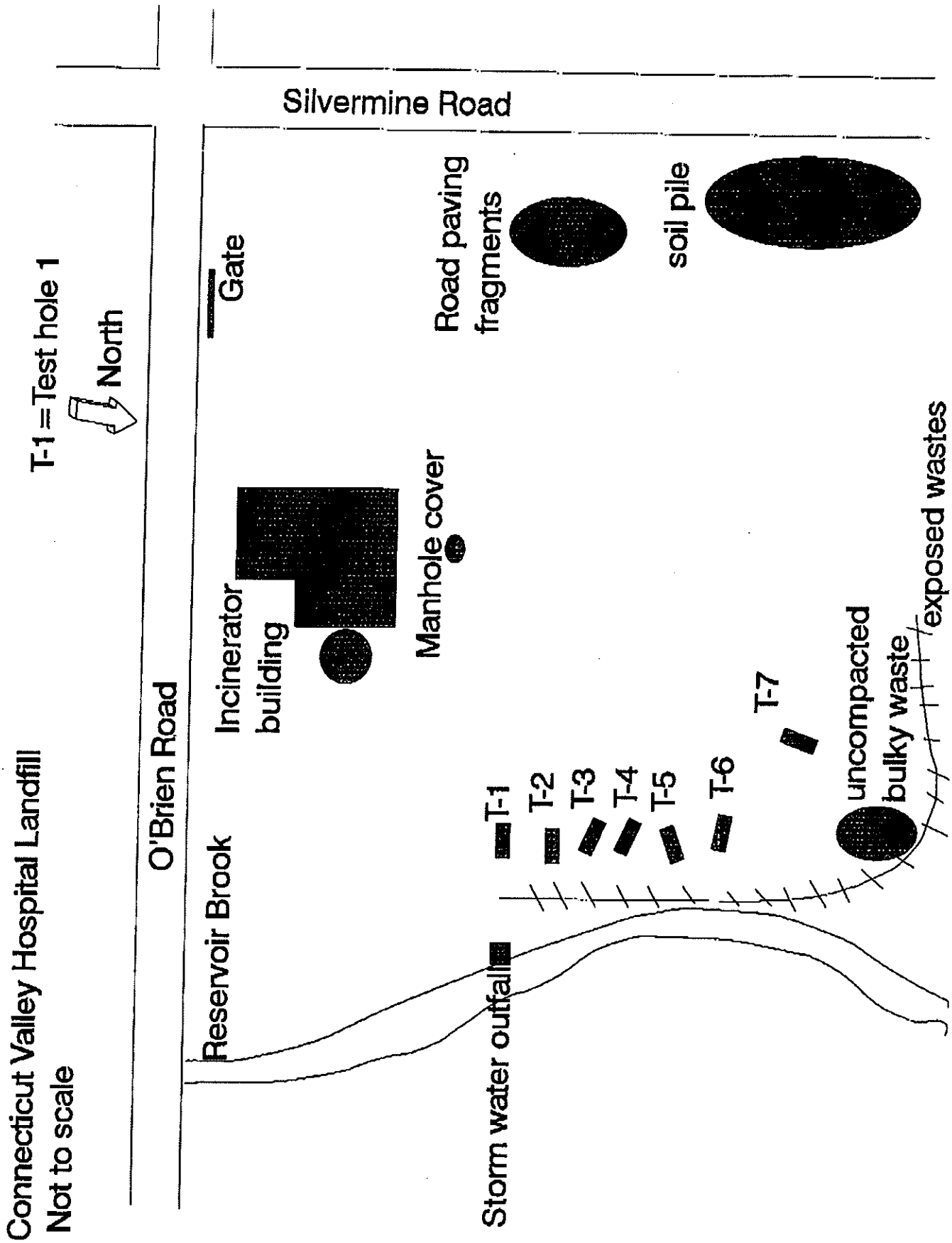
Based upon my discussions with several employees, the results of the test hole excavations, and the general appearance of the physical site itself (exposed side slopes showing the deposition of solid waste) it is clear that CVH operated a solid waste landfill at this location for many years.

The landfill site is adjacent to, and/or in, Reservoir Brook and is located, approximately, one-half mile from the John S. Roth Well Field which supplies public water to the town of Middletown. The Water Management Bureau of this department has expressed concern over the landfills close proximity to that well field.

I therefore recommend that DMHAS retain one or more qualified consultants acceptable to the Commissioner or demonstrate to the Commissioner that qualified in-house expertise exists to prepare and oversee a landfill closure plan for the CVH solid waste disposal area. The landfill closure plan shall be submitted to the department in accordance with Section 22a-209-13 of the Regulations of Connecticut State Agencies. The closure plan shall including but not be limited to detailed information concerning; use of the site following closure, grading, final covering and seeding, vector control, decomposition gases, and disruption of the site. DMHAS shall submit as built drawings of the area and record a detailed description of the disposal area in the Middletown land records. DMHAS shall also be responsible for post-closure maintenance and monitoring of the site unless other wise approved by writing by the Commissioner.

I have spoke to John England, Supervising Environmental Analyst (424-3366), our staff hydrogeologist regarding this landfill. Mr. England feels that two monitor wells placed such that one is up gradient and one down gradient should be sufficient to get a feel of what is leaching from the landfill. He also informed me that he is prepared to work with DMHAS regarding plan details of sitting, construction, and monitoring parameters of the above monitor wells.

SG:ehd


Silvermine Road
T-1 = Test hole 1
North
Gate
Road paving fragments
soil pile
Incinerator building
Manhole cover
O'Brien Road
Reservoir Brook
T-1
T-2
T-3
T-4
T-5
T-6
T-7
uncompacted bulky waste
exposed wastes
Storm water outfall
Connecticut Valley Hospital Landfill
Not to scale

TRA-10 REV 1/97

Report By: RJC Date: 4/97 Checked By: MM Date: 4/97 See Previous STC Report No.	STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION **TRAFFIC INVESTIGATION REPORT TO THE STATE TRAFFIC COMMISSION**	STC No: 082-9704-01 Loc. No: 082-248 Approved By STC Date: MAY 20 1997 Richard J. Howard EXECUTIVE DIRECTOR
Requested By: Dept. Of Mental Health How Requested: Letter Date: 4/1/96	Middletown Location: Silver Street @ Tynan & Harvey Drives	

Recommendation:

It is recommended that the state assume ownership of the traffic control signal at the subject location upon its installation and the completion of a thirty-day test period.

The Department of Mental Health will pay for the electricity needed to operate the signal and will continue to own and maintain the emergency pre-emption equipment.

Officer Craig Elkin, representing the Legal Traffic Authority for the City of Middletown, was contacted and concurred on April 4, 1997.

Existing Conditions:

Mr. Michael Lucas, Chief of Engineering Services at the Department of Mental Health, wrote to the state on April 1, 1996 requesting that the department upgrade the existing town-owned signals on Silver Street @ Harvey & Tynan Drives and at Holmes Drive. The department has agreed to upgrade and assume ownership of these signals. This work will be accomplished in Project 171-260.

By Vincent Quinn
Division of Traffic Engineering
Bureau of Engineering and Highway Operations

RECEIVED
DEC 1 1995

United States Department of the Interior

NATIONAL PARK SERVICE
P.O. Box 37127
Washington, D.C. 20013-7127

IN REPLY REFER TO:
H32(2280)

DEC 14 1995

Mr. John W. Shannahan
Director
Connecticut Historical
Commission
59 South Prospect Street
Hartford, CT 06106

Dear Mr. Shannahan:

This letter certifies that the Connecticut General Hospital for the Insane, located on Silver Street in Middletown, Middlesex County, Connecticut, was listed in the National Register of Historic Places on August 29, 1985.

If we can provide further information or assistance, please let us know.

Sincerely,

Carol D. Shull
Keeper of the National Register of Historic Places
National Register, History & Education

Notary, District of Columbia
My Commission Expires February 14, 1998
1998 gw

Exhibit 31

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

November 28, 1995

Natalina Raimondi
Department of Public Works
S.O.B., Room 437
165 Capitol Avenue
Hartford, Ct. 06106

Re: CVH Middletown
Project No. BI-I-425

Dear Natalina:

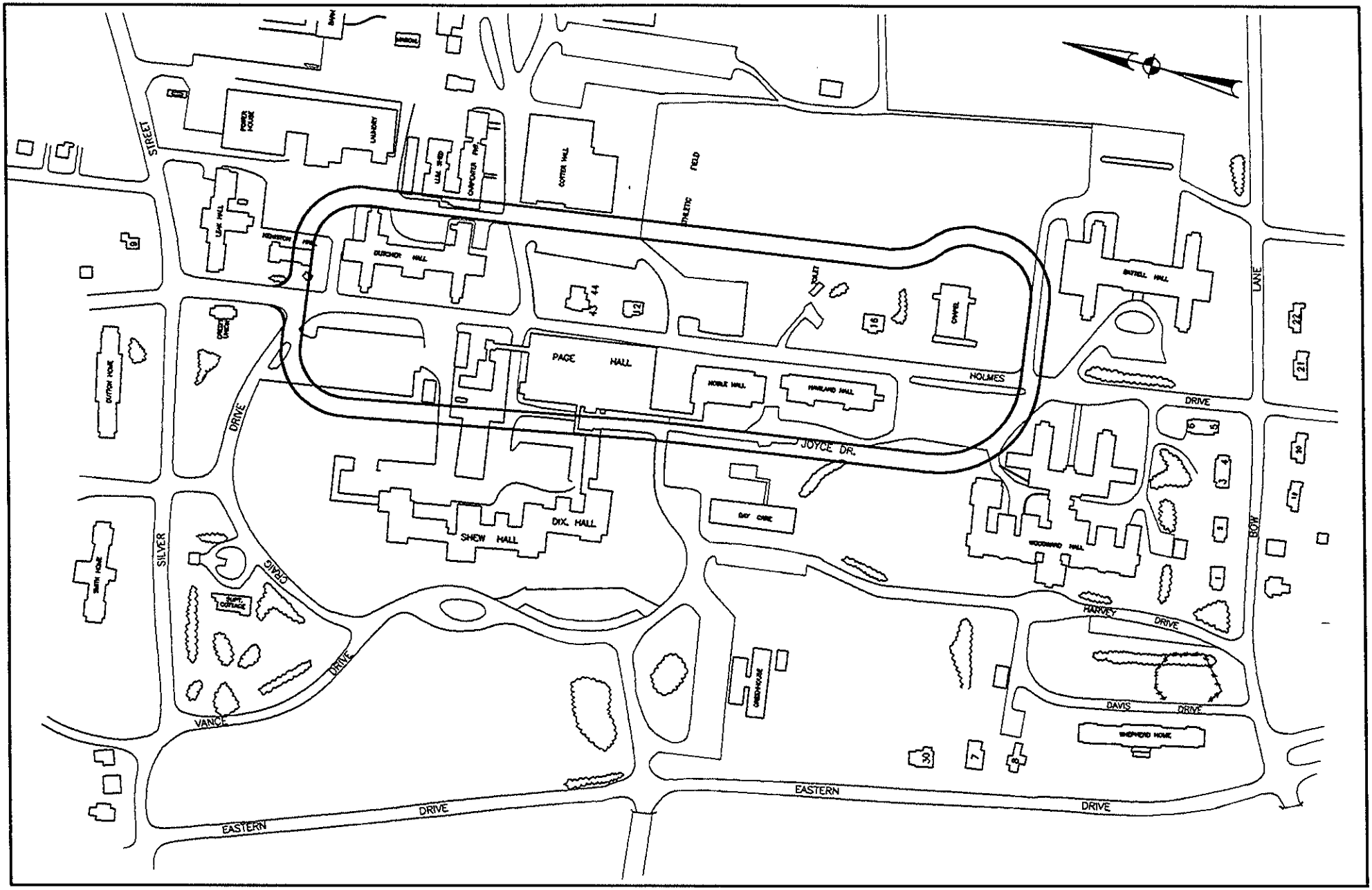
I have reviewed the draft "Sanitary Sewer Study Connecticut Valley Hospital Middletown, Connecticut" prepared for The Department of Public Works by Purcell Associates. As a result of my review I have only two concerns regarding the tie-in to the City of Middletown sanitary sewer system. The first one is the fact that there sources of excessive inflow and infiltration within the existing sanitary collection system at CVH. Although recommended by the report, an I & I study must be undertaken and necessary repairs made to the collection system before a tie-in to the Middletown system is accomplished. The other item missing from the report concerns the abandonment of the existing WPCF. Details concerning the demolition and the disposal of all chemicals and sludges should be provided.

If you have any questions concerning this matter please do not hesitate to call me at 424-3759.

Walter Sinnott
Senior Sanitary Engineer

APPENDIX D

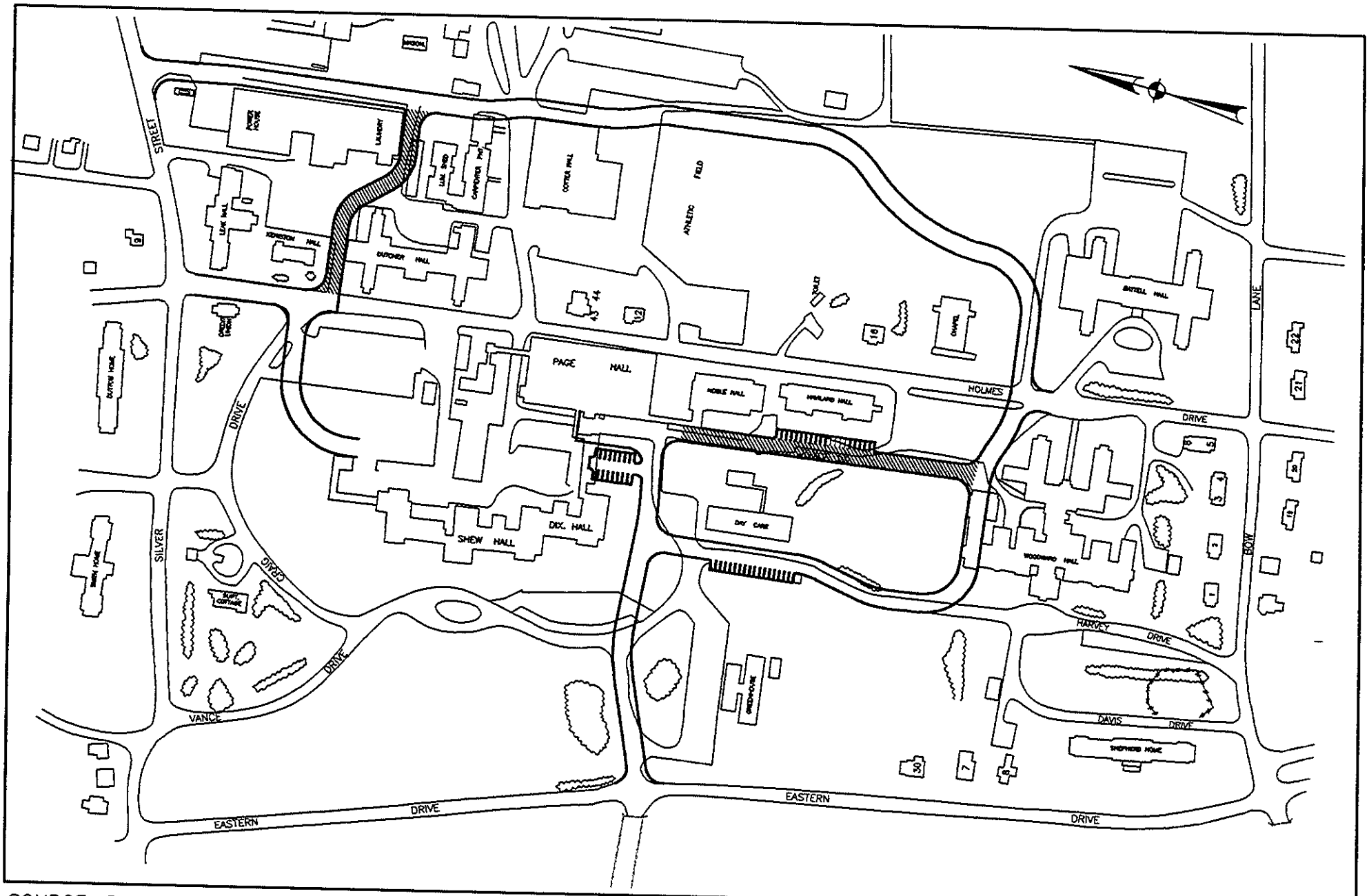
Alternative Site Plans



SOURCE: PURCELL ASSOCIATES SCALE: 1" = 270'

CONNECTICUT VALLEY HOSPITAL, MIDDLETOWN, CONNECTICUT

ALTERNATIVE 1

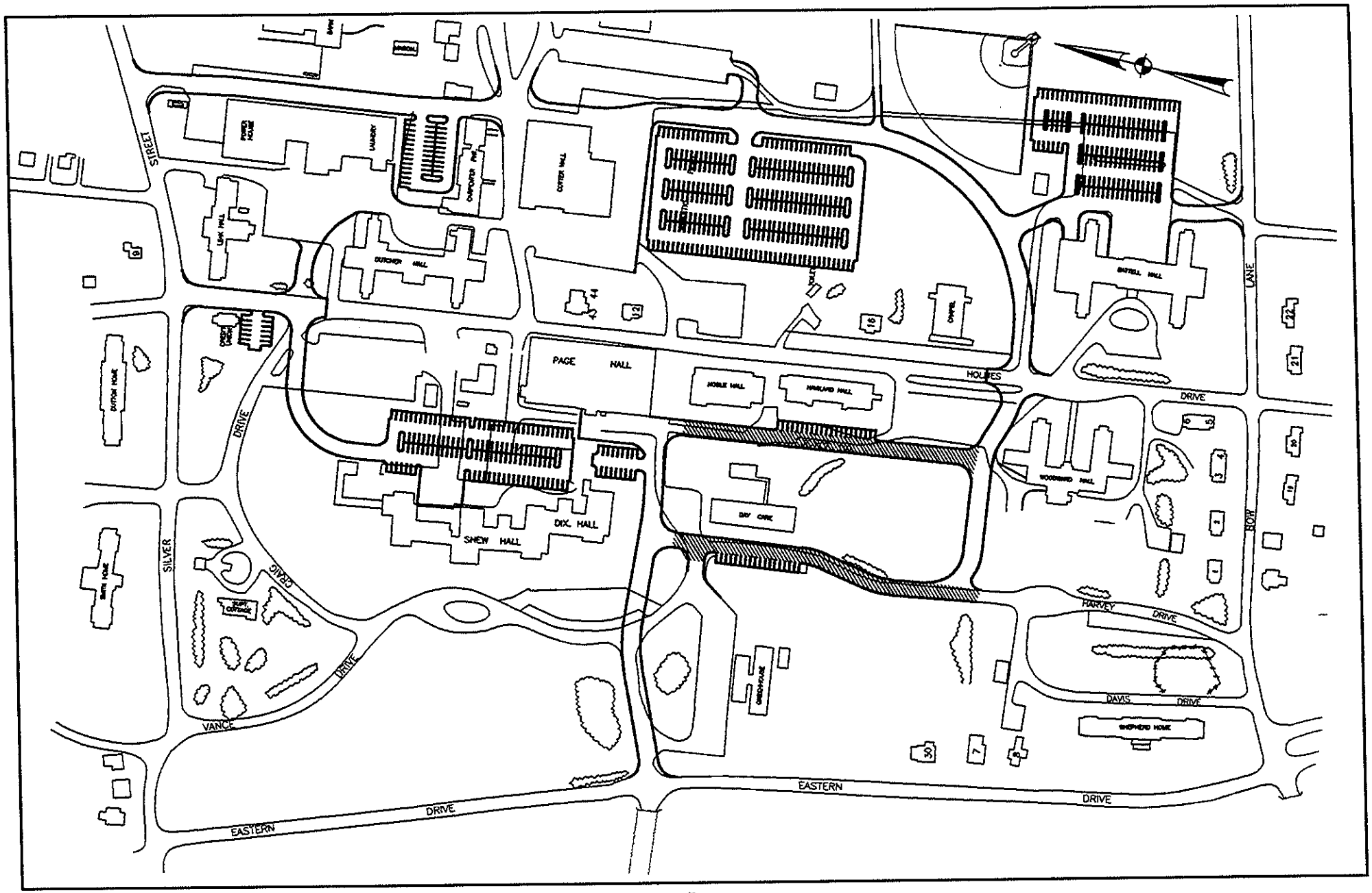


SOURCE: PURCELL ASSOCIATES

SCALE: 1" = 270'

CONNECTICUT VALLEY HOSPITAL, MIDDLETOWN, CONNECTICUT

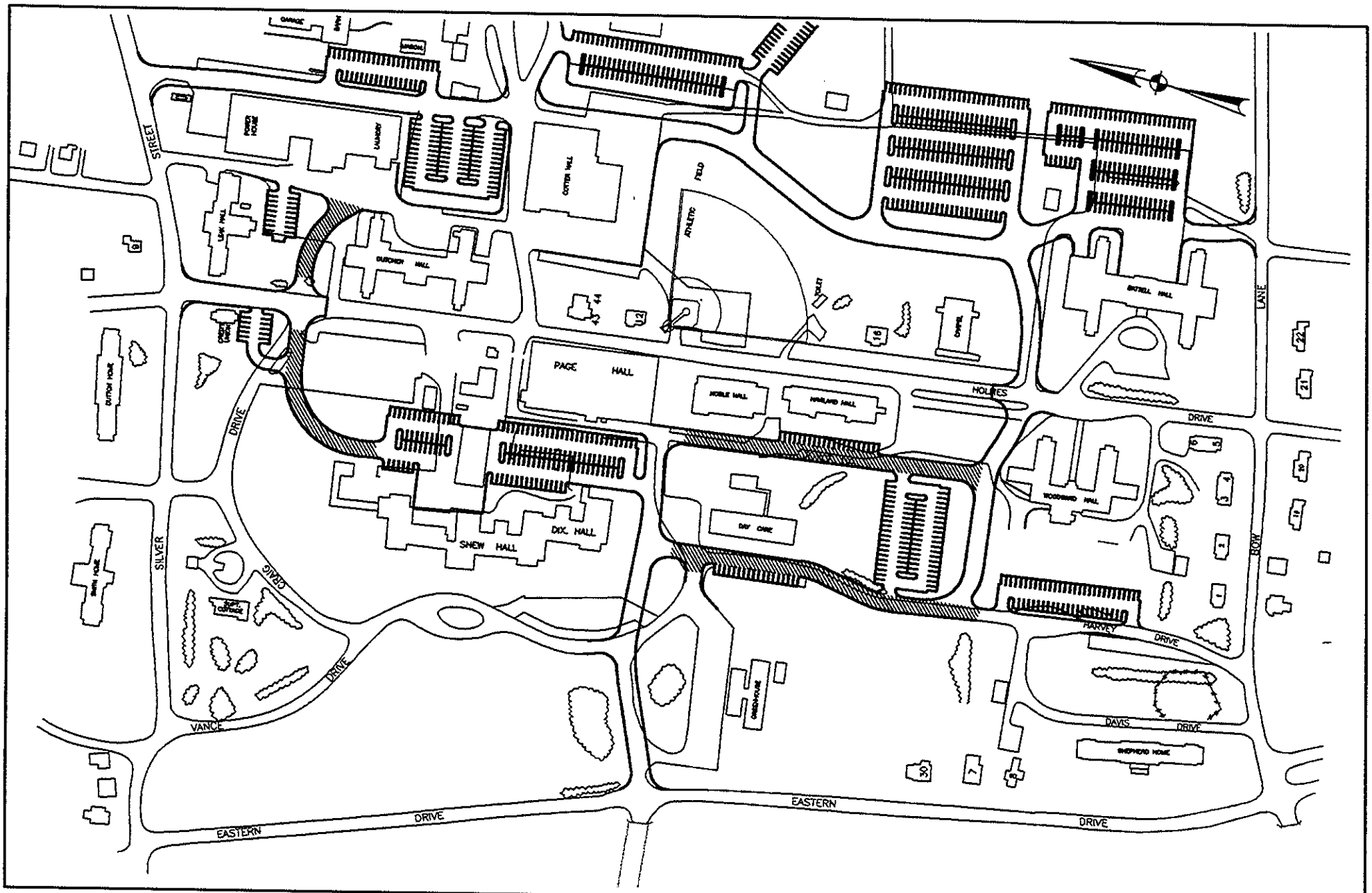
ALTERNATIVE 2



SOURCE: PURCELL ASSOCIATES SCALE: 1" = 270'

CONNECTICUT VALLEY HOSPITAL, MIDDLETOWN, CONNECTICUT

ALTERNATIVE 3



SOURCE: PURCELL ASSOCIATES

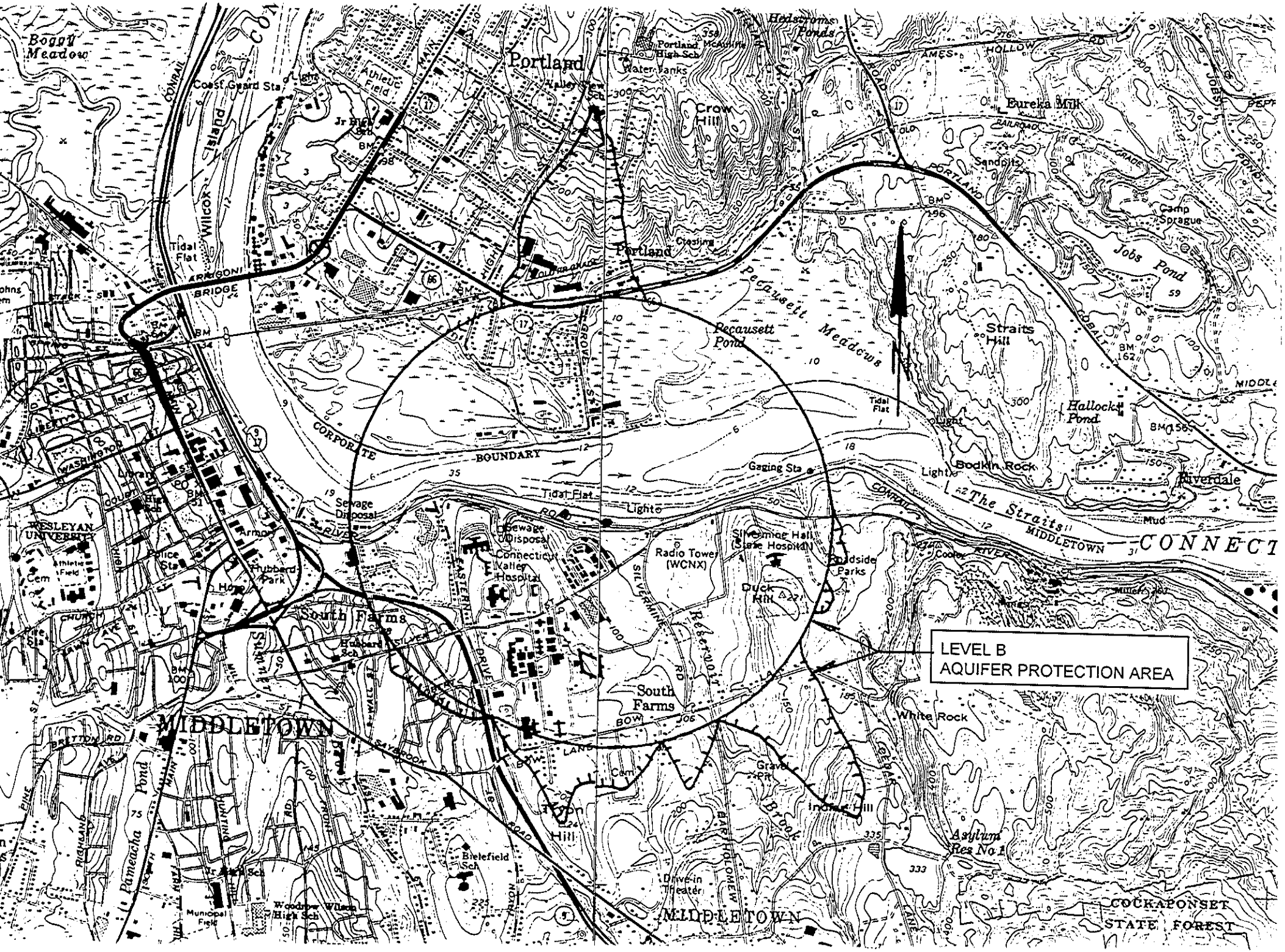
SCALE: 1" = 270'

CONNECTICUT VALLEY HOSPITAL, MIDDLETOWN, CONNECTICUT

ALTERNATIVE 4

APPENDIX E

Level B Aquifer
Protection Map


LEVEL B
AQUIFER PROTECTION AREA
Portland
MIDDLETOWN
South Farms
Pecausett Meadows
Pecausett Pond
Crow Hill
Straits Hill
Eureka Mill
Jobs Pond
Camp Sprague
Hallocks Pond
Bodkin Rock
Riverdale
The Straits
Duck Hill
Silvermine Hall (State Hospital)
Radio Tower (WCNX)
Goldside Parks
White Rock
Asylum Res No 1
Indian Hill
Pameacha Pond
Bielefield Sch
Woodrow Wilson High Sch
Drive-in Theater
COCKAPONSET STATE FOREST
Portland High Sch
Water Tanks
Coast Guard Sta
Tidal Flat
Sewage Disposal
Connecticut Valley Hospital
Wesleyan University
Hubbard Park
Hubbard Sch
Police Sta
Gaging Sta
Light
Mud
CORPORATE BOUNDARY
ARMORONI BRIDGE
MAIN ST
HIGH ST
WILCOX BRIDGE
GROVE ST
SILVERMINE RD
EASTERN DRIVE
SAYBROOK ROAD
BROOK ST
HOLLOW RD
PORTLAND ROAD
MIDDLETOWN
CONNECTICUT
RIVER
Coast Guard Island
Boggy Meadow
Hedstrome Ponds
Sandpits
Athletic Field
Jr High Sch
Valley View Sch
Armory
Library
Post Office
Cem
Church
Town Hall
Fire Sta
Gravel Pit
Quarry
Golf Course
Tidal Flat
Light
Crossing
Railroad
Bridge
Creek
Pond
Hill
Mountain
Brook
Lane
Road
Drive
Avenue
Street
Place
Terrace
Court
Circle
Boulevard
Highway
Turnpike
Expressway
Freeway
Interstate
Route
Exit
Entrance
Ramp
Overpass
Underpass
Tunnel
Bridge
Dam
Reservoir
Lake
River
Stream
Creek
Brook
Pond
Swamp
Marsh
Bog
Meadow
Field
Forest
Woods
Park
Cemetery
School
Church
Hospital
Library
Post Office
Police Station
Fire Station
Town Hall
Courthouse
Jail
Prison
Airport
Heliport
Helipad
Runway
Taxiway
Apron
Hangar
Control Tower
Terminal
Gate
Parking
Garage
Lot
Meter
Sign
Signal
Light
Beacon
Buoy
Channel
Harbor
Port
Dock
Pier
Wharf
Jetty
Breakwater
Seawall
Levee
Dike
Canal
Ditch
Culvert
Pipeline
Power Line
Transmission Line
Substation
Transformer
Generator
Turbine
Windmill
Solar Panel
Battery
Fuel Cell
Nuclear Reactor
Coal Mine
Oil Well
Gas Well
Refinery
Pipeline
Storage Tank
Pump
Valve
Meter
Gauge
Sensor
Monitor
Alarm
Siren
Radio
Television
Antenna
Satellite
Dish
Tower
Mast
Guy Wire
Insulator
Transformer
Switch
Circuit Breaker
Fuse
Relay
Capacitor
Resistor
Inductor
Diode
Transistor
Integrated Circuit
Microprocessor
Computer
Server
Router
Modem
Cable
Fiber Optic
Wireless
Bluetooth
Wi-Fi
Cellular
Satellite
GPS
Navigation
Mapping
Surveying
Geodesy
Geology
Hydrology
Meteorology
Climatology
Oceanography
Limnology
Ecology
Biology
Chemistry
Physics
Mathematics
Statistics
Probability
Algorithm
Data
Information
Knowledge
Wisdom
Intelligence
Consciousness
Existence
Reality
Truth
Beauty
Goodness
Love
Peace
Joy
Happiness
Success
Failure
Life
Death
Time
Space
Matter
Energy
Universe
God
Creation
Evolution
Adaptation
Mutation
Selection
Genetics
DNA
RNA
Protein
Cell
Tissue
Organ
System
Organism
Species
Population
Community
Ecosystem
Biosphere
Earth
Sun
Moon
Planet
Star
Galaxy
Universe
Big Bang
Inflation
Dark Matter
Dark Energy
Quantum Mechanics
Relativity
Gravity
Electromagnetism
Strong Force
Weak Force
Particle
Wave
Field
Vacuum
Zero-Point Energy
Casimir Effect
Hawking Radiation
Black Hole
Singularity
Event Horizon
Wormhole
Time Travel
Parallel Universe
Multiverse
Simulation
Virtual Reality
Artificial Intelligence
Machine Learning
Neural Network
Deep Learning
Natural Language Processing
Computer Vision
Robotics
Automation
Industry 4.0
Internet of Things
Big Data
Cloud Computing
Edge Computing
Blockchain
Cryptocurrency
Smart Contract
Decentralized Finance
Non-Fungible Token
Metaverse
Web 3.0
Digital Twin
Augmented Reality
Mixed Reality
Extended Reality
Haptic Technology
Brain-Computer Interface
Neuralink
Transhumanism
Singularity
Post-Scarcity
Abundance
Sustainability
Climate Change
Global Warming
Greenhouse Gas
Carbon Dioxide
Methane
Nitrous Oxide
Fluorinated Gas
Ozone Layer
Ozone Hole
Montreal Protocol
Kyoto Protocol
Paris Agreement
Net Zero
Carbon Neutral
Carbon Negative
Carbon Capture
Carbon Sequestration
Carbon Offset
Carbon Tax
Carbon Trading
Carbon Footprint
Water Footprint
Ecological Footprint
Biodiversity
Conservation
Restoration
Rewilding
Permaculture
Regenerative Agriculture
Organic Farming
Vertical Farming
Hydroponics
Aeroponics
Aquaponics
Lab-Grown Meat
Plant-Based Meat
Alternative Protein
Food Security
Food Sovereignty
Food Justice
Food Waste
Circular Economy
Cradle to Cradle
Zero Waste
Recycling
Upcycling
Downcycling
Composting
Anaerobic Digestion
Biogas
Biofuel
Hydrogen
Fuel Cell
Battery
Electric Vehicle
Autonomous Vehicle
Hyperloop
Maglev
High-Speed Rail
Urban Planning
Smart City
Green Building
Passive House
Net Zero Building
Living Building
Biophilic Design
Universal Design
Accessibility
Inclusion
Diversity
Equity
Justice
Peace
Nonviolence
Compassion
Empathy
Love

APPENDIX F

Flora and Fauna Index

FLORA INDEX

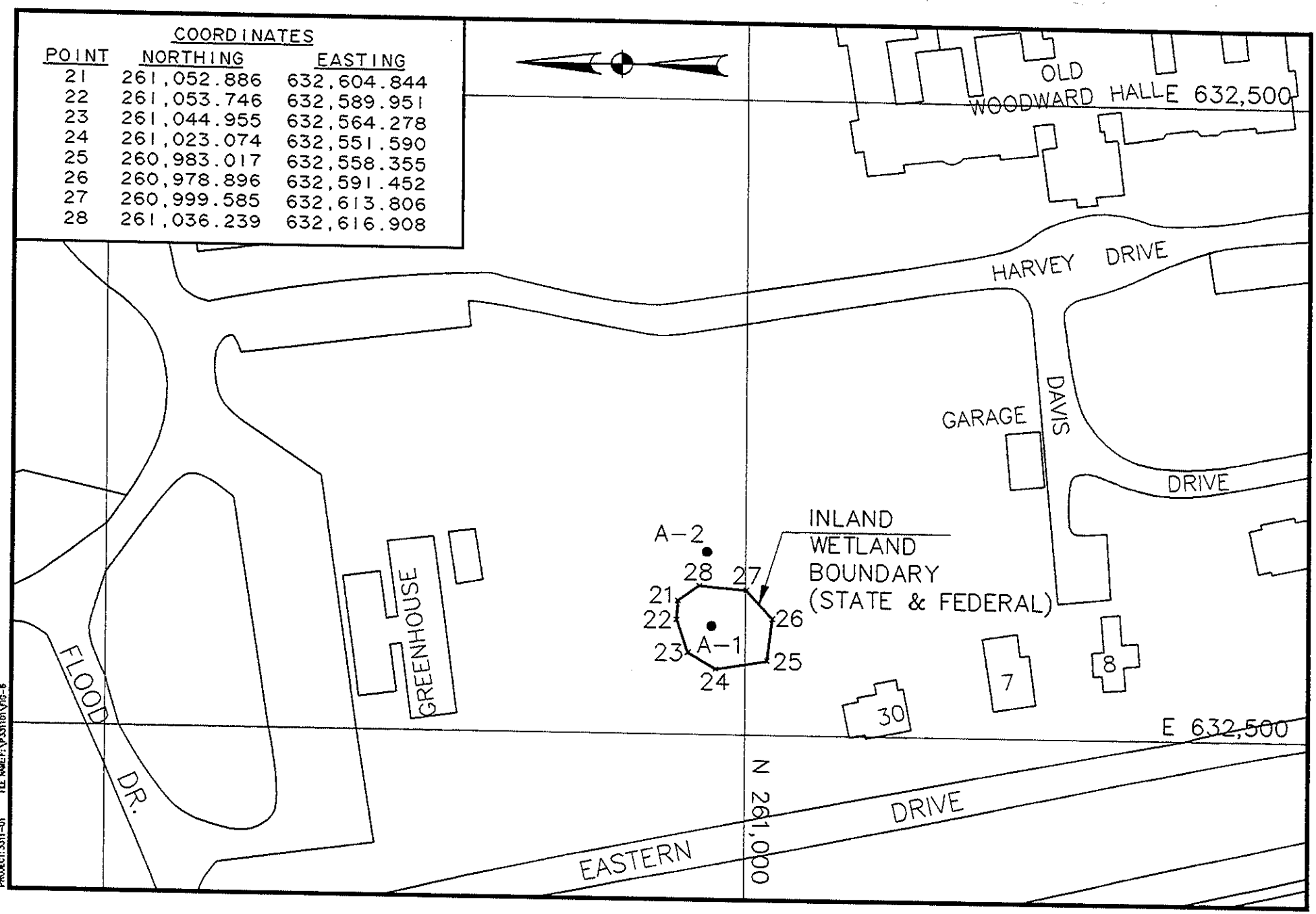
American yew	*Taxus canadensis*
American Basswood	*Tilia americana*
American bittersweet	*Celastrus scandens*
American Elm	*Ulmus americana*
Apple tree	*Malus sp.*
Arborvitae	*Thuja sp.*
Aster	*Aster sp.*
Bittersweet nightshade	*Solanum dulcamara*
Black Birch	*Betula lenta*
Burning bush	*Euonymous atropurpureus*
Common dandelion	*Taraxacum officinale*
Common burdock	*Arctium minus*
Common privet	*Ligustrum vulgare*
Common privet	*Ligustrum vulgare*
Copper Beech	*Fagus cuprea*
Crabapple	*Malus sp.*
Eastern cottonwood	*Populus deltoides*
Eastern hemlock	*Tsuga canadensis*
Eastern red cedar	*Juniperus virginiana*
Eastern white pine	*Pinus strobus*
European beech	*Fagus sylvatica*
Flowering dogwood	*Cornus florida*
Foxgrape	*Vitis labrusca*
Foxtail	*Alopecurus sp.*
Goldenrod sp.	*Solidago sp.*
Green Ash	*Fraxinus pennsylvanica*
Horse Chestnut	*Aesculus hippocastanum*
Inkberry	*Ilex glabra*
Japanese red maple	*Acer palmatum atropurpureum*
Japanese honeysuckle	*Lonicera japonica*
Kentucky bluegrass	*Poa pratensis*
London planes	*Platanus acerifolia*
Multiflora rose	*Rosa multiflora*
Northern red oak	*Quercus rubra*
Norway maple	*Acer platanoides*
Norway spruce	*Picea abies*
Poison ivy	*Toxicodendron radicans*
Pokeweed	*Phytolacca americana*
Queen Anne's lace	*Daucus carota*
Red maple	*Acer rubrum*
Red osier dogwood	*Cornus stolonifera*
Silver maple	*Acer saccharinum*
Staghorn sumac	*Rhus typhina*
Sugar maple	*Acer saccharum*
Tree-of-heaven	*Ailanthus altissima*
Tuliptree sapling	*Liriodendron tulipifera*
Virginia creeper	*Parthenocissus quinquefolia*
Walnut	*Juglans sp.*
White mulberry	*Morus alba*
Winged sumac	*Rhus copallinum*

FAUNA INDEX

American crow	*Corvus brachyrhynchos*
Bald eagle	*Halaieetus leucocephalus*
Canada geese	*Branta canadensis*
Deer mouse	*Peromyscus maniculatus.*
Eastern cottontail	*Sylvilagus floridanus*
Eastern chipmunk	*Tamias striatus*
European starling	*Sturnus vulgaris*
Gray squirrel	*Sciurus carolinensis*
Herring gull	*Larus argentatus*
House sparrow	*Passer domesticus*
Mourning dove	*Zenaida macroura*
Opossum	*Didelphis virginiana*
Raccoon	*Procyon lotor*
Striped skunk	*Mephitis mephitis*
Whitetail deer	*Odocoileus virginianus*

APPENDIX G

Wetland Evaluation
Worksheets



SCALE: 1" = 100'

CONNECTICUT VALLEY HOSPITAL, MIDDLETOWN, CONNECTICUT

SITE PLAN – INLAND WETLAND NEAR GREENHOUSE

Project Title: Connecticut Valley Hospital
Middletown, Connecticut

File Number:

Transect: A Plot: 1 Date: June 16, 1997

DATA - - VEGETATION	Stratum and Species (DOMINANTS ONLY)	Dominance Ratio	Percent Dominance	NWI Status
Trees: Basal Area (sq. in.), >5" dbh, >20' hgt, <30' r				
	/			
Saplings: Percent Areal Coverage, 0.4-5.0" dbh, <15' r				
	/			
Shrubs: Percent Areal Coverage, 3-20' hgt, <15' radius				
	/			
Lianas: Percent Areal Coverage of woody vines, <30' r				
	/			
Herbaceous: Percent Areal Coverage, <3' hgt, <5'radius				
(D)	Eleocharis acicularis	38/99.5	38%	OBL
(D)	Agrostis alba	20.5/99.5	20	FACW
(D)	Polygonum persicaria	20.5/99.5	20	FACW
	Grasses sp.	20.5/99.5	20	–

(D): Dominants in tally
Note: use asterick * to indicate FAC-, FACU, or UPL species with observed adaptations to wetland hydrology

TALLY (Dominants ONLY)

OBL	FACW	FAC	*FAC-	*FACU	*UPL
1	2	0	0	0	0

Subtotal (Hydrophytes): 3

FAC-	FACU	UPL
0	0	0

Subtotal: 0

Total: 3

100 x Subtotal (Hydrophytes) / Total = 100% = Percent Hydrophytes

Describe Vegetation Disturbance: periodically mowed field

Describe Adaptations: only herbaceous plants survive

DATA - - SOIL | Soil Taxonomy: Aquents

COE Regional Drainage Class: somewhat poorly Criterion: C 2a

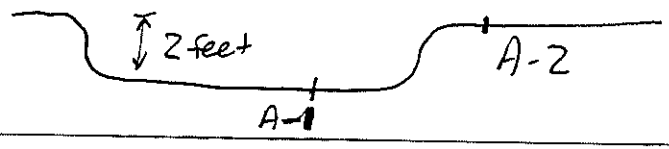
Is Published Soil Survey Available? Yes _X_ No __
Title/Date: Middlesex County, 1979
Soil Type Mapped: small body of water (W)

Field Observations
Confirm Type Mapped? Yes ✓ No __

Depth (inches)	Horizon	Matrix Color (Munsell-Moist)	Color of Mottlest (Munsell-Moist) Abundan./Contrast	USDA Texture, manganese or iron nodules or concretions estrictive layers, root distribution, etc.
0-8	A	7.5YR 2/2		silt loam relatively high organic matter oxidized rhizosphere
8-20	C_1	5YR 5/4	c,d 7.5YR 5/2 7.5YR 4/6	fine sandy loam
20-24	C2			broken shale rocky fill distinct black manganese stains on rock fragments

Remarks: data plot located in small depressional area subject to periodic ponding & seasonally saturated soils

Sketch Landscape Position:



SOIL DETERMINATION	1."NO" in all the following is evidence that the soil is NON HYDRIC. 2.Use outside the six New England states may be inappropriate. 3.This interpretive routine may be innappropriate in unusual cases.

YES NO

___ ✓ All dominant plants are OBLIGATE.

___ ✓ All dominant plants are FACULTATIVE WET and OBLIGATE and the topographic boundary is abrupt.

___ ✓ Soil is frequently PONDED or FLOODED for a duration longer than two weeks during the growing season.(attach an explanation of the basis for conlusion)

___ ✓ Soil meets the COE regional criteria as a VERY POORLY DRAINED SOIL* and there is no evidence of altered hydrology.

___ ✓ Soil meets the COE regional criteria as a POORLY DRAINED SOIL* and there is no evidence of altered hydrology.

✓ ___ Soil meets the COE regional criteria as a SOMEWHAT POORLY DRAINED SOIL that has either of the two following characteristics*:

YES NO

✓ ___ 1. Within 6 inches of the soil surface there are:

YES NO

___ ___ a. soil mottles within A of Ap horizon and the subsoil is mottled throughout; OR

___ ___ b. common to many, distinct or prominent mottles with a matrix of chroma 3 or less; OR

✓ ___ c. distinct or prominent oxidized rhizospheres and the subsoil is mottled throughout.

___ ✓ 2. Within 24 inches of the soil surface, there are mottles which are common to many, distinct to prominent, and that are chroma 2 or less, AND one of the following:

YES NO

___ ___ a. In the horizon that lies within 10" of the soil surface AND directly beneath a dark** A or Ap horizon the matrix is chroma 3 or less; the mottles are at least 10% and distinct or prominent.

___ ___ b. When a dark** Ap horizon is between 10" and 14" thick, wetness morphology may be masked by organic matter. Normally, these problem situations will be considered hydric when: i. hydrophytes are prevalent, ii. there is no evidence of altered hydrology, AND iii. in the horizon that lies beneath the Ap horizon, the matrix chroma is 3 or less and mottles are at least 10% and distinct or prominent

___ Check here and attach a description of your procedures and conclusions if one of the following options were chosen for your hydric soil determination: measured redox potentials, colormetric test for ferrous iron test, or other measureaments

* Typically in New England, soils having these morphologies will be classified in an aquic suborder or an aquic subgroup in soil taxonomy.
** Note: a dark A or Ap is defined as having a value of ≤3 and a chroma of ≤2

Remarks:

DATA & DETERMINATION HYDROLOGY	1.Hydrology is often the most difficult feature to observe 2.Interpretations must consider season, recent weather conditions etc 3.May require repeated observations over more than one season

___ Recorded Data:

Stream, lake or tidal gage Identification: _____

Aerial Photograph Identification: _____

Other Identification: _____

_X_ No Recorded Data Available

REPORT ANY OF THE FOLLOWING OBSERVATIONS:

Depth to Free Water: below 24 inches

Depth to Saturation: below 24 inches

Describe Altered Hydrology: _____

___ Inundated

___ Saturated in upper 12 inches

___ Water Marks

___ Drift Lines

___ Sediment Deposits

✓ Drainage Patterns

Remarks: red tile drainage pipe outlet to Data Plot A-1 is 41 feet on a bearing of 200 degrees.

CONCLUSIONS	Project Title: Connecticut Valley Hospital, Middletown, CT
	Delineator: Thomas W. Pietras, Soil Science & Environ Services, INC

Transect: A Plot: 1 Date: June 16, 1997

	YES	NO
Greater than 50 Percent Hydrophytes?	✓	___
Hydric Soils Criterion Met?	✓	___
Wetland Hydrology Present?	✓	___

IS THIS DATAPOINT WITHIN A WETLAND? YES ✓ NO ___

Remarks:

Project Title: Connecticut Valley Hospital
Middletown, Connecticut

File Number:

Transect: A Plot: 2 Date: June 16, 1997

DATA - - VEGETATION	Stratum and Species (DOMINANTS ONLY)	Dominance Ratio	Percent Dominance	NWI Status
Trees: Basal Area (sq. in.), >5" dbh, >20' hgt, <30' r				
	/			
Saplings: Percent Areal Coverage, 0.4-5.0" dbh, <15' r				
	/			
Shrubs: Percent Areal Coverage, 3-20' hgt, <15' radius				
	/			
Lianas: Percent Areal Coverage of woody vines, <30' r				
	/			
Herbaceous: Percent Areal Coverage, <3' hgt, <5'radius				
	Gross sp.	38/102.5	37%	-
(D)	Poa pratensis	38/102.5	37	FACU
(D)	Trifolium repens	20.5/102.5	20	FACU-
	Plantago major	3/102.5	3	FACU
	Taraxacum officinale	3/102.5	3	FACU-

(D): Dominants in tally
Note: use asterick * to indicate FAC-, FACU, or UPL species with observed adaptations to wetland hydrology

TALLY (Dominants ONLY)

OBL	FACW	FAC	*FAC-	*FACU	*UPL	FAC-	FACU	UPL
0	0	0	0	0	0	0	2	0

Subtotal (Hydrophytes): 0 Total: 2 Subtotal: 2

100 x Subtotal (Hydrophytes) / Total = 0 = Percent Hydrophytes

Describe Vegetation Disturbance: mowed grass lawn

Describe Adaptations:

DATA - - SOIL | Soil Taxonomy: Udorthents

COE Regional Drainage Class: well drained Criterion: E

Is Published Soil Survey Available? Yes _X_ No __
Title/Date: Middlesex County, 1979
Soil Type Mapped: Ludlow silt loam (Lp)

Field Observations
Confirm Type Mapped? Yes __ No ✓

Depth (inches)	Horizon	Matrix Color (Munsell-Moist)	Color of Mottlest (Munsell-Moist) Abundan./Contrast	USDA Texture, manganese or iron nodules or concretions estrictive layers, root distribution, etc.
0-4	A	7.5YR 3/2		fine sandy loam
4-20	C	5YR 3/3	-	stony fine sandy loam fragments of pavement

Remarks:

Sketch Landscape Position:

See A-1

SOIL DETERMINATION	1."NO" in all the following is evidence that the soil is NON HYDRIC. 2.Use outside the six New England states may be inappropriate. 3.This interpretive routine may be innappropriate in unusual cases.

YES	NO	
___	✓	All dominant plants are OBLIGATE.
___	✓	All dominant plants are FACULTATIVE WET and OBLIGATE and the topographic boundary is abrupt.
___	✓	Soil is frequently PONDED or FLOODED for a duration longer than two weeks during the growing season.(attach an explanation of the basis for conlusion)
___	✓	Soil meets the COE regional criteria as a VERY POORLY DRAINED SOIL* and there is no evidence of altered hydrology.
___	✓	Soil meets the COE regional criteria as a POORLY DRAINED SOIL* and there is no evidence of altered hydrology.
___	✓	Soil meets the COE regional criteria as a SOMEWHAT POORLY DRAINED SOIL that has either of the two following characteristics*:

YES	NO	
___	___	1. Within 6 inches of the soil surface there are:
___	___	a. soil mottles within A of Ap horizon and the subsoil is mottled throughout; OR
___	___	b. common to many, distinct or prominent mottles with a matrix of chroma 3 or less; OR
___	___	c. distinct or prominent oxidized rhizospheres and the subsoil is mottled throughout.
___	___	2. Within 24 inches of the soil surface, there are mottles which are common to many, distinct to prominent, and that are chroma 2 or less, AND one of the following:
___	___	a. In the horizon that lies within 10" of the soil surface AND directly beneath a dark** A or Ap horizon the matrix is chroma 3 or less; the mottles are at least 10% and distinct or prominent.
___	___	b. When a dark** Ap horizon is between 10" and 14" thick, wetness morphology may be masked by organic matter. Normally, these problem situations will be considered hydric when: i. hydrophytes are prevalent, ii. there is no evidence of altered hydrology, AND iii. in the horizon that lies beneath the Ap horizon, the matrix chroma is 3 or less and mottles are at least 10% and distinct or prominent

___ Check here and attach a description of your procedures and conclusions if one of the following options were chosen for your hydric soil determination: measured redox potentials, colormetric test for ferrous iron test, or other measureaments

* Typically in New England, soils having these morphologies will be classified in an aquic suborder or an aquic subgroup in soil taxonomy.
** Note: a dark A or Ap is defined as having a value of ≤3 and a chroma of ≤2

Remarks:

DATA & DETERMINATION HYDROLOGY	1.Hydrology is often the most difficult feature to observe 2.Interpretations must consider season, recent weather conditions etc 3.May require repeated observations over more than one season

___ Recorded Data:
Stream, lake or tidal gage Identification: _____
Aerial Photograph Identification: _____
Other Identification: _____

_X_ No Recorded Data Available

REPORT ANY OF THE FOLLOWING OBSERVATIONS:

Depth to Free Water: below 20 inches
Depth to Saturation: below 20 inches
Describe Altered Hydrology: _____

___ Inundated
___ Saturated in upper 12 inches
___ Water Marks
___ Drift Lines
___ Sediment Deposits
___ Drainage Patterns

Remarks: Data Plot A-1 to A-2 is 16 feet on a bearing of 120 degrees.

CONCLUSIONS	Project Title: Connecticut Valley Hospital, Middletown, CT
	Delineator: Thomas W. Pietras, Soil Science & Environ Services, INC

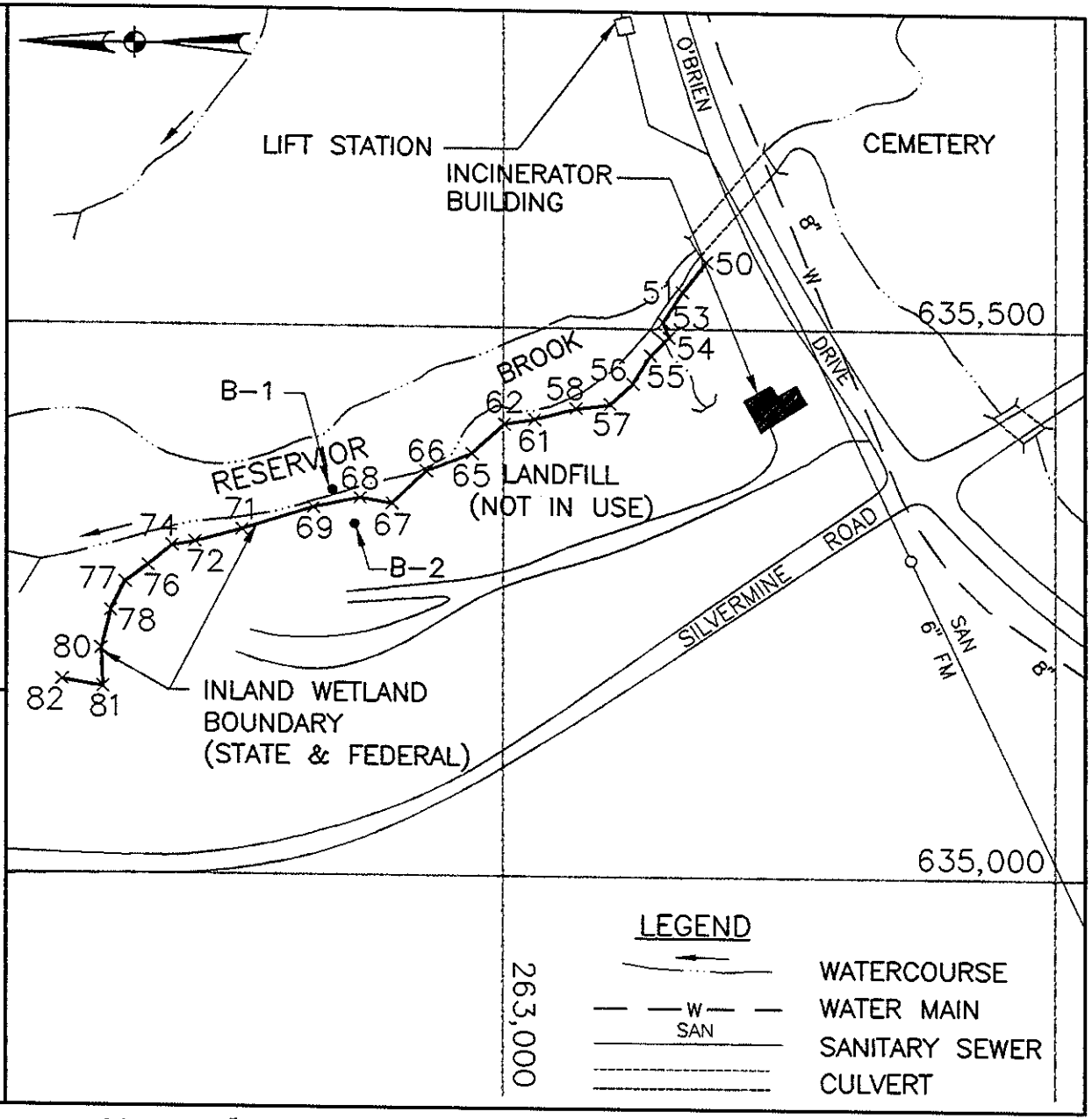
Transect: A Plot: 2 Date: June 16, 1997

	YES	NO
Greater than 50 Percent Hydrophytes?	___	✓
Hydric Soils Criterion Met?	___	✓
Wetland Hydrology Present?	___	✓

IS THIS DATAPOINT WITHIN A WETLAND? YES ___ NO ✓

Remarks: Data Plot A-2 is by wetland flag #7.

COORDINATES		
POINT	NORTHING	EASTING
50	262,816.544	635,561.032
51	262,837.816	635,533.753
53	262,855.601	635,505.957
54	262,850.247	635,492.036
55	262,866.804	635,475.757
56	262,883.119	635,449.363
57	262,903.517	635,430.501
58	262,934.600	635,426.437
61	262,971.752	635,416.094
62	262,998.869	635,411.841
65	263,028.501	635,384.620
66	263,069.542	635,368.282
67	263,100.404	635,338.537
68	263,129.138	635,343.779
69	263,171.144	635,334.699
71	263,236.047	635,313.618
72	263,278.405	635,302.328
74	263,299.053	635,298.434
76	263,320.499	635,280.115
77	263,340.881	635,264.588
78	263,353.953	635,238.739
80	263,362.808	635,203.937
81	263,360.998	635,169.416
82	263,397.653	635,175.368



SCALE: 1" = 150'

X-REFS: NONE
LAST EDIT: 08/04/97 07:47 AM
PROJECT: 3311-01 FILE NAME: F:\P331101\WETLAND

CONNECTICUT VALLEY HOSPITAL, MIDDLETOWN, CONNECTICUT

SITE PLAN – INLAND WETLAND BOUNDARY AT LANDFILL

Project Title: Connecticut Valley Hospital
Middletown, Connecticut

File Number:

Transect: B Plot: 1

Date: June 16, 1997

DATA - - VEGETATION	Stratum and Species (DOMINANTS ONLY)	Dominance Ratio	Percent Dominance	NWI Status
Trees: Basal Area (sq. in.), >5" dbh, >20' hgt, <30' r				
	/			
Saplings: Percent Areal Coverage, 0.4-5.0" dbh, <15' r				
(D)	Salix nigra	38/58.5	65%	FACW+
(D)	Ailanthus altissima	20.5/58.5	35	UPL(NI)
Shrubs: Percent Areal Coverage, 3-20' hgt, <15' radius				
(D)	Lonicera tartarica	38/58.5	65%	FACU
(D)	Cornus amomum	20.5/58.5	35	FACW
Lianas: Percent Areal Coverage of woody vines, <30' r				
	-			
Herbaceous: Percent Areal Coverage, <3' hgt, <5' radius				
(D)	Impatiens capensis	63/73.5	86%	FACW
	Symplocarpus foetidus	10.5/73.5	14	OBL

(D): Dominants in tally
Note: use asterick * to indicate FAC-, FACU, or UPL species with observed adaptations to wetland hydrology

TALLY (Dominants ONLY)

OBL	FACW	FAC	*FAC-	*FACU	*UPL
0	3	0	0	0	0

FAC-	FACU	UPL
0	1	1

Subtotal (Hydrophytes): 3 Total: 5 Subtotal: 2

100 x Subtotal (Hydrophytes) / Total = 60% = Percent Hydrophytes

Describe Vegetation Disturbance: none

Describe Adaptations:

DATA - - SOIL | Soil Taxonomy: Fluvaquents

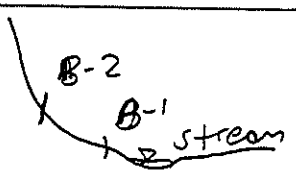
COE Regional Drainage Class: poorly drained Criterion: B3 b (1)

Is Published Soil Survey Available? Yes _X_ No ___
Title/Date: Middlesex County, 1979
Soil Type Mapped: (Ru) Rumney fine sandy loam
Field Observations Confirm Type Mapped? Yes ✓ No ___

Depth (inches)	Horizon	Matrix Color (Munsell-Moist)	Color of Mottlest (Munsell-Moist) Abundan./Contrast	USDA Texture, manganese or iron nodules or concretions estrictive layers, root distribution, etc.
0-8	A	10YR 4/2	C,d 7.5YR 4/6	gravelly sandy loam oxidized rhizosphere
8-20	C	10YR 4/3		gravelly loamy sand alluvium

Remarks:

Sketch Landscape Position: very steep fill slope



SOIL DETERMINATION

1."NO" in all the following is evidence that the soil is NON HYDRIC.
2.Use outside the six New England states may be inappropriate.
3.This interpretive routine may be innappropriate in unusual cases.

YES	NO	
___	✓	All dominant plants are OBLIGATE.
___	✓	All dominant plants are FACULTATIVE WET and OBLIGATE and the topographic boundary is abrupt.
___	✓	Soil is frequently PONDED or FLOODED for a duration longer than two weeks during the growing season.(attach an explanation of the basis for conlusion)
___	✓	Soil meets the COE regional criteria as a VERY POORLY DRAINED SOIL* and there is no evidence of altered hydrology.
✓	___	Soil meets the COE regional criteria as a POORLY DRAINED SOIL* and there is no evidence of altered hydrology.
___	✓	Soil meets the COE regional criteria as a SOMEWHAT POORLY DRAINED SOIL that has either of the two following characteristics*:

YES	NO	
___	___	1. Within 6 inches of the soil surface there are:
___	___	a. soil mottles within A of Ap horizon and the subsoil is mottled throughout; OR
___	___	b. common to many, distinct or prominent mottles with a matrix of chroma 3 or less; OR
___	___	c. distinct or prominent oxidized rhizospheres and the subsoil is mottled throughout.
___	___	2. Within 24 inches of the soil surface, there are mottles which are common to many, distinct to prominent, and that are chroma 2 or less, AND one of the following:
___	___	a. In the horizon that lies within 10" of the soil surface AND directly beneath a dark** A or Ap horizon the matrix is chroma 3 or less; the mottles are at least 10% and distinct or prominent.
___	___	b. When a dark** Ap horizon is between 10" and 14" thick, wetness morphology may be masked by organic matter. Normally, these problem situations will be considered hydric when: i. hydrophytes are prevalent, ii. there is no evidence of altered hydrology, AND iii. in the horizon that lies beneath the Ap horizon, the matrix chroma is 3 or less and mottles are at least 10% and distinct or prominent

___ Check here and attach a description of your procedures and conclusions if one of the following options were chosen for your hydric soil determination: measured redox potentials, colormetric test for ferrous iron test, or other measureaments

* Typically in New England, soils having these morphologies will be classified in an aquic suborder or an aquic subgroup in soil taxonomy.
** Note: a dark A or Ap is defined as having a value of ≤3 and a chroma of ≤2

Remarks:

DATA & DETERMINATION HYDROLOGY

1.Hydrology is often the most difficult feature to observe
2.Interpretations must consider season, recent weather conditions etc
3.May require repeated observations over more than one season

___ Recorded Data:
Stream, lake or tidal gage Identification: _____
Aerial Photograph Identification: _____
Other Identification: _____

_X_ No Recorded Data Available

REPORT ANY OF THE FOLLOWING OBSERVATIONS:

Depth to Free Water: 3 inches
Depth to Saturation: 0
Describe Altered Hydrology: _____

___ Inundated
✓ Saturated in upper 12 inches
___ Water Marks
___ Drift Lines
___ Sediment Deposits
✓ Drainage Patterns

Remarks: Wetland flag # 23 to Data Plot B-1 is 10 feet on a bearing of 30 degrees.

CONCLUSIONS

Project Title: Connecticut Valley Hospital, Middletown, CT
Delineator: Thomas W. Pietras, Soil Science & Environ Services, INC

Transect: B Plot: 1 Date: June 16, 1997

	YES	NO
Greater than 50 Percent Hydrophytes?	✓	___
Hydric Soils Criterion Met?	✓	___
Wetland Hydrology Present?	✓	___

IS THIS DATAPOINT WITHIN A WETLAND? YES ✓ NO ___

Remarks:

Project Title: Connecticut Valley Hospital
Middletown, Connecticut

File Number:

Transect: B Plot: 2 Date: June 16, 1997

DATA - - VEGETATION	Stratum and Species (DOMINANTS ONLY)	Dominance Ratio	Percent Dominance	NWI Status
Trees: Basal Area (sq. in.), >5" dbh, >20' hgt, <30' r				
	/			
Saplings: Percent Areal Coverage, 0.4-5.0" dbh, <15' r				
(D)	Salix nigra	38/58.5	65%	FACW+
(D)	Ailanthus altissima	20.5/58.5	35	UPL (NI)
Shrubs: Percent Areal Coverage, 3-20' hgt, <15' radius				
(D)	Lonicera tartarian	38/69	55%	FACU
(D)	Rosa multiflora	20.5/69	30	FACU
	Cornus amomum	10.5/69	15	FACW
Lianas: Percent Areal Coverage of woody vines, <30' r				
	/			
Herbaceous: Percent Areal Coverage, <3' hgt, <5'radius				
(D)	Alliaria moschatus	63/73.5	86	FACU-
	Vitus sp.	10.5/73.5	14	—

(D): Dominants in tally
Note: use asterick * to indicate FAC-, FACU, or UPL species with observed adaptations to wetland hydrology

TALLY (Dominants ONLY)

OBL	FACW	FAC	*FAC-	*FACU	*UPL	FAC-	FACU	UPL
0	1	0	0	0	0	0	3	1

Subtotal (Hydrophytes): 1 Total: 5 Subtotal: 4

100 x Subtotal (Hydrophytes) / Total = 20% = Percent Hydrophytes

Describe Vegetation Disturbance: none

Describe Adaptations:

DATA - - SOIL | Soil Taxonomy: Udorthents

COE Regional Drainage Class: well drained Criterion: E

Is Published Soil Survey Available? Yes _X_ No ___
Title/Date: Middlesex County, 1979
Soil Type Mapped: (Ru)
Rumney fine sandy loam

Field Observations
Confirm Type Mapped? Yes ___ No ✓

Depth (inches)	Horizon	Matrix Color (Munsell-Moist)	Color of Mottlest (Munsell-Moist) Abundan./Contrast	USDA Texture, manganese or iron nodules or concretions estrictive layers, root distribution, etc.
0-8	A	10YR 3/3		fine sandy loam
8-20	C	10YR 4/4		stony fine sandy loam fill

Remarks:

Sketch Landscape Position:

see B-1

SOIL DETERMINATION	1."NO" in all the following is evidence that the soil is NON HYDRIC. 2.Use outside the six New England states may be inappropriate. 3.This interpretive routine may be innappropriate in unusual cases.

YES NO

___ ✓ All dominant plants are OBLIGATE.

___ ✓ All dominant plants are FACULTATIVE WET and OBLIGATE and the topographic boundary is abrupt.

___ ✓ Soil is frequently PONDED or FLOODED for a duration longer than two weeks during the growing season.(attach an explanation of the basis for conlusion)

___ ✓ Soil meets the COE regional criteria as a VERY POORLY DRAINED SOIL* and there is no evidence of altered hydrology.

___ ✓ Soil meets the COE regional criteria as a POORLY DRAINED SOIL* and there is no evidence of altered hydrology.

___ ✓ Soil meets the COE regional criteria as a SOMEWHAT POORLY DRAINED SOIL that has either of the two following characteristics*:

YES NO

___ ___ 1. Within 6 inches of the soil surface there are:

YES NO

___ ___ a. soil mottles within A of Ap horizon and the subsoil is mottled throughout; OR

___ ___ b. common to many, distinct or prominent mottles with a matrix of chroma 3 or less; OR

___ ___ c. distinct or prominent oxidized rhizospheres and the subsoil is mottled throughout.

___ ___ 2. Within 24 inches of the soil surface, there are mottles which are common to many, distinct to prominent, and that are chroma 2 or less, AND one of the following:

YES NO

___ ___ a. In the horizon that lies within 10" of the soil surface AND directly beneath a dark** A or Ap horizon the matrix is chroma 3 or less; the mottles are at least 10% and distinct or prominent.

___ ___ b. When a dark** Ap horizon is between 10" and 14" thick, wetness morphology may be masked by organic matter. Normally, these problem situations will be considered hydric when: i. hydrophytes are prevalent, ii. there is no evidence of altered hydrology, AND iii. in the horizon that lies beneath the Ap horizon, the matrix chroma is 3 or less and mottles are at least 10% and distinct or prominent

___ Check here and attach a description of your procedures and conclusions if one of the following options were chosen for your hydric soil determination: measured redox potentials, colormetric test for ferrous iron test, or other measureaments

* Typically in New England, soils having these morphologies will be classified in an aquic suborder or an aquic subgroup in soil taxonomy.
** Note: a dark A or Ap is defined as having a value of ≤3 and a chroma of ≤2

Remarks:

DATA & DETERMINATION HYDROLOGY	1.Hydrology is often the most difficult feature to observe 2.Interpretations must consider season, recent weather conditions etc 3.May require repeated observations over more than one season

___ Recorded Data:

Stream, lake or tidal gage Identification: _____

Aerial Photograph Identification: _____

Other Identification: _____

_X_ No Recorded Data Available

REPORT ANY OF THE FOLLOWING OBSERVATIONS:

Depth to Free Water: below 20 inches

Depth to Saturation: below 20 inches

Describe Altered Hydrology: _____

___ Inundated

___ Saturated in upper 12 inches

___ Water Marks

___ Drift Lines

___ Sediment Deposits

___ Drainage Patterns

Remarks: Date plot B-1 to B-2 is 11 feet on a bearing of 260 degrees.

CONCLUSIONS	Project Title: Connecticut Valley Hospital, Middletown, CT
	Delineator: Thomas W. Pietras, Soil Science & Environ Services, INC

Transect: B Plot: 2 Date: June 16, 1997

	YES	NO
Greater than 50 Percent Hydrophytes?	___	✓
Hydric Soils Criterion Met?	___	✓
Wetland Hydrology Present?	___	✓

IS THIS DATAPOINT WITHIN A WETLAND? YES ___ NO ✓

Remarks:

APPENDIX H

Air Quality - Computations and Documents

Ambient Air Quality Data and Standards

Pollutant	Statistical Base	Units	Primary	Secondary
Particulates (PM_{10})	Annual Arithmetic Mean	$\mu g/m^3$	50	50
	Maximum 24-Hr. Average[a]	$\mu g/m^3$	150	150
Sulfur Dioxide (SO_2)				
	Annual Arithmetic Mean	$\mu g/m^3$	80	
	Maximum 24-Hr. Average[a]	$\mu g/m^3$	365	
Nitrogen	Maximum 3-Hr. Average	$\mu g/m^3$		1300
Dioxide(NO_2)				
	Annual Arithmetic Mean	$\mu g/m^3$	100	100
Ozone (O_3)				
Lead (Pb)	Maximum 1-Hr. Average[a]	ppm	.12	.12
Carbon Monoxide (CO)	Maximum 3-Hr. Average	$\mu g/m^3$	1.5	1.5
	Maximum 8-Hr. Average[a]	ppm	9	9
	Maximum 1-Hr. Average[a]	ppm	35	35

Abbreviations:
ppm = parts per million
$\mu g/m^3$ = microgram per cubic meter
a Not to be exceeded more that once per year

Note: The Federal EPA classifies an Air Quality Control Region (AQCR) as in attainment for a particular pollutant when all applicable primary and secondary standards for the respective statistical bases are attained. A region is designated as non-attainment if any monitoring site exceeded Federal standards. If there is no monitoring site for a particulate pollutant in the Region, then an unclassified designation is recorded.

Pollutant Descriptions:

Particulate matter (PM_{10}). The generic term for discrete liquid droplets or solid particles of various size, composed of a broad class of substances.

Sulfur dioxides (SO_2). Heavy gases that result from the burning of sulfur-containing fuel, mainly coal and oil-derived fuels.

Nitrogen dioxide (NO_2). A highly oxidizing, extremely corrosive toxic gas. It is formed by chemical conversion in the air from nitric oxide (NO), which is emitted primarily by industrial furnaces, power plants, and motor vehicles.

Ozone (O_3). The principal component of smog, it is not emitted into the air directly, but is formed primarily by chemical reactions in the air between volatile organic compounds (VOC) and nitrogen oxides (NOx) in the presence of sunlight.

Lead (Pb). A heavy metal, emitted into the atmosphere primarily by the processing of lead-containing materials and the incineration of solid wastes. The intake of Pb into the population is not primarily through polluted air, but through ingestion.

Carbon monoxide (CO). Colorless, odorless gas, formed when carbon-containing fuel is not burned completely. It may accumulate on a local scale in high concentrations, but eventually is degraded naturally into harmless carbon dioxide.

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

June 26, 1997

Mr. Mark S. Foster, P.E.
Senior Civil Engineer
Frederic R. Harris, Inc.
333 Ludlow Street
Stamford, CT 06902

Reference: Enforcement status of the Connecticut Valley Hospital ("CVH") Power House

Dear Mr. Foster:

This letter is in response to your request for the enforcement status of the Power House at CVH. The issues which the Connecticut Department of Environmental Protection ("DEP") Bureau of Air Management currently have with CVH are as follows:

1) On July 16, 1996 Consent Order #8101 was signed by the Commissioner of Environmental Protection requiring CVH to offset nitrogen oxide emissions from the oil fired steam boilers as required by Section 22a-174-22 of the Regulations of Connecticut State Agencies ("RCSA") from oil fired steam boilers located at the facility. One requirement of Section 22a-174-22 of the RCSA is that sources conduct DEP approved stack testing of the oil fired steam boilers. This testing must be preceded by the submissions of an Intent to Test protocol and the testing must be performed at 90% of maximum rated capacity and be witnessed by DEP personnel. As of June 18, 1997 this approved testing had not been completed. The DEP will be in contact with representatives of CVH and the Department of Mental Health and Addiction Services in order to resolve this violation.

2) Regarding the Title V Operating Permit Program, the CVH facility is classified as a major source and is thus required to obtain a Title V operating permit or obtain registration under the General Permit to Limit Potential to Emit ("GPLPE"). The deadline for CVH to be granted registration under the GPLPE or to submit an application for a Title V Operating Permit is January 23, 1998. Until this date CVH can not be considered in violation of Title V of the Clean Air Act.

3) In referencing the Notices of Violation ("NOV") Log Sheet, the CVH Power House has been issued 3 NOVs for opacity violations. The years in which these NOVs occurred are 1980, 1987 and 1992. The violations occurring in the years 1987 and 1992 are marked 'Status Code 9' meaning the source is in compliance. There is no further information on the 1980 NOV.

If you have any questions regarding this letter or compliance status of CVH please contact Eric Davis of my staff at (860) 424-3386.

Sincerely,

Patrick Bowe
Assistant Director of Eng. & Enf.
Bureau of Air Management

BEA **BRAUN ENGINEERING ASSOCIATES, P.C.**
149 DURHAM ROAD • OAK PARK • MADISON, CT 06443 • (203) 245-9777

STATE OF CONNECTICUT DEPARTMENT OF PUBLIC WORKS

PROJECT NO. BI-2B-916-E CLEAN AIR ACT RETROFIT POWER PLANT FACILITY

ADDENDUM TO SCHEMATIC DESIGN NARRATIVE

SUMMARY SCOPE OF WORK

The Scope of Work for the above stated Project includes the retrofit of the Power Plant Facility at the Connecticut Valley Hospital (CVH), Middletown, Connecticut. The retrofit includes the work necessary to bring the Power Plant into compliance with the current local emission regulations.

SUMMARY

The following is an outline summary of the Work to be included under this Contract:

1. Install new Low NO_x Package Burners on all four boilers with capability to burn natural gas, #6 oil, and #2 oil. The package burners shall be installed complete with new forced draft fans and burner management.

2. Install Flue Gas Recirculation (FGR) on Boilers No. 1 and No. 2 only. The FGR system shall be the forced type utilizing separate FGR fans.

3. Install the necessary gas piping from the gas service meters to the burners.

4. Install all new combustion controls for all four boilers. This includes all the necessary panel and field devices for a complete and operational system.

5. Install a new Plant instrumentation and monitoring panel. This includes all necessary panel and field devices for a complete and operational system.

6. Install a Supervisory Control and Data Acquisition (SCADA) system.

7. Install a new motor control center for the Power Plant electrical distribution.

8. Install new #6 fuel oil pump and heater set.

9. Install new pressure reducing controls (does not include steam valves) for the following pressure reducing stations within the Plant:

1. 150/50 psig steam atomization reducing station.

2. 250/150 psig main steam distribution reducing station.

3. 150/10 psig exhaust steam make-up station.

10. Install new automatic boiler blowdown controls and equipment for all four boilers.

11. Install all necessary components to provide a modern, safe and reliable Power Plant.

12. Perform all demolition work necessary for the execution of the installations mentioned above.

13. Furnish and install all valves, piping, tubing, fittings, wire, cable, conduit, brackets, and insulation as is necessary for the Project. This Contract shall not include the replacement or installation of any main system valves such as main and auxiliary steam and/or feedwater valves.

14. Provide all the labor necessary to complete the above mentioned items.

15. The removal and disposal of asbestos shall be limited to only those areas that are affected by the Work. The cost of testing, removing and disposing of asbestos containing materials, other than that which is directly affected by the Work, shall not be covered under this Contract.

16. Four complete sets of "As-Built" drawings and a copy of the electronic files in AutoCAD 12 format shall be provided upon completion of the Project.

17. Provide operating and maintenance manuals for all new equipment installed under this Contract. Orientation and operational training for the new equipment shall be provided to Facility personnel.

SPECIFIC

The following pages are a detailed component list of the items to be included within this Contract. It shall be noted that throughout the design development of this Project, there may be slight variances in the exact components furnished to complete the Installation as described in the Summary of this document. These variances (if any) will only reflect small changes in design of specific areas of the Project and shall not affect the overall Scope of Work to be executed by this Contract.

cc: M. LUCAS

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

RECEIVED
JUL 2 3 19
MENTAL HEALTH & ADDICTION SERVICES

In the matter of

State of Connecticut Department

of Mental Health and Addiction Services)

TRADING AGREEMENT AND ORDER No. 8101

Whereas, the Commissioner of the Department of Environmental Protection ("DEP") ("Commissioner") and the Commissioner of the Department of Mental Health and Addiction Services ("DMHAS") agree that it is in the public interest that they work cooperatively to improve the air quality within the State of Connecticut and that the use of emission reduction trading will achieve this result in a timely and cost-effective manner:

A. At the request and with the agreement of two facilities operated by the DMHAS, namely the Connecticut Valley Hospital ("CVH") and Norwich Hospital ("NH") ("the facilities"), the Commissioner finds the following:

1. The facilities are owned and operated by the State of Connecticut DMHAS and serve as health care facilities located on Silver Street in Middletown, Connecticut (CVH) and Route 12 in Preston, Connecticut (NH).

2. At the facilities, CVH operates oil-fired steam boilers ("boilers"), which are projected, based upon historical fuel consumption records, to emit 54.5 tons of nitrogen oxides ("NOx") between June 1, 1995 and May 31, 1996. Similarly, NH operates oil-fired steam boilers which are projected to emit 70.7 tons of nitrogen oxides between June 1, 1995 and May 31, 1996. Pursuant to Section 22a-174-22, Regulations of Connecticut State Agencies ("Regulations"), the projected NOx emissions for these two facilities are 45.4 tons (CVH) and 43.1 tons (NH)(equivalent to .25 pounds/million Btu of heat input [MMBtu]) all for the same time period of June 1, 1995 to May 31, 1996.

3. Pursuant to Section 22a-174-22(j) of the Regulations, On September 28, 1995 the State of Connecticut purchased 50 (fifty) tons of approved ozone season and 50 (fifty) tons of approved non-ozone season emission reduction credits ("ERCs") from the United Illuminating Company. These ERCs were purchased by and are under the managed authority of the Connecticut Office of Policy and Management (OPM) and are for use by State agencies. Approved ERCs are defined for purposes of this order as those for which the Commissioner has provided written authorization for use in compliance with Section 22a-174-22 of the Regulations.

B. The Commissioner, in accordance with the provisions of this Trading Order, and pursuant to Sections 22a-174-22(d)(4) and 22a-174-22(j) of the Regulations, hereby allows the DMHAS to use the ERCs purchased and referenced in Section A.3 herein, to achieve compliance with the nitrogen oxide emission reduction required by Section 22a-174-22(d)(2) of the Regulations. The use of these credits will be allowed prior to and during the period of installation of the advanced low-NOx fuel-burning equipment.

RECEIVED BY
DMHAS OOC
JUL 2 5 1996
ENGINEERING SERVICES

Initials: Q.A.S.

Date: 7/11/96

C. With the agreement of the DMHAS, the Commissioner, acting under Sections 22a-6, 22a-171, 22a-174, 22a-176, and 22a-177 of the Connecticut General Statutes, orders DMHAS as follows:

1. After May 31, 1995 and until the completion of the construction and operation of the advanced low-NOx fuel-burning equipment or until May 1, 1999, whichever comes earlier, the DMHAS shall document and record the amounts of all fuel burned at operating facilities on a daily basis and shall calculate the quantity of NOx emitted which exceeds the standard of 0.25 lbs/MMBtu. DMHAS shall maintain and provide such records in accordance with the following and Section 22a-174-4 of the Regulations:

   A. The calculation of debits created will be as follows:

      Debits = (Fuel Use in MMBtu X (*FLER lbs/MMBtu - (0.25 lbs/MMBtu x .95))) / 2000 pounds.

      *FLER = Facility specific full load emission rate in lbs/MMBtu at CVH (0.30) and NH (0.41).

      Daily NOx emission totals for the period from June 1, 1995 until completion of the installation of the advanced low-NOx fuel-burning equipment shall be maintained and made available to the Department upon request;

   B. The DMHAS shall acquire sufficient approved ERCs no later than the first of each calendar month to assure compliance for, at a minimum, that calendar month. For the months of June, July, August, and September 1995, ERCs must be acquired before September 30, 1995;

   C. No later than the tenth day of each month, calculate ERCs used in the preceding calendar month;

   D. Document and record monthly fuel and ERCs used;

   E. No later than March 1 of the years 1997, 1998, 1999 and 2000 include with its annual emissions report to the Commissioner, NOx emissions and ERCs used for the previous calendar year, in monthly increments;

   F. Retain records and supporting documentation as described in this section for a minimum of five years, commencing on the date such records were created;

   G. Maintain documentation to attest to the fact that ERCs used during the ozone season were generated during the ozone season. The ozone season is May 1 to September 30 in any calendar year. Generator certification of this fact shall be sufficient; and

H. Provide the records specified above to the Commissioner within thirty (30) days of receipt of a written request from the Commissioner.

2. Provided that all conditions of this trading order have been and continue to be met, and prior to installing the advanced low-NOx fuel-burning equipment or vacating a facility, operation of each boiler shall be limited to the full load emission rate (FLER) limitation as listed in C.1.A above, averaged on a 24-hour basis.

3. On or before May 1, 1999, CVH and NH shall comply with the requirements of Section 22a-174-22(d)(2) of the Regulations.

4. On or before July 31, 1997, the DMHAS shall submit a progress report to the Commissioner describing the actions the DMHAS has taken to comply with this Trading Order to date.

5. As used in this Trading Order, "Commissioner" means the Commissioner of Environmental Protection or an agent of the Commissioner.

6. Notification of noncompliance. In the event that the DMHAS becomes aware that it did not or may not comply, or did not or may not comply on time, with any requirement of this Trading Order or of any document required hereunder, the DMHAS shall immediately notify the Commissioner and shall take all reasonable steps to ensure that any noncompliance or delay is avoided or, if unavoidable, is minimized to the greatest extent possible. In so notifying the Commissioner, the DMHAS shall state in writing the reasons for the noncompliance or delay and propose, for the review and written approval of the Commissioner, dates by which compliance will be achieved, and the DMHAS shall comply with any dates which may be approved in writing by the Commissioner. Notification by the DMHAS shall not excuse noncompliance or delay, and the Commissioner's approval of any compliance dates proposed shall not excuse noncompliance or delay unless specifically so stated by the Commissioner in writing.

7. Certification of documents. Any document, including but not limited to any notice, which is required to be submitted to the Commissioner under this Trading Order shall be signed by the chief executive officer of the DMHAS or a duly authorized representative of such officer, as those terms are defined in Section 22a-430-3(b)(2) of the Regulations, and by the individual or individuals responsible for actually preparing such document, each of whom shall certify in writing as follows:

"I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that any false statement made in the submitted information may be punishable as a criminal

offense, in accordance with Section 22a-6 of the Connecticut General Statutes, pursuant to Section 53a-157 of the Connecticut General Statutes, and in accordance with any other applicable statute."

8. Final Agreement and Order. This Trading Agreement and Order is the final agreement and order by and between the Commissioner and the DMHAS with respect to the matters addressed herein, and shall not be modified without the written agreement of both parties.

9. False statements. Any false statement in any information submitted pursuant to this Trading Order may be punishable as a criminal offense under Section 22a-175 of the Connecticut General Statutes or, in accordance with Section 22a-6, under Section 53a-157 of the Connecticut General Statutes.

10. Notice of transfer; liability of DMHAS and others. Until May 1, 1999, and in accordance with Public Act 95-218, DMHAS shall notify the Commissioner in writing at least thirty (30) days prior to transferring any license held by DMHAS to any other party and shall notify the Commissioner in writing no later than fifteen (15) days after transferring all or any portion of the operations, the facility or the business which are the subject of this Trading Order, or obtaining a new mailing or location address. DMHAS's obligations under this Trading Order shall not be affected by the passage of title to any property to any other person or municipality, unless and until the responsibilities of this trading order are transferred to another person by means of a new trading order agreement.

11. Commissioner's powers. Nothing in this Trading Order shall affect the Commissioner's authority to institute any proceeding or take any other action to prevent or abate violations of law, prevent or abate pollution, recover costs and natural resource damages, and to impose penalties for violations of law which are willful or criminally negligent or for which penalties have not been specifically provided in this Trading Order, including but not limited to violations of any permit issued by the Commissioner. If at any time the Commissioner determines that the actions taken by the DMHAS pursuant to this Trading Order have not fully achieved compliance with Section 22a-174-22(j) of the Regulations, the Commissioner may institute any independent proceeding to require DMHAS to undertake further investigation or further action.

12. DMHAS's obligations under law. Nothing in this Trading Order shall relieve the DMHAS of other obligations under applicable federal, state and local law.

13. Access to records and facilities. Any representative of the Department of Environmental Protection may enter the facilities and inspect and copy records pertaining to this trading order within normal business hours without prior notice for the purposes of monitoring and enforcing the actions required or allowed by this Trading Order.

Initials: CJP

Date: 2/11/96

14. No effect on rights of other persons. This Trading Order shall neither create nor affect any rights of persons who or municipalities which are not parties to this Trading Order.

15. Notice to Commissioner of changes. Within fifteen (15) days of the date the DMHAS becomes aware of a change in any information submitted to the Commissioner under this Trading Order, or that any such information was inaccurate or misleading or that any relevant information was omitted, DMHAS shall submit the correct or omitted information to the Commissioner.

16. Submission of documents. Any document required to be submitted to the Commissioner under this Trading Order shall, unless otherwise specified in writing by the Commissioner, be directed to:

Mr. Eric Davis
Department of Environmental Protection
Bureau of Air Management
Engineering and Enforcement Division
79 Elm Street
Hartford, Connecticut 06106

Initials: AP

Date: 7/11/96

APPENDIX I

Traffic Analysis
Computations

Center For Microcomputers In Transportation
University of Florida
512 Weil Hall
Gainesville, FL 32611-6585
Ph: (352) 392-0378

Streets: (N-S) EASTERN DRIVE (E-W) SILVER ST.
Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... AW
Date of Analysis..... 7/9/97
Other Information.....1996 EXSISTING AM
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	128	430	59	6	41	116	15	85	10	2	8	15
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9
Grade		4			-4			-3			0	
MC's (%)	0			0			0	0	0	0	0	0
SU/RV's (%)	1			1			1	1	1	1	1	1
CV's (%)	0			0			0	0	0	0	0	0
PCE's	1.42			0.80			0.85	0.85	0.85	1.00	1.00	1.00

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	511	110
Potential Capacity: (pcph)	763	1218
Movement Capacity: (pcph)	763	1218
Prob. of Queue-Free State:	0.99	0.99
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	544	175
Potential Capacity: (pcph)	944	1415
Movement Capacity: (pcph)	944	1415
Prob. of Queue-Free State:	0.99	0.86
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	0.99	0.79
Step 3: TH from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	835	804
Potential Capacity: (pcph)	398	413
Capacity Adjustment Factor due to Impeding Movements	0.79	0.79
Movement Capacity: (pcph)	313	324
Prob. of Queue-Free State:	0.74	0.97
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	784	823
Potential Capacity: (pcph)	372	353
Major LT, Minor TH Impedance Factor:	0.76	0.58
Adjusted Impedance Factor:	0.82	0.68
Capacity Adjustment Factor due to Impeding Movements	0.81	0.67
Movement Capacity: (pcph)	300	236

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)		Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB	L	14	300	>					
NB	T	80	313	>	328	15.9	1.4	C	15.9
NB	R	9	763	>					
SB	L	2	236	>					
SB	T	9	324	>	558	6.8	0.0	B	6.8
SB	R	17	1218	>					
EB	L	201	1415			3.0	0.5	A	0.6
WB	L	6	944			3.8	0.0	A	0.1

Intersection Delay = 2.5 sec/veh

Center For Microcomputers In Transportation
University of Florida
512 Weil Hall
Gainesville, FL 32611-6585
Ph: (352) 392-0378

Streets: (N-S) EASTERN DRIVE (E-W) SILVER ST.
Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... AW
Date of Analysis..... 7/9/97
Other Information.....1996 EXSISTING PM
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	63	240	82	23	159	542	26	52	11	2	24	25
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9
Grade		4			-4			-3			0	
MC's (%)	0			0			0	0	0	0	0	0
SU/RV's (%)	1			1			1	1	1	1	1	1
CV's (%)	0			0			0	0	0	0	0	0
PCE's	1.42			0.80			0.85	0.85	0.85	1.00	1.00	1.00

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	312	478
Potential Capacity: (pcph)	962	793
Movement Capacity: (pcph)	962	793
Prob. of Queue-Free State:	0.99	0.96
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	358	779
Potential Capacity: (pcph)	1157	729
Movement Capacity: (pcph)	1157	729
Prob. of Queue-Free State:	0.98	0.86
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	0.97	0.83
Step 3: TH from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	1188	932
Potential Capacity: (pcph)	260	354
Capacity Adjustment Factor due to Impeding Movements	0.80	0.80
Movement Capacity: (pcph)	208	283
Prob. of Queue-Free State:	0.76	0.90
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	914	922
Potential Capacity: (pcph)	313	310
Major LT, Minor TH Impedance Factor:	0.72	0.61
Adjusted Impedance Factor:	0.79	0.70
Capacity Adjustment Factor due to Impeding Movements	0.76	0.69
Movement Capacity: (pcph)	238	214

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)		Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB	L	25	238	>					
NB	T	49	208	>	239	23.0	1.5	D	23.0
NB	R	10	962	>					
SB	L	2	214	>					
SB	T	27	283	>	407	10.3	0.5	C	10.3
SB	R	28	793	>					
EB	L	99	729			5.7	0.5	B	0.9
WB	L	21	1157			3.2	0.0	A	0.1

Intersection Delay = 2.4 sec/veh

Center For Microcomputers In Transportation
University of Florida
512 Weil Hall
Gainesville, FL 32611-6585
Ph: (352) 392-0378

Streets: (N-S) EASTERN DRIVE (E-W) SILVER ST.
Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... AW
Date of Analysis..... 7/9/97
Other Information.....NO BUILD CONDITION AM
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	137	457	59	7	44	122	16	90	11	2	8	16
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9
Grade		4			-4			-3			0	
MC's (%)	0			0			0	0	0	0	0	0
SU/RV's (%)	1			1			1	1	1	1	1	1
CV's (%)	0			0			0	0	0	0	0	0
PCE's	1.42			0.80			0.85	0.85	0.85	1.00	1.00	1.00

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	541	117
Potential Capacity: (pcph)	737	1208
Movement Capacity: (pcph)	737	1208
Prob. of Queue-Free State:	0.99	0.99
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	574	185
Potential Capacity: (pcph)	913	1399
Movement Capacity: (pcph)	913	1399
Prob. of Queue-Free State:	0.99	0.85
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	0.99	0.77
Step 3: TH from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	886	851
Potential Capacity: (pcph)	374	390
Capacity Adjustment Factor due to Impeding Movements	0.76	0.76
Movement Capacity: (pcph)	285	297
Prob. of Queue-Free State:	0.70	0.97
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	832	874
Potential Capacity: (pcph)	349	330
Major LT, Minor TH Impedance Factor:	0.74	0.53
Adjusted Impedance Factor:	0.80	0.64
Capacity Adjustment Factor due to Impeding Movements	0.79	0.63
Movement Capacity: (pcph)	275	207

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB	L	15	275 >					
NB	T	85	285 >	300	18.8	1.6	C	18.8
NB	R	10	737 >					
SB	L	2	207 >					
SB	T	9	297 >	529	7.2	0.0	B	7.2
SB	R	18	1208 >					
EB	L	215	1399		3.0	0.6	A	0.6
WB	L	6	913		4.0	0.0	A	0.2

Intersection Delay = 2.9 sec/veh

Center For Microcomputers In Transportation
University of Florida
512 Weil Hall
Gainesville, FL 32611-6585
Ph: (352) 392-0378

Streets: (N-S) EASTERN DRIVE (E-W) SILVER ST.
Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... AW
Date of Analysis..... 7/9/97
Other Information.....NO BUILD CONDITION PM
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	69	251	86	25	168	572	28	54	12	2	24	25
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9
Grade		4			-4			-3			0	
MC's (%)	0			0			0	0	0	0	0	0
SU/RV's (%)	1			1			1	1	1	1	1	1
CV's (%)	0			0			0	0	0	0	0	0
PCE's	1.42			0.80			0.85	0.85	0.85	1.00	1.00	1.00

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	327	505
Potential Capacity: (pcph)	945	768
Movement Capacity: (pcph)	945	768
Prob. of Queue-Free State:	0.99	0.96
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	375	823
Potential Capacity: (pcph)	1136	695
Movement Capacity: (pcph)	1136	695
Prob. of Queue-Free State:	0.98	0.84
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	0.96	0.80
Step 3: TH from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	1255	985
Potential Capacity: (pcph)	239	332
Capacity Adjustment Factor due to Impeding Movements	0.77	0.77
Movement Capacity: (pcph)	184	255
Prob. of Queue-Free State:	0.72	0.89
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	964	974
Potential Capacity: (pcph)	293	289
Major LT, Minor TH Impedance Factor:	0.69	0.56
Adjusted Impedance Factor:	0.76	0.65
Capacity Adjustment Factor due to Impeding Movements	0.73	0.64
Movement Capacity: (pcph)	214	186

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB	L	26	214 >					
NB	T	51	184 >	214	28.1	1.8	D	28.1
NB	R	11	945 >					
SB	L	2	186 >					
SB	T	27	255 >	372	11.4	0.5	C	11.4
SB	R	28	768 >					
EB	L	109	695		6.1	0.6	B	1.0
WB	L	22	1136		3.2	0.0	A	0.1

Intersection Delay = 2.8 sec/veh

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Gainesville, FL 32611-6585
Ph: (352) 392-0378

Streets: (N-S) EASTERN DRIVE (E-W) SILVER ST.
Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... AW
Date of Analysis..... 7/9/97
Other Information.....BUILD CONDITION AM
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	137	450	65	9	39	120	20	93	18	5	8	16
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9
Grade		4			-4			-3			0	
MC's (%)	0			0			0	0	0	0	0	0
SU/RV's (%)	1			1			1	1	1	1	1	1
CV's (%)	0			0			0	0	0	0	0	0
PCE's	1.42			0.80			0.85	0.85	0.85	1.00	1.00	1.00

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	536	110
Potential Capacity: (pcph)	741	1218
Movement Capacity: (pcph)	741	1218
Prob. of Queue-Free State:	0.98	0.99
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	572	176
Potential Capacity: (pcph)	915	1413
Movement Capacity: (pcph)	915	1413
Prob. of Queue-Free State:	0.99	0.85
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	0.99	0.77
Step 3: TH from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	874	844
Potential Capacity: (pcph)	379	393
Capacity Adjustment Factor due to Impeding Movements	0.76	0.76
Movement Capacity: (pcph)	289	300
Prob. of Queue-Free State:	0.70	0.97
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	821	869
Potential Capacity: (pcph)	354	332
Major LT, Minor TH Impedance Factor:	0.74	0.53
Adjusted Impedance Factor:	0.80	0.63
Capacity Adjustment Factor due to Impeding Movements	0.79	0.62
Movement Capacity: (pcph)	279	205

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB	L	19	279 >					
NB	T	88	289 >	313	18.8	1.8	C	18.8
NB	R	17	741 >					
SB	L	6	205 >					
SB	T	9	300 >	446	8.7	0.1	B	8.7
SB	R	18	1218 >					
EB	L	215	1413		3.0	0.6	A	0.6
WB	L	8	915		4.0	0.0	A	0.2

Intersection Delay = 3.2 sec/veh

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Streets: (N-S) EASTERN DRIVE (E-W) SILVER ST.
Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... AW
Date of Analysis..... 7/9/97
Other Information.....BUILD CONDITION PM
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	69	246	93	42	156	515	41	110	16	3	24	25
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9
Grade		4			-4			-3			0	
MC's (%)	0			0			0	0	0	0	0	0
SU/RV's (%)	1			1			1	1	1	1	1	1
CV's (%)	0			0			0	0	0	0	0	0
PCE's	1.42			0.80			0.85	0.85	0.85	1.00	1.00	1.00

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	324	459
Potential Capacity: (pcph)	949	811
Movement Capacity: (pcph)	949	811
Prob. of Queue-Free State:	0.98	0.97
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	376	745
Potential Capacity: (pcph)	1135	757
Movement Capacity: (pcph)	1135	757
Prob. of Queue-Free State:	0.97	0.86
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	0.94	0.82
Step 3: TH from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	1194	959
Potential Capacity: (pcph)	258	342
Capacity Adjustment Factor due to Impeding Movements	0.77	0.77
Movement Capacity: (pcph)	198	262
Prob. of Queue-Free State:	0.47	0.90
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	935	978
Potential Capacity: (pcph)	304	287
Major LT, Minor TH Impedance Factor:	0.69	0.36
Adjusted Impedance Factor:	0.76	0.49
Capacity Adjustment Factor due to Impeding Movements	0.73	0.48
Movement Capacity: (pcph)	222	138

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4d 07-11-1997
Center For Microcomputers In Transportation

Streets: (E-W) SIVLER ST. (N-S) TYNAN CIRCLE
Analyst: AW File Name: SVTCNBAM.HC9
Area Type: Other 7-1-97 AM
Comment: NO BUILD CONDITION (SIGNALIZED)

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes		> 1	<		> 1	<		> 1	<		> 1	<
Volumes	11	415	26	2	152	6	8	13	1	1	12	8
PHF or PK15	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Lane W (ft)		12.0			12.0			12.0			12.0	
Grade		0			4			0			0	
% Heavy Veh	1	1	1	1	1	1	1	1	1	1	1	1
Parking	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Bus Stops			0			1			0			0
Con. Peds			0			0			0			0
Ped Button	(Y/N)	Y	0.0 s	(Y/N)	Y	0.0 s	(Y/N)	Y	0.0 s	(Y/N)	Y	0.0
Arr Type		3			3			3			3	
RTOR Vols			0			0			0			0
Lost Time	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Prop. Share												
Prop. Prot.												

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	*				NB Left	*		
Thru	*				Thru	*		
Right	*				Right	*		
Peds					Peds			
WB Left	*				SB Left	*		
Thru	*				Thru	*		
Right	*				Right	*		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	25.0P				Green	18.0A		
Yellow/AR	5.0				Yellow/AR	5.0		

Cycle Length: 53 secs Phase combination order: #1 #5

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	LTR	848	1664	0.592	0.509	6.7	B	6.7	B
WB	LTR	827	1624	0.215	0.509	4.6	A	4.6	A
NB	LTR	619	1640	0.039	0.377	6.7	B	6.7	B
SB	LTR	600	1590	0.038	0.377	6.7	B	6.7	B

Intersection Delay = 6.2 sec/veh Intersection LOS = B
Lost Time/Cycle, L = 6.0 sec Critical v/c(x) = 0.357

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4d 07-11-1997
Center For Microcomputers In Transportation

Streets: (E-W) SILVER ST. (N-S) TYNAN CIRCLE
Analyst: AW File Name: SVTCNBPM.HC9
Area Type: Other 7-1-97 PM
Comment: NO BUILD CONDITION (SIGNALIZED)

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes		> 1	<		> 1	<		> 1	<		> 1	<
Volumes	4	219	22	2	644	14	80	6	3	10	32	8
PHF or PK15	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Lane W (ft)		12.0			12.0			12.0			12.0	
Grade		0			4			0			0	
% Heavy Veh	1	1	1	1	1	1	1	1	1	1	1	1
Parking	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Bus Stops			0			1			0			0
Con. Peds			0			0			0			0
Ped Button	(Y/N)	Y	0.0 s	(Y/N)	Y	0.0 s	(Y/N)	Y	0.0 s	(Y/N)	Y	0.0
Arr Type		3			3			3			3	
RTOR Vols			0			0			0			0
Lost Time	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Prop. Share												
Prop. Prot.												

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	*				NB Left	*		
Thru	*				Thru	*		
Right	*				Right	*		
Peds					Peds			
WB Left	*				SB Left	*		
Thru	*				Thru	*		
Right	*				Right	*		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	25.0P				Green	18.0A		
Yellow/AR	5.0				Yellow/AR	5.0		

Cycle Length: 53 secs Phase combination order: #1 #5

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	LTR	812	1593	0.334	0.509	5.1	B	5.1	B
WB	LTR	838	1645	0.876	0.509	14.8	B	14.8	B
NB	LTR	520	1378	0.190	0.377	7.2	B	7.2	B
SB	LTR	597	1581	0.094	0.377	6.9	B	6.9	B

Intersection Delay = 11.5 sec/veh Intersection LOS = B
Lost Time/Cycle, L = 6.0 sec Critical v/c(x) = 0.584

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4d 07-11-1997
Center For Microcomputers In Transportation

Streets: (E-W) SIVLER ST. (N-S) TYNAN CIRCLE
Analyst: AW File Name: SVTCBDAM.HC9
Area Type: Other 7-1-97 AM
Comment: BUILD CONDITION (SIGNALIZED)

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes		> 1			> 1	<		1			> 1	<
Volumes	11	431		2	157	6		4		10	4	8
PHF or PK15	0.90	0.90		0.90	0.90	0.90		0.90		0.90	0.90	0.90
Lane W (ft)		12.0			12.0			12.0			12.0	
Grade		0			4			0			0	
% Heavy Veh	1	1		1	1	1		1		1	1	1
Parking	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Bus Stops			0			1			0			0
Con. Peds			0			0			0			0
Ped Button	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Arr Type		3			3			3			3	
RTOR Vols			0			0			0			0
Lost Time	3.00	3.00		3.00	3.00	3.00		3.00		3.00	3.00	3.00
Prop. Share												
Prop. Prot.												

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	*				NB Left	*		
Thru	*				Thru	*		
Right	*				Right	*		
Peds					Peds			
WB Left	*				SB Left	*		
Thru	*				Thru	*		
Right	*				Right	*		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	25.0P				Green	18.0A		
Yellow/AR	5.0				Yellow/AR	5.0		

Cycle Length: 53 secs Phase combination order: #1 #5

Intersection Performance Summary

Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB LT	950	1864	0.517	0.509	6.0	B	6.0	B
WB LTR	828	1626	0.221	0.509	4.7	A	4.7	A
NB T	710	1881	0.006	0.377	6.7	B	6.7	B
SB LTR	594	1575	0.040	0.377	6.7	B	6.7	B

Intersection Delay = 5.7 sec/veh Intersection LOS = B
Lost Time/Cycle, L = 6.0 sec Critical v/c(x) = 0.314

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4d 07-11-1997
Center For Microcomputers In Transportation

Streets: (E-W) SILVER ST. (N-S) TYNAN CIRCLE
Analyst: AW File Name: SVTCBDPM.HC9
Area Type: Other 7-1-97 PM
Comment: BUILD CONDITION (SIGNALIZED)

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes		> 1			> 1	<		1			> 1	<
Volumes	4	235		2	662	14		4		33	12	8
PHF or PK15	0.90	0.90		0.90	0.90	0.90		0.90		0.90	0.90	0.90
Lane W (ft)		12.0			12.0			12.0			12.0	
Grade		0			4			0			0	
% Heavy Veh	1	1		1	1	1		1		1	1	1
Parking	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Bus Stops			0			1			0			0
Con. Peds			0			0			0			0
Ped Button	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Arr Type		3			3			3			3	
RTOR Vols			0			0			0			0
Lost Time	3.00	3.00		3.00	3.00	3.00		3.00		3.00	3.00	3.00
Prop. Share												
Prop. Prot.												

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	*				NB Left	*		
Thru	*				Thru	*		
Right	*				Right	*		
Peds					Peds			
WB Left	*				SB Left	*		
Thru	*				Thru	*		
Right	*				Right	*		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	25.0P				Green	18.0A		
Yellow/AR	5.0				Yellow/AR	5.0		

Cycle Length: 53 secs Phase combination order: #1 #5

Intersection Performance Summary

Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB LT	910	1787	0.291	0.509	4.9	A	4.9	A
WB LTR	839	1646	0.899	0.509	16.6	C	16.6	C
NB T	710	1881	0.006	0.377	6.7	B	6.7	B
SB LTR	608	1610	0.097	0.377	6.9	B	6.9	B

Intersection Delay = 13.2 sec/veh Intersection LOS = B
Lost Time/Cycle, L = 6.0 sec Critical v/c(x) = 0.558

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Streets: (N-S) TYNAN CIRCLE (E-W) SILVER STREET
Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... AW
Date of Analysis..... 7/1/97
Other Information.....EXISTING CONDITION
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	11	387	26	2	142	6	8	13	1	1	12	8
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9
Grade		0			4			0			0	
MC's (%)	0			0			0	0	0	0	0	0
SU/RV's (%)	1			1			1	1	1	1	1	1
CV's (%)	0			0			0	0	0	0	0	0
PCE's	1.00			1.42			1.00	1.00	1.00	1.00	1.00	1.00

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	444	162
Potential Capacity: (pcph)	825	1146
Movement Capacity: (pcph)	825	1146
Prob. of Queue-Free State:	1.00	0.99
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	459	165
Potential Capacity: (pcph)	1036	1430
Movement Capacity: (pcph)	1036	1430
Prob. of Queue-Free State:	1.00	0.99
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	1.00	0.99
Step 3: TH from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	624	634
Potential Capacity: (pcph)	513	507
Capacity Adjustment Factor due to Impeding Movements	0.99	0.99
Movement Capacity: (pcph)	505	500
Prob. of Queue-Free State:	0.97	0.97
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	631	628
Potential Capacity: (pcph)	456	458
Major LT, Minor TH Impedance Factor:	0.96	0.96
Adjusted Impedance Factor:	0.97	0.97
Capacity Adjustment Factor due to Impeding Movements	0.96	0.97
Movement Capacity: (pcph)	439	443

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB L	9	439 >					
NB T	14	505 >	485	7.8	0.0	B	7.8
NB R	1	825 >					
SB L	1	443 >					
SB T	13	500 >	637	5.9	0.0	B	5.9
SB R	9	1146 >					
EB L	12	1430		2.5	0.0	A	0.1
WB L	3	1036		3.5	0.0	A	0.0

Intersection Delay = 0.5 sec/veh

Center For Microcomputers In Transportation
University of Florida
512 Weil Hall
Gainesville, FL 32611-6585
Ph: (352) 392-0378

Streets: (N-S) TYNAN CIRCLE (E-W) SILVER STREET
Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... AW
Date of Analysis..... 7/1/97
Other Information.....EXISTING CONDITION PM
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	4	207	22	2	603	14	80	6	3	10	32	8
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9
Grade		0			4			0			0	
MC's (%)	0			0			0	0	0	0	0	0
SU/RV's (%)	1			1			1	1	1	1	1	1
CV's (%)	0			0			0	0	0	0	0	0
PCE's	1.00			1.42			1.00	1.00	1.00	1.00	1.00	1.00

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	242	678
Potential Capacity: (pcph)	1044	628
Movement Capacity: (pcph)	1044	628
Prob. of Queue-Free State:	1.00	0.99
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	254	686
Potential Capacity: (pcph)	1297	808
Movement Capacity: (pcph)	1297	808
Prob. of Queue-Free State:	1.00	1.00
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	1.00	0.99
Step 3: TH from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	934	938
Potential Capacity: (pcph)	353	351
Capacity Adjustment Factor due to Impeding Movements	0.99	0.99
Movement Capacity: (pcph)	350	348
Prob. of Queue-Free State:	0.98	0.90
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	948	931
Potential Capacity: (pcph)	299	306
Major LT, Minor TH Impedance Factor:	0.89	0.97
Adjusted Impedance Factor:	0.91	0.98
Capacity Adjustment Factor due to Impeding Movements	0.90	0.97
Movement Capacity: (pcph)	269	298

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB	L	89	269 >					
NB	T	7	350 >	280	19.7	1.6	C	19.7
NB	R	3	1044 >					
SB	L	11	298 >					
SB	T	36	348 >	362	11.8	0.5	C	11.8
SB	R	9	628 >					
EB	L	4	808		4.5	0.0	A	0.1
WB	L	3	1297		2.8	0.0	A	0.0

Intersection Delay = 2.4 sec/veh

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Streets: (N-S) TYNAN CIRCLE (E-W) SILVER STREET
Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... AW
Date of Analysis..... 7/1/97
Other Information.....NO BUILD CONDITION AM
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	11	415	26	2	152	6	8	13	1	1	12	8
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9
Grade		0			4			0			0	
MC's (%)	0			0			0	0	0	0	0	0
SU/RV's (%)	1			1			1	1	1	1	1	1
CV's (%)	0			0			0	0	0	0	0	0
PCE's	1.00			1.42			1.00	1.00	1.00	1.00	1.00	1.00

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	476	172
Potential Capacity: (pcph)	795	1133
Movement Capacity: (pcph)	795	1133
Prob. of Queue-Free State:	1.00	0.99
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	490	176
Potential Capacity: (pcph)	1001	1413
Movement Capacity: (pcph)	1001	1413
Prob. of Queue-Free State:	1.00	0.99
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	1.00	0.99
Step 3: TH from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	666	676
Potential Capacity: (pcph)	488	482
Capacity Adjustment Factor due to Impeding Movements	0.98	0.98
Movement Capacity: (pcph)	481	475
Prob. of Queue-Free State:	0.97	0.97
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	673	670
Potential Capacity: (pcph)	432	433
Major LT, Minor TH Impedance Factor:	0.96	0.96
Adjusted Impedance Factor:	0.97	0.97
Capacity Adjustment Factor due to Impeding Movements	0.96	0.97
Movement Capacity: (pcph)	415	418

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB	L	9	415 >					
NB	T	14	481 >	461	8.2	0.0	B	8.2
NB	R	1	795 >					
SB	L	1	418 >					
SB	T	13	475 >	610	6.1	0.0	B	6.1
SB	R	9	1133 >					
EB	L	12	1413		2.6	0.0	A	0.1
WB	L	3	1001		3.6	0.0	A	0.0

Intersection Delay = 0.5 sec/veh

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Streets: (N-S) TYNAN CIRCLE (E-W) SILVER STREET
Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... AW
Date of Analysis..... 7/1/97
Other Information.....NO BUILD CONDITION PM
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	4	219	22	2	644	14	80	6	3	10	32	8
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9
Grade		0			4			0			0	
MC's (%)	0			0			0	0	0	0	0	0
SU/RV's (%)	1			1			1	1	1	1	1	1
CV's (%)	0			0			0	0	0	0	0	0
PCE's	1.00			1.42			1.00	1.00	1.00	1.00	1.00	1.00

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	255	724
Potential Capacity: (pcph)	1028	595
Movement Capacity: (pcph)	1028	595
Prob. of Queue-Free State:	1.00	0.98
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	267	732
Potential Capacity: (pcph)	1279	768
Movement Capacity: (pcph)	1279	768
Prob. of Queue-Free State:	1.00	0.99
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	1.00	0.99
Step 3: TH from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	993	997
Potential Capacity: (pcph)	329	327
Capacity Adjustment Factor due to Impeding Movements	0.99	0.99
Movement Capacity: (pcph)	326	324
Prob. of Queue-Free State:	0.98	0.89
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	1008	990
Potential Capacity: (pcph)	276	283
Major LT, Minor TH Impedance Factor:	0.88	0.97
Adjusted Impedance Factor:	0.91	0.98
Capacity Adjustment Factor due to Impeding Movements	0.89	0.97
Movement Capacity: (pcph)	247	275

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB	L	89	247 >					
NB	T	7	326 >	257	22.5	1.7	D	22.5
NB	R	3	1028 >					
SB	L	11	275 >					
SB	T	36	324 >	337	12.8	0.6	C	12.8
SB	R	9	595 >					
EB	L	4	768		4.7	0.0	A	0.1
WB	L	3	1279		2.8	0.0	A	0.0

Intersection Delay = 2.6 sec/veh

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Streets: (N-S) TYNAN CIRCLE (E-W) SILVER STREET
Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... AW
Date of Analysis..... 7/1/97
Other Information.....BUILD CONDITION AM
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	11	431	0	2	157	6	0	4	0	10	4	8
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9
Grade		0			4			0			0	
MC's (%)	0			0			0	0	0	0	0	0
SU/RV's (%)	1			1			1	1	1	1	1	1
CV's (%)	0			0			0	0	0	0	0	0
PCE's	1.00			1.42			1.00	1.00	1.00	1.00	1.00	1.00

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	479	178
Potential Capacity: (pcph)	792	1125
Movement Capacity: (pcph)	792	1125
Prob. of Queue-Free State:	1.00	0.99
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	479	181
Potential Capacity: (pcph)	1014	1406
Movement Capacity: (pcph)	1014	1406
Prob. of Queue-Free State:	1.00	0.99
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	1.00	0.99
Step 3: TH from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	674	670
Potential Capacity: (pcph)	483	486
Capacity Adjustment Factor due to Impeding Movements	0.98	0.98
Movement Capacity: (pcph)	476	479
Prob. of Queue-Free State:	0.99	0.99
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	677	672
Potential Capacity: (pcph)	429	432
Major LT, Minor TH Impedance Factor:	0.98	0.98
Adjusted Impedance Factor:	0.98	0.98
Capacity Adjustment Factor due to Impeding Movements	0.97	0.98
Movement Capacity: (pcph)	418	424

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB	L	0	418 >					
NB	T	4	476 >	476	7.6	0.0	B	7.6
NB	R	0	792 >					
SB	L	11	424 >					
SB	T	4	479 >	567	6.6	0.0	B	6.6
SB	R	9	1125 >					
EB	L	12	1406		2.6	0.0	A	0.1
WB	L	3	1014		3.6	0.0	A	0.0

Intersection Delay = 0.3 sec/veh

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Streets: (N-S) TYNAN CIRCLE (E-W) SILVER STREET
Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... AW
Date of Analysis..... 7/1/97
Other Information.....BUILD CONDITION PM
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	4	235	0	2	662	14	0	4	0	33	12	8
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9
Grade		0			4			0			0	
MC's (%)	0			0			0	0	0	0	0	0
SU/RV's (%)	1			1			1	1	1	1	1	1
CV's (%)	0			0			0	0	0	0	0	0
PCE's	1.00			1.42			1.00	1.00	1.00	1.00	1.00	1.00

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	261	744
Potential Capacity: (pcph)	1021	581
Movement Capacity: (pcph)	1021	581
Prob. of Queue-Free State:	1.00	0.98
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	261	752
Potential Capacity: (pcph)	1287	751
Movement Capacity: (pcph)	1287	751
Prob. of Queue-Free State:	1.00	0.99
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	1.00	0.99
Step 3: TH from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	1019	1011
Potential Capacity: (pcph)	318	322
Capacity Adjustment Factor due to Impeding Movements	0.99	0.99
Movement Capacity: (pcph)	315	319
Prob. of Queue-Free State:	0.99	0.96
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	1022	1013
Potential Capacity: (pcph)	271	274
Major LT, Minor TH Impedance Factor:	0.95	0.98
Adjusted Impedance Factor:	0.96	0.98
Capacity Adjustment Factor due to Impeding Movements	0.95	0.98
Movement Capacity: (pcph)	256	269

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB	L	0	256 >					
NB	T	4	315 >	315	11.6	0.0	C	11.6
NB	R	0	1021 >					
SB	L	37	269 >					
SB	T	13	319 >	304	14.7	0.7	C	14.7
SB	R	9	581 >					
EB	L	4	751		4.8	0.0	A	0.1
WB	L	3	1287		2.8	0.0	A	0.0

Intersection Delay = 0.9 sec/veh

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4d 07-11-1997
Center For Microcomputers In Transportation

Streets: (E-W) SILVER ST. (N-S) HOLMES DRIVE
Analyst: AW File Name: SVHD97PM.HC9
Area Type: Other 7-1-97 PM
Comment: NO BUILD CONDITION (SIGNALIZED)

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes		> 1	<		> 1	<		> 1	<		1	<
Volumes	17	178	25	6	511	1	90	4	5		5	18
PHF or PK15	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90		0.90	0.90
Lane W (ft)		12.0			12.0			12.0			12.0	
Grade		0			0			0			0	
% Heavy Veh	1	1	1	1	1	1	1	1	1		1	1
Parking	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Bus Stops			0			1			0			0
Con. Peds			0			0			0			0
Ped Button	(Y/N)	Y	0.0 s	(Y/N)	Y	0.0 s	(Y/N)	Y	0.0 s	(Y/N)	Y	0.0
Arr Type		3			3			3			3	
RTOR Vols			0			0			0			0
Lost Time	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00		3.00	3.00
Prop. Share												
Prop. Prot.												

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	*				NB Left	*		
Thru	*				Thru	*		
Right	*				Right	*		
Peds					Peds			
WB Left	*				SB Left	*		
Thru	*				Thru	*		
Right	*				Right	*		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	25.0P				Green	16.0A		
Yellow/AR	5.0				Yellow/AR	5.0		

Cycle Length: 51 secs Phase combination order: #1 #5

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	LTR	762	1439	0.322	0.529	4.5	A	4.5	A
WB	LTR	888	1677	0.649	0.529	6.7	B	6.7	B
NB	LTR	523	1482	0.210	0.353	7.5	B	7.5	B
SB	TR	529	1498	0.049	0.353	7.0	B	7.0	B

Intersection Delay = 6.3 sec/veh Intersection LOS = B
Lost Time/Cycle, L = 6.0 sec Critical v/c(x) = 0.473

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4d 07-11-1997
Center For Microcomputers In Transportation

Streets: (E-W) SILVER ST. (N-S) HOLMES DRIVE
Analyst: AW File Name: SVHD97AM.HC9
Area Type: Other 7-1-97 AM
Comment: EXISTING CONDITION (SIGNALIZED)

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes		> 1	<		1			> 1			1	<
Volumes	12	315	62		125		20	1			2	5
PHF or PK15	0.90	0.90	0.90		0.90		0.90	0.90			0.90	0.90
Lane W (ft)		12.0			12.0			12.0			12.0	
Grade		0			0			0			0	
% Heavy Veh	1	1	1		1		1	1			1	1
Parking	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Bus Stops			0			1			0			0
Con. Peds			0			0			0			0
Ped Button	(Y/N)	Y	0.0 s	(Y/N)	Y	0.0 s	(Y/N)	Y	0.0 s	(Y/N)	Y	0.0
Arr Type		3			3			3			3	
RTOR Vols			0			0			0			0
Lost Time	3.00	3.00	3.00		3.00		3.00	3.00			3.00	3.00
Prop. Share												
Prop. Prot.												

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	*				NB Left	*		
Thru	*				Thru	*		
Right	*				Right	*		
Peds					Peds			
WB Left	*				SB Left	*		
Thru	*				Thru	*		
Right	*				Right	*		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	25.0P				Green	16.0A		
Yellow/AR	5.0				Yellow/AR	5.0		

Cycle Length: 51 secs Phase combination order: #1 #5

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	LTR	867	1638	0.498	0.529	5.3	B	5.3	B
WB	T	992	1874	0.140	0.529	3.9	A	3.9	A
NB	LT	634	1797	0.036	0.353	7.0	B	7.0	B
SB	TR	530	1503	0.015	0.353	6.9	B	6.9	B

Intersection Delay = 5.1 sec/veh Intersection LOS = B
Lost Time/Cycle, L = 6.0 sec Critical v/c(x) = 0.313

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4d 07-11-1997
Center For Microcomputers In Transportation

Streets: (E-W) SILVER ST. (N-S) HOLMES DRIVE
Analyst: AW File Name: SVHDNBPM.HC9
Area Type: Other 7-1-97 PM
Comment: NO BUILD CONDITION (SIGNALIZED)

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes		> 1	<		> 1	<		> 1	<		1	<
Volumes	17	190	25	6	552	1	90	4	5		5	18
PHF or PK15	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90		0.90	0.90
Lane W (ft)		12.0			12.0			12.0			12.0	
Grade		0			0			0			0	
% Heavy Veh	1	1	1	1	1	1	1	1	1		1	1
Parking	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Bus Stops			0			1			0			0
Con. Peds			0			0			0			0
Ped Button	(Y/N)	Y	0.0 s	(Y/N)	Y	0.0 s	(Y/N)	Y	0.0 s	(Y/N)	Y	0.0
Arr Type		3			3			3			3	
RTOR Vols			0			0			0			0
Lost Time	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00		3.00	3.00
Prop. Share												
Prop. Prot.												

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	*				NB Left	*		
Thru	*				Thru	*		
Right	*				Right	*		
Peds					Peds			
WB Left	*				SB Left	*		
Thru	*				Thru	*		
Right	*				Right	*		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	25.0P				Green	16.0A		
Yellow/AR	5.0				Yellow/AR	5.0		

Cycle Length: 51 secs Phase combination order: #1 #5

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	LTR	746	1409	0.346	0.529	4.6	A	4.6	A
WB	LTR	888	1677	0.699	0.529	7.5	B	7.5	B
NB	LTR	523	1482	0.210	0.353	7.5	B	7.5	B
SB	TR	529	1498	0.049	0.353	7.0	B	7.0	B

Intersection Delay = 6.8 sec/veh Intersection LOS = B
Lost Time/Cycle, L = 6.0 sec Critical v/c(x) = 0.504

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4d 07-11-1997
Center For Microcomputers In Transportation

Streets: (E-W) SILVER ST. (N-S) HOLMES DRIVE
Analyst: AW File Name: SVHDNBAM.HC9
Area Type: Other 7-1-97 AM
Comment: NO BUILD CONDITION (SIGNALIZED)

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes		> 1	<		1			> 1			1	<
Volumes	12	343	62		135		20	1			2	5
PHF or PK15	0.90	0.90	0.90		0.90		0.90	0.90			0.90	0.90
Lane W (ft)		12.0			12.0			12.0			12.0	
Grade		0			0			0			0	
% Heavy Veh	1	1	1		1		1	1			1	1
Parking	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Bus Stops			0			1			0			0
Con. Peds			0			0			0			0
Ped Button	(Y/N)	Y	0.0 s	(Y/N)	Y	0.0 s	(Y/N)	Y	0.0 s	(Y/N)	Y	0.0
Arr Type		3			3			3			3	
RTOR Vols			0			0			.0			0
Lost Time	3.00	3.00	3.00		3.00		3.00	3.00			3.00	3.00
Prop. Share												
Prop. Prot.												

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	*				NB Left	*		
Thru	*				Thru	*		
Right	*				Right	*		
Peds					Peds			
WB Left	*				SB Left	*		
Thru	*				Thru	*		
Right	*				Right	*		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	25.0P				Green	16.0A		
Yellow/AR	5.0				Yellow/AR	5.0		

Cycle Length: 51 secs Phase combination order: #1 #5

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	LTR	869	1641	0.533	0.529	5.6	B	5.6	B
WB	T	992	1874	0.151	0.529	4.0	A	4.0	A
NB	LT	634	1797	0.036	0.353	7.0	B	7.0	B
SB	TR	530	1503	0.015	0.353	6.9	B	6.9	B

Intersection Delay = 5.3 sec/veh Intersection LOS = B
Lost Time/Cycle, L = 6.0 sec Critical v/c(x) = 0.334

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4d 07-11-1997
Center For Microcomputers In Transportation

Streets: (E-W) SILVER ST. (N-S) HOLMES DRIVE
Analyst: AW File Name: SVHDBDPM.HC9
Area Type: Other 7-1-97 PM
Comment: BUILD CONDITION (signalized)

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes		> 1	<		> 1	<		> 1	<		> 1	<
Volumes	17	235	16	2	615	1	45	1	5	2	5	18
PHF or PK15	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Lane W (ft)		12.0			12.0			12.0			12.0	
Grade		0			0			0			0	
% Heavy Veh	1	1	1	1	1	1	1	1	1	1	1	1
Parking	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Bus Stops			0			1			0			0
Con. Peds			0			0			0			0
Ped Button	(Y/N)	Y	0.0 s	(Y/N)	Y	0.0 s	(Y/N)	Y	0.0 s	(Y/N)	Y	0.0
Arr Type		3			3			3			3	
RTOR Vols			0			0			0			0
Lost Time	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Prop. Share												
Prop. Prot.												

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	*				NB Left	*		
Thru	*				Thru	*		
Right	*				Right	*		
Peds					Peds			
WB Left	*				SB Left	*		
Thru	*				Thru	*		
Right	*				Right	*		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	25.0P				Green	16.0P		
Yellow/AR	5.0				Yellow/AR	5.0		

Cycle Length: 51 secs Phase combination order: #1 #5

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	LTR	728	1375	0.409	0.529	5.7	B	5.7	B
WB	LTR	892	1684	0.769	0.529	10.1	B	10.1	B
NB	LTR	529	1500	0.108	0.353	8.4	B	8.4	B
SB	LTR	529	1500	0.053	0.353	8.3	B	8.3	B

Intersection Delay = 8.8 sec/veh Intersection LOS = B
Lost Time/Cycle, L = 6.0 sec Critical v/c(x) = 0.505

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4d 07-11-1997
Center For Microcomputers In Transportation

Streets: (E-W) SILVER ST. (N-S) HOLMES DRIVE
Analyst: AW File Name: SVHDBDAM.HC9
Area Type: Other 7-1-97 AM
Comment: BUILD CONDITION (signalized)

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes		> 1	<		> 1			> 1			> 1	<
Volumes	12	408	21	2	155		11	1		1	2	5
PHF or PK15	0.90	0.90	0.90	0.90	0.90		0.90	0.90		0.90	0.90	0.90
Lane W (ft)		12.0			12.0			12.0			12.0	
Grade		0			0			0			0	
% Heavy Veh	1	1	1	1	1		1	1		1	1	1
Parking	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Bus Stops			0			1			0			0
Con. Peds			0			0			0			0
Ped Button	(Y/N)	Y	0.0 s	(Y/N)	Y	0.0 s	(Y/N)	Y	0.0 s	(Y/N)	Y	0.0
Arr Type		3			3			3			3	
RTOR Vols			0			0			0			0
Lost Time	3.00	3.00	3.00	3.00	3.00		3.00	3.00		3.00	3.00	3.00
Prop. Share												
Prop. Prot.												

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	*				NB Left	*		
Thru	*				Thru	*		
Right	*				Right	*		
Peds					Peds			
WB Left	*				SB Left	*		
Thru	*				Thru	*		
Right	*				Right	*		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	25.0P				Green	16.0P		
Yellow/AR	5.0				Yellow/AR	5.0		

Cycle Length: 51 secs Phase combination order: #1 #5

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	LTR	881	1665	0.555	0.529	6.7	B	6.7	B
WB	LT	981	1853	0.177	0.529	4.7	A	4.7	A
NB	LT	638	1808	0.020	0.353	8.2	B	8.2	B
SB	LTR	536	1518	0.017	0.353	8.2	B	8.2	B

Intersection Delay = 6.2 sec/veh Intersection LOS = B
Lost Time/Cycle, L = 6.0 sec Critical v/c(x) = 0.341

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Streets: (N-S) HOLMES DRIVE (E-W) SILVER STREET
Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... AW
Date of Analysis..... 7/1/97
Other Information.....EXISTING CONDITION AM
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	12	315	62	0	125	0	20	1	0	0	2	5
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9
Grade		0			0			0			0	
MC's (%)	0			0			0	0	0	0	0	0
SU/RV's (%)	1			1			1	1	1	1	1	1
CV's (%)	0			0			0	0	0	0	0	0
PCE's	1.00			1.00			1.00	1.00	1.00	1.00	1.00	1.00

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	384	139
Potential Capacity: (pcph)	885	1177
Movement Capacity: (pcph)	885	1177
Prob. of Queue-Free State:	1.00	0.99
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	419	139
Potential Capacity: (pcph)	1082	1472
Movement Capacity: (pcph)	1082	1472
Prob. of Queue-Free State:	1.00	0.99
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	1.00	0.99
Step 3: TH from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	536	571
Potential Capacity: (pcph)	571	547
Capacity Adjustment Factor due to Impeding Movements	0.99	0.99
Movement Capacity: (pcph)	564	541
Prob. of Queue-Free State:	1.00	1.00
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	540	537
Potential Capacity: (pcph)	515	517
Major LT, Minor TH Impedance Factor:	0.98	0.99
Adjusted Impedance Factor:	0.99	0.99
Capacity Adjustment Factor due to Impeding Movements	0.98	0.99
Movement Capacity: (pcph)	506	512

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB	L	22	506 >					
NB	T	1	564 >	508	7.4	0.0	B	7.4
NB	R	0	885 >					
SB	L	0	512 >					
SB	T	2	541 >	910	4.0	0.0	A	4.0
SB	R	6	1177 >					
EB	L	13	1472		2.5	0.0	A	0.1
WB	L	0	1082		3.3	0.0	A	0.0

Intersection Delay = 0.4 sec/veh

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Streets: (N-S) HOLMES DRIVE (E-W) SILVER STREET
Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... AW
Date of Analysis..... 7/1/97
Other Information.....EXISTING CONDITION PM
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	17	178	25	6	511	1	90	4	5	0	5	18
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9
Grade		0			0			0			0	
MC's (%)	0			0			0	0	0	0	0	0
SU/RV's (%)	1			1			1	1	1	1	1	1
CV's (%)	0			0			0	0	0	0	0	0
PCE's	1.00			1.00			1.00	1.00	1.00	1.00	1.00	1.00

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	212	568
Potential Capacity: (pcph)	1081	714
Movement Capacity: (pcph)	1081	714
Prob. of Queue-Free State:	0.99	0.97
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	226	569
Potential Capacity: (pcph)	1338	918
Movement Capacity: (pcph)	1338	918
Prob. of Queue-Free State:	0.99	0.98
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	0.99	0.98
Step 3: TH from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	807	820
Potential Capacity: (pcph)	411	405
Capacity Adjustment Factor due to Impeding Movements	0.97	0.97
Movement Capacity: (pcph)	398	392
Prob. of Queue-Free State:	0.99	0.98
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	820	812
Potential Capacity: (pcph)	355	359
Major LT, Minor TH Impedance Factor:	0.95	0.96
Adjusted Impedance Factor:	0.96	0.97
Capacity Adjustment Factor due to Impeding Movements	0.94	0.96
Movement Capacity: (pcph)	333	346

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB	L	100	333 >					
NB	T	4	398 >	348	15.1	1.4	C	15.1
NB	R	6	1081 >					
SB	L	0	346 >					
SB	T	6	392 >	600	6.3	0.0	B	6.3
SB	R	20	714 >					
EB	L	19	918		4.0	0.0	A	0.3
WB	L	7	1338		2.7	0.0	A	0.0

Intersection Delay = 2.0 sec/veh

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Streets: (N-S) HOLMES DRIVE (E-W) SILVER STREET
Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... AW
Date of Analysis..... 7/1/97
Other Information.....NO BUILD CONDITION AM
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	12	343	62	0	135	0	20	1	0	0	2	5
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9
Grade		0			0			0			0	
MC's (%)	0			0			0	0	0	0	0	0
SU/RV's (%)	1			1			1	1	1	1	1	1
CV's (%)	0			0			0	0	0	0	0	0
PCE's	1.00			1.00			1.00	1.00	1.00	1.00	1.00	1.00

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	416	150
Potential Capacity: (pcph)	852	1162
Movement Capacity: (pcph)	852	1162
Prob. of Queue-Free State:	1.00	0.99
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	450	150
Potential Capacity: (pcph)	1046	1454
Movement Capacity: (pcph)	1046	1454
Prob. of Queue-Free State:	1.00	0.99
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	1.00	0.99
Step 3: TH from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	578	613
Potential Capacity: (pcph)	543	520
Capacity Adjustment Factor due to Impeding Movements	0.99	0.99
Movement Capacity: (pcph)	536	514
Prob. of Queue-Free State:	1.00	1.00
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	582	579
Potential Capacity: (pcph)	487	489
Major LT, Minor TH Impedance Factor:	0.98	0.99
Adjusted Impedance Factor:	0.99	0.99
Capacity Adjustment Factor due to Impeding Movements	0.98	0.99
Movement Capacity: (pcph)	479	484

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB	L	22	479 >					
NB	T	1	536 >	481	7.9	0.0	B	7.9
NB	R	0	852 >					
SB	L	0	484 >					
SB	T	2	514 >	884	4.1	0.0	A	4.1
SB	R	6	1162 >					
EB	L	13	1454		2.5	0.0	A	0.1
WB	L	0	1046		3.4	0.0	A	0.0

Intersection Delay = 0.4 sec/veh

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Streets: (N-S) HOLMES DRIVE (E-W) SILVER STREET
Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... AW
Date of Analysis..... 7/1/97
Other Information.....NO BUILD CONDITION PM
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	17	190	25	6	552	1	90	4	5	0	5	18
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9
Grade		0			0			0			0	
MC's (%)	0			0			0	0	0	0	0	0
SU/RV's (%)	1			1			1	1	1	1	1	1
CV's (%)	0			0			0	0	0	0	0	0
PCE's	1.00			1.00			1.00	1.00	1.00	1.00	1.00	1.00

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	225	614
Potential Capacity: (pcph)	1065	676
Movement Capacity: (pcph)	1065	676
Prob. of Queue-Free State:	0.99	0.97
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	239	614
Potential Capacity: (pcph)	1319	874
Movement Capacity: (pcph)	1319	874
Prob. of Queue-Free State:	0.99	0.98
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	0.99	0.97
Step 3: TH from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	865	878
Potential Capacity: (pcph)	384	378
Capacity Adjustment Factor due to Impeding Movements	0.97	0.97
Movement Capacity: (pcph)	371	365
Prob. of Queue-Free State:	0.99	0.98
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	878	870
Potential Capacity: (pcph)	328	332
Major LT, Minor TH Impedance Factor:	0.95	0.96
Adjusted Impedance Factor:	0.96	0.97
Capacity Adjustment Factor due to Impeding Movements	0.93	0.96
Movement Capacity: (pcph)	306	319

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB	L	100	306 >					
NB	T	4	371 >	321	17.0	1.5	C	17.0
NB	R	6	1065 >					
SB	L	0	319 >					
SB	T	6	365 >	565	6.7	0.0	B	6.7
SB	R	20	676 >					
EB	L	19	874		4.2	0.0	A	0.3
WB	L	7	1319		2.7	0.0	A	0.0

Intersection Delay = 2.1 sec/veh

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Ph: (352) 392-0378

Streets: (N-S) HOLMES DRIVE (E-W) SILVER STREET
Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... AW
Date of Analysis..... 7/1/97
Other Information.....BUILD CONDITION PM
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	17	235	16	2	615	1	45	1	5	2	5	18
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9
Grade		0			0			0			0	
MC's (%)	0			0			0	0	0	0	0	0
SU/RV's (%)	1			1			1	1	1	1	1	1
CV's (%)	0			0			0	0	0	0	0	0
PCE's	1.00			1.00			1.00	1.00	1.00	1.00	1.00	1.00

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	270	684
Potential Capacity: (pcph)	1010	623
Movement Capacity: (pcph)	1010	623
Prob. of Queue-Free State:	0.99	0.97
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	279	684
Potential Capacity: (pcph)	1262	809
Movement Capacity: (pcph)	1262	809
Prob. of Queue-Free State:	1.00	0.98
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	1.00	0.97
Step 3: TH from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	975	984
Potential Capacity: (pcph)	336	332
Capacity Adjustment Factor due to Impeding Movements	0.97	0.97
Movement Capacity: (pcph)	326	322
Prob. of Queue-Free State:	1.00	0.98
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	988	978
Potential Capacity: (pcph)	284	287
Major LT, Minor TH Impedance Factor:	0.95	0.97
Adjusted Impedance Factor:	0.96	0.97
Capacity Adjustment Factor due to Impeding Movements	0.93	0.97
Movement Capacity: (pcph)	265	278

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB	L	50	265 >					
NB	T	1	326 >	288	15.6	0.7	C	15.6
NB	R	6	1010 >					
SB	L	2	278 >					
SB	T	6	322 >	483	7.9	0.0	B	7.9
SB	R	20	623 >					
EB	L	19	809		4.6	0.0	A	0.3
WB	L	2	1262		2.9	0.0	A	0.0

Intersection Delay = 1.1 sec/veh

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Streets: (N-S) HOLMES DRIVE (E-W) SILVER STREET
Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... AW
Date of Analysis..... 7/1/97
Other Information.....BUILD CONDITION AM
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	12	408	21	2	155	0	11	1	0	1	2	5
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9
Grade		0			0			0			0	
MC's (%)	0			0			0	0	0	0	0	0
SU/RV's (%)	1			1			1	1	1	1	1	1
CV's (%)	0			0			0	0	0	0	0	0
PCE's	1.00			1.00			1.00	1.00	1.00	1.00	1.00	1.00

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	464	172
Potential Capacity: (pcph)	806	1133
Movement Capacity: (pcph)	806	1133
Prob. of Queue-Free State:	1.00	0.99
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	476	172
Potential Capacity: (pcph)	1017	1419
Movement Capacity: (pcph)	1017	1419
Prob. of Queue-Free State:	1.00	0.99
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	1.00	0.99
Step 3: TH from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	652	663
Potential Capacity: (pcph)	496	490
Capacity Adjustment Factor due to Impeding Movements	0.99	0.99
Movement Capacity: (pcph)	489	483
Prob. of Queue-Free State:	1.00	1.00
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	656	652
Potential Capacity: (pcph)	442	444
Major LT, Minor TH Impedance Factor:	0.98	0.98
Adjusted Impedance Factor:	0.99	0.99
Capacity Adjustment Factor due to Impeding Movements	0.98	0.99
Movement Capacity: (pcph)	433	438

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB L	12	433 >					
NB T	1	489 >	437	8.5	0.0	B	8.5
NB R	0	806 >					
SB L	1	438 >					
SB T	2	483 >	768	4.7	0.0	A	4.7
SB R	6	1133 >					
EB L	13	1419		2.6	0.0	A	0.1
WB L	2	1017		3.5	0.0	A	0.0

Intersection Delay = 0.3 sec/veh

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Streets: (N-S) SWEET DRIVE (E-W) SILVER ST.
Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... AW
Date of Analysis..... 7/9/97
Other Information.....1996 EXSISTING AM
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	0	0	0	0	0
Stop/Yield			N			N						
Volumes	0	309	0	0	116	0						
PHF	.9	.9	.9	.9	.9	.9						
Grade		-4			4							
MC's (%)	0			0								
SU/RV's (%)	1			1								
CV's (%)	0			0								
PCE's	0.80			1.42								

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)	343	129
Potential Capacity: (pcph)	1177	1488
Movement Capacity: (pcph)	1177	1488
Prob. of Queue-Free State:	1.00	1.00
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	1.00	1.00

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
EB L	0	1488		2.4	0.0	A	0.0
WB L	0	1177		3.1	0.0	A	0.0

Intersection Delay = 0.0 sec/veh

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Streets: (N-S) SWEET DRIVE (E-W) SILVER ST.
Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... AW
Date of Analysis..... 7/9/97
Other Information.....1996 EXSISTING PM
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 0	< 0	0	0	0
Stop/Yield			N			N						
Volumes	0	152	6	0	474	0	35		0			
PHF	.9	.9	.9	.9	.9	.9	.9		.9			
Grade		-4			4			0				
MC's (%)	0			0			0		0			
SU/RV's (%)	1			1			1		1			
CV's (%)	0			0			0		0			
PCE's	0.80			1.42			1.00		1.00			

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	172	
Potential Capacity: (pcph)	1133	
Movement Capacity: (pcph)	1133	
Prob. of Queue-Free State:	1.00	
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	176	527
Potential Capacity: (pcph)	1413	962
Movement Capacity: (pcph)	1413	962
Prob. of Queue-Free State:	1.00	1.00
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	1.00	1.00
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	700	
Potential Capacity: (pcph)	416	
Major LT, Minor TH Impedance Factor:	1.00	
Adjusted Impedance Factor:	1.00	
Capacity Adjustment Factor due to Impeding Movements	1.00	
Movement Capacity: (pcph)	416	

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB L	39	416 >	416	9.5	0.2	B	9.5
NB R	0	1133 >					
EB L	0	962		3.7	0.0	A	0.0
WB L	0	1413		2.5	0.0	A	0.0

Intersection Delay = 0.5 sec/veh

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Streets: (N-S) SWEET DRIVE (E-W) SILVER ST.
Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... AW
Date of Analysis..... 7/9/97
Other Information.....NO BUILD CONDITION AM
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	0	0	0	0	0
Stop/Yield			N			N						
Volumes	0	337	0	0	126	0						
PHF	.9	.9	.9	.9	.9	.9						
Grade		-4			4							
MC's (%)	0			0								
SU/RV's (%)	1			1								
CV's (%)	0			0								
PCE's	0.80			1.42								

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)	374	140
Potential Capacity: (pcph)	1137	1470
Movement Capacity: (pcph)	1137	1470
Prob. of Queue-Free State:	1.00	1.00
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	1.00	1.00

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
EB L	0	1470		2.4	0.0	A	0.0
WB L	0	1137		3.2	0.0	A	0.0

Intersection Delay = 0.0 sec/veh

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Streets: (N-S) SWEET DRIVE (E-W) SILVER ST.
Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... AW
Date of Analysis..... 7/9/97
Other Information.....NO BUILD CONDITION PM
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 0	< 0	0	0	0
Stop/Yield			N			N						
Volumes	0	164	6	0	515	0	35		0			
PHF	.9	.9	.9	.9	.9	.9	.9		.9			
Grade		-4			4			0				
MC's (%)	0			0			0		0			
SU/RV's (%)	1			1			1		1			
CV's (%)	0			0			0		0			
PCE's	0.80			1.42			1.00		1.00			

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	186	
Potential Capacity: (pcph)	1115	
Movement Capacity: (pcph)	1115	
Prob. of Queue-Free State:	1.00	
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	189	572
Potential Capacity: (pcph)	1393	915
Movement Capacity: (pcph)	1393	915
Prob. of Queue-Free State:	1.00	1.00
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	1.00	1.00
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	758	
Potential Capacity: (pcph)	385	
Major LT, Minor TH Impedance Factor:	1.00	
Adjusted Impedance Factor:	1.00	
Capacity Adjustment Factor due to Impeding Movements	1.00	
Movement Capacity: (pcph)	385	

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB L	39	385 >					
			385	10.4	0.3	C	10.4
NB R	0	1115 >					
EB L	0	915		3.9	0.0	A	0.0
WB L	0	1393		2.6	0.0	A	0.0

Intersection Delay = 0.5 sec/veh

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Streets: (N-S) SWEET DRIVE (E-W) SILVER ST.
Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... AW
Date of Analysis..... 7/9/97
Other Information.....BUILD CONDITION AM
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 0	< 0	0	0	0
Stop/Yield			N			N						
Volumes	0	337	65	0	126	0	34		0			
PHF	.9	.9	.9	.9	.9	.9	.9		.9			
Grade		-4			4			0				
MC's (%)	0			0			0		0			
SU/RV's (%)	1			1			1		1			
CV's (%)	0			0			0		0			
PCE's	0.80			1.42			1.01		1.01			

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	410	
Potential Capacity: (pcph)	858	
Movement Capacity: (pcph)	858	
Prob. of Queue-Free State:	1.00	

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)	446	140
Potential Capacity: (pcph)	1051	1470
Movement Capacity: (pcph)	1051	1470
Prob. of Queue-Free State:	1.00	1.00
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	1.00	1.00

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)	550	
Potential Capacity: (pcph)	509	
Major LT, Minor TH Impedance Factor:	1.00	
Adjusted Impedance Factor:	1.00	
Capacity Adjustment Factor due to Impeding Movements	1.00	
Movement Capacity: (pcph)	509	

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB L	38	509 >					
NB R	0	858 >	509	7.6	0.1	B	7.6
EB L	0	1470		2.4	0.0	A	0.0
WB L	0	1051		3.4	0.0	A	0.0

Intersection Delay = 0.5 sec/veh

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Streets: (N-S) SWEET DRIVE (E-W) SILVER ST.
Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... AW
Date of Analysis..... 7/9/97
Other Information.....BUILD CONDITION PM
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 0	< 0	0	0	0
Stop/Yield			N			N						
Volumes	0	164	58	0	515	0	96		0			
PHF	.9	.9	.9	.9	.9	.9	.9		.9			
Grade		-4			4			0				
MC's (%)	0			0			0		0			
SU/RV's (%)	1			1			1		1			
CV's (%)	0			0			0		0			
PCE's	0.80			1.42			1.00		1.00			

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	214	
Potential Capacity: (pcph)	1079	
Movement Capacity: (pcph)	1079	
Prob. of Queue-Free State:	1.00	

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)	246	572
Potential Capacity: (pcph)	1309	915
Movement Capacity: (pcph)	1309	915
Prob. of Queue-Free State:	1.00	1.00
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	1.00	1.00

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)	786	
Potential Capacity: (pcph)	371	
Major LT, Minor TH Impedance Factor:	1.00	
Adjusted Impedance Factor:	1.00	
Capacity Adjustment Factor due to Impeding Movements	1.00	
Movement Capacity: (pcph)	371	

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB L	107	371 >	371	13.6	1.2	C	13.6
NB R	0	1079 >					
EB L	0	915		3.9	0.0	A	0.0
WB L	0	1309		2.8	0.0	A	0.0

Intersection Delay = 1.6 sec/veh

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Streets: (N-S) EASTERN DRIVE (E-W) ROBERTS STREET (to FLOOD DRIVE)
Major Street Direction.... NS
Length of Time Analyzed... 15 (min)
Analyst..... AW
Date of Analysis..... 7/9/97
Other Information.....1996 EXSISTING AM
Two-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	5	111	15	43	57	0	7	7	2	3	2	7
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9
Grade		0			0			4			-4	
MC's (%)	0			0			0	0	0	0	0	0
SU/RV's (%)	1			1			1	1	1	1	1	1
CV's (%)	0			0			0	0	0	0	0	0
PCE's	1.00			1.00			1.42	1.42	1.42	0.80	0.80	0.80

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	WB	EB
Conflicting Flows: (vph)	132	63
Potential Capacity: (pcph)	1187	1286
Movement Capacity: (pcph)	1187	1286
Prob. of Queue-Free State:	0.99	1.00
Step 2: LT from Major Street	**SB**	**NB**
Conflicting Flows: (vph)	140	63
Potential Capacity: (pcph)	1470	1600
Movement Capacity: (pcph)	1470	1600
Prob. of Queue-Free State:	0.97	1.00
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	0.97	1.00
Step 3: TH from Minor Street	**WB**	**EB**
Conflicting Flows: (vph)	248	257
Potential Capacity: (pcph)	808	800
Capacity Adjustment Factor due to Impeding Movements	0.96	0.96
Movement Capacity: (pcph)	777	770
Prob. of Queue-Free State:	1.00	0.99
Step 4: LT from Minor Street	**WB**	**EB**
Conflicting Flows: (vph)	254	254
Potential Capacity: (pcph)	755	755
Major LT, Minor TH Impedance Factor:	0.95	0.96
Adjusted Impedance Factor:	0.96	0.97
Capacity Adjustment Factor due to Impeding Movements	0.96	0.96
Movement Capacity: (pcph)	724	728

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
EB L	11	728 >					
EB T	11	770 >	788	4.7	0.0	A	4.7
EB R	3	1286 >					
WB L	2	724 >					
WB T	2	777 >	962	3.8	0.0	A	3.8
WB R	6	1187 >					
NB L	6	1600		2.3	0.0	A	0.1
SB L	48	1470		2.5	0.0	A	1.1

Intersection Delay = 0.9 sec/veh

Center For Microcomputers In Transportation
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Streets: (N-S) EASTERN DRIVE (E-W) ROBERTS STREET
Major Street Direction.... NS
Length of Time Analyzed... 15 (min)
Analyst..... AW
Date of Analysis..... 7/9/97
Other Information.....1996 EXSISTING PM
Two-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	11	76	2	17	108	4	4	1	5	11	7	9
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9
Grade		0			0			4			-4	
MC's (%)	0			0			0	0	0	0	0	0
SU/RV's (%)	1			1			1	1	1	1	1	1
CV's (%)	0			0			0	0	0	0	0	0
PCE's	1.01			1.01			1.42	1.42	1.42	0.80	0.80	0.80

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	WB	EB
Conflicting Flows: (vph)	85	122
Potential Capacity: (pcph)	1254	1201
Movement Capacity: (pcph)	1254	1201
Prob. of Queue-Free State:	0.99	0.99
Step 2: LT from Major Street	**SB**	**NB**
Conflicting Flows: (vph)	86	124
Potential Capacity: (pcph)	1560	1496
Movement Capacity: (pcph)	1560	1496
Prob. of Queue-Free State:	0.99	0.99
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	0.99	0.99
Step 3: TH from Minor Street	**WB**	**EB**
Conflicting Flows: (vph)	240	239
Potential Capacity: (pcph)	816	817
Capacity Adjustment Factor due to Impeding Movements	0.98	0.98
Movement Capacity: (pcph)	798	799
Prob. of Queue-Free State:	0.99	1.00
Step 4: LT from Minor Street	**WB**	**EB**
Conflicting Flows: (vph)	242	247
Potential Capacity: (pcph)	767	762
Major LT, Minor TH Impedance Factor:	0.98	0.97
Adjusted Impedance Factor:	0.98	0.98
Capacity Adjustment Factor due to Impeding Movements	0.98	0.97
Movement Capacity: (pcph)	749	740

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
EB L	6	740 >					
EB T	1	799 >	936	3.9	0.0	A	3.9
EB R	8	1201 >					
WB L	10	749 >					
WB T	6	798 >	881	4.2	0.0	A	4.2
WB R	8	1254 >					
NB L	12	1496		2.4	0.0	A	0.3
SB L	19	1560		2.3	0.0	A	0.3

Intersection Delay = 0.9 sec/veh

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Major Street Direction.... NS
Length of Time Analyzed... 15 (min)
Analyst..... AW
Date of Analysis..... 7/9/97
Other Information.....NO BUILD CONDITION AM
Two-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	5	119	15	43	60	0	8	7	2	3	2	7
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9
Grade		0			0			4			-4	
MC's (%)	0			0			0	0	0	0	0	0
SU/RV's (%)	1			1			1	1	1	1	1	1
CV's (%)	0			0			0	0	0	0	0	0
PCE's	1.00			1.00			1.42	1.42	1.42	0.80	0.80	0.80

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	WB	EB
Conflicting Flows: (vph)	140	67
Potential Capacity: (pcph)	1176	1281
Movement Capacity: (pcph)	1176	1281
Prob. of Queue-Free State:	0.99	1.00
Step 2: LT from Major Street	**SB**	**NB**
Conflicting Flows: (vph)	149	67
Potential Capacity: (pcph)	1456	1593
Movement Capacity: (pcph)	1456	1593
Prob. of Queue-Free State:	0.97	1.00
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	0.97	1.00
Step 3: TH from Minor Street	**WB**	**EB**
Conflicting Flows: (vph)	262	270
Potential Capacity: (pcph)	795	787
Capacity Adjustment Factor due to Impeding Movements	0.96	0.96
Movement Capacity: (pcph)	765	757
Prob. of Queue-Free State:	1.00	0.99
Step 4: LT from Minor Street	**WB**	**EB**
Conflicting Flows: (vph)	266	266
Potential Capacity: (pcph)	743	743
Major LT, Minor TH Impedance Factor:	0.95	0.96
Adjusted Impedance Factor:	0.96	0.97
Capacity Adjustment Factor due to Impeding Movements	0.96	0.96
Movement Capacity: (pcph)	712	716

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
EB	L	13	716 >					
EB	T	11	757 >	771	4.8	0.0	A	4.8
EB	R	3	1281 >					
WB	L	2	712 >					
WB	T	2	765 >	950	3.8	0.0	A	3.8
WB	R	6	1176 >					
NB	L	6	1593		2.3	0.0	A	0.1
SB	L	48	1456		2.6	0.0	A	1.1

Intersection Delay = 0.9 sec/veh

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Major Street Direction.... NS
Length of Time Analyzed... 15 (min)
Analyst..... AW
Date of Analysis..... 7/9/97
Other Information.....NO BUILD CONDITION PM
Two-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	12	81	2	17	114	4	4	1	5	11	7	9
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9
Grade		0			0			4			-4	
MC's (%)	0			0			0	0	0	0	0	0
SU/RV's (%)	1			1			1	1	1	1	1	1
CV's (%)	0			0			0	0	0	0	0	0
PCE's	1.00			1.00			1.42	1.42	1.42	0.80	0.80	0.80

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	WB	EB
Conflicting Flows: (vph)	91	129
Potential Capacity: (pcph)	1245	1191
Movement Capacity: (pcph)	1245	1191
Prob. of Queue-Free State:	0.99	0.99
Step 2: LT from Major Street	**SB**	**NB**
Conflicting Flows: (vph)	92	131
Potential Capacity: (pcph)	1550	1485
Movement Capacity: (pcph)	1550	1485
Prob. of Queue-Free State:	0.99	0.99
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	0.99	0.99
Step 3: TH from Minor Street	**WB**	**EB**
Conflicting Flows: (vph)	254	253
Potential Capacity: (pcph)	803	804
Capacity Adjustment Factor due to Impeding Movements	0.98	0.98
Movement Capacity: (pcph)	785	786
Prob. of Queue-Free State:	0.99	1.00
Step 4: LT from Minor Street	**WB**	**EB**
Conflicting Flows: (vph)	256	261
Potential Capacity: (pcph)	753	748
Major LT, Minor TH Impedance Factor:	0.98	0.97
Adjusted Impedance Factor:	0.98	0.98
Capacity Adjustment Factor due to Impeding Movements	0.97	0.97
Movement Capacity: (pcph)	734	726

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)		Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
EB	L	6	726	>					
EB	T	1	786	>	936	3.9	0.0	A	3.9
EB	R	9	1191	>					
WB	L	10	734	>					
WB	T	6	785	>	867	4.3	0.0	A	4.3
WB	R	8	1245	>					
NB	L	13	1485			2.4	0.0	A	0.3
SB	L	19	1550			2.4	0.0	A	0.3

Intersection Delay = 0.8 sec/veh

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Major Street Direction.... NS
Length of Time Analyzed... 15 (min)
Analyst..... AW
Date of Analysis..... 7/9/97
Other Information.....BUILD CONDITION AM
Two-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	5	131	23	24	85	0	8	7	2	1	2	10
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9
Grade		0			0			4			-4	
MC's (%)	0			0			0	0	0	0	0	0
SU/RV's (%)	1			1			1	1	1	1	1	1
CV's (%)	0			0			0	0	0	0	0	0
PCE's	1.00			1.00			1.42	1.42	1.42	0.80	0.80	0.80

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	WB	EB
Conflicting Flows: (vph)	159	94
Potential Capacity: (pcph)	1150	1241
Movement Capacity: (pcph)	1150	1241
Prob. of Queue-Free State:	0.99	1.00
Step 2: LT from Major Street	**SB**	**NB**
Conflicting Flows: (vph)	172	94
Potential Capacity: (pcph)	1419	1546
Movement Capacity: (pcph)	1419	1546
Prob. of Queue-Free State:	0.98	1.00
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	0.98	1.00
Step 3: TH from Minor Street	**WB**	**EB**
Conflicting Flows: (vph)	286	299
Potential Capacity: (pcph)	772	760
Capacity Adjustment Factor due to Impeding Movements	0.98	0.98
Movement Capacity: (pcph)	753	741
Prob. of Queue-Free State:	1.00	0.99
Step 4: LT from Minor Street	**WB**	**EB**
Conflicting Flows: (vph)	291	292
Potential Capacity: (pcph)	718	717
Major LT, Minor TH Impedance Factor:	0.96	0.97
Adjusted Impedance Factor:	0.97	0.98
Capacity Adjustment Factor due to Impeding Movements	0.97	0.97
Movement Capacity: (pcph)	695	697

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
EB	L	13	697 >					
EB	T	11	741 >	752	5.0	0.0	A	5.0
EB	R	3	1241 >					
WB	L	1	695 >					
WB	T	2	753 >	1007	3.6	0.0	A	3.6
WB	R	9	1150 >					
NB	L	6	1546		2.3	0.0	A	0.1
SB	L	27	1419		2.6	0.0	A	0.6

Intersection Delay = 0.7 sec/veh

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Streets: (N-S) EASTERN DRIVE (E-W) ROBERTS STREET
Major Street Direction.... NS
Length of Time Analyzed... 15 (min)
Analyst..... AW
Date of Analysis..... 7/9/97
Other Information.....BUILD CONDITION PM
Two-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	12	130	12	15	140	4	4	1	5	11	7	33
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9
Grade		0			0							
MC's (%)	0			0				4			-4	
SU/RV's (%)	1			1			0	0	0	0	0	0
CV's (%)	0			0			1	1	1	1	1	1
PCE's	1.00			1.00			0	0	0	0	0	0
							1.42	1.42	1.42	0.80	0.80	0.80

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	WB	EB
Conflicting Flows: (vph)	150	158
Potential Capacity: (pcph)	1162	1152
Movement Capacity: (pcph)	1162	1152
Prob. of Queue-Free State:	0.97	0.99
Step 2: LT from Major Street	**SB**	**NB**
Conflicting Flows: (vph)	157	160
Potential Capacity: (pcph)	1443	1438
Movement Capacity: (pcph)	1443	1438
Prob. of Queue-Free State:	0.99	0.99
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	0.99	0.99
Step 3: TH from Minor Street	**WB**	**EB**
Conflicting Flows: (vph)	340	345
Potential Capacity: (pcph)	723	719
Capacity Adjustment Factor due to Impeding Movements	0.98	0.98
Movement Capacity: (pcph)	706	703
Prob. of Queue-Free State:	0.99	1.00
Step 4: LT from Minor Street	**WB**	**EB**
Conflicting Flows: (vph)	342	361
Potential Capacity: (pcph)	671	654
Major LT, Minor TH Impedance Factor:	0.98	0.97
Adjusted Impedance Factor:	0.98	0.98
Capacity Adjustment Factor due to Impeding Movements	0.97	0.95
Movement Capacity: (pcph)	653	622

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
EB	L	6	622 >					
EB	T	1	703 >	847	4.3	0.0	A	4.3
EB	R	9	1152 >					
WB	L	10	653 >					
WB	T	6	706 >	927	4.1	0.0	A	4.1
WB	R	30	1162 >					
NB	L	13	1438		2.5	0.0	A	0.2
SB	L	17	1443		2.5	0.0	A	0.2

Intersection Delay = 0.9 sec/veh

HCS: Unsignalized Intersections Release 2.1d BWED97AM.HC0 Page 1

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Streets: (N-S) EASTERN DRIVE (E-W) BOW LANE
Analyst..... AW
Date of Analysis..... 7/9/97
Other Information.....1996 EXSISTING AM
All-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 2	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Volumes	152	70	49	21	0	40	44	62	0	0	38	17
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9

Volume Summary and Capacity Analysis WorkSheet

	NB	SB	EB	WB
LT Flow Rate	169	23	49	0
RT Flow Rate	54	44	0	19
Approach Flow Rate	301	67	118	61
Proportion LT	0.56	0.34	0.42	0.00
Proportion RT	0.18	0.66	0.00	0.31
Opposing Approach Flow Rate	67	301	61	118
Conflicting Approaches Flow Rate	179	179	368	368
Proportion, Subject Approach Flow Rate	0.55	0.12	0.22	0.11
Proportion, Opposing Approach Flow Rate	0.12	0.55	0.11	0.22
Lanes on Subject Approach	2	1	1	1
Lanes on Opposing Approach	1	2	1	1
LT, Opposing Approach	23	169	0	49
RT, Opposing Approach	44	54	19	0
LT, Conflicting Approaches	49	49	192	192
RT, Conflicting Approaches	19	19	98	98
Proportion LT, Opposing Approach	0.34	0.56	0.00	0.42
Proportion RT, Opposing Approach	0.66	0.18	0.31	0.00
Proportion LT, Conflicting Approaches	0.27	0.27	0.52	0.52
Proportion RT, Conflicting Approaches	0.11	0.11	0.27	0.27
Approach Capacity	914	325	379	161

Intersection Performance Summary

Movement	Approach Flow Rate	Approach Capacity	V/C Ratio	Average Total Delay	LOS
NB	301	914	0.33	3.5	A
SB	67	325	0.21	2.2	A
EB	118	379	0.31	3.3	A
WB	61	161	0.38	4.2	A

Intersection Delay = 3.4
Level of Service (Intersection) = A

HCS: Unsignalized Intersections Release 2.1d BWED97PM.HC0 Page 1

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Streets: (N-S) EASTERN DRIVE (E-W) BOW LANE
Analyst..... AW
Date of Analysis..... 7/9/97
Other Information.....1996 EXSISTING PM
All-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 2	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Volumes	82	36	9	32	0	92	30	52	0	0	123	23
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9

Volume Summary and Capacity Analysis WorkSheet

	NB	SB	EB	WB
LT Flow Rate	91	36	33	0
RT Flow Rate	10	102	0	26
Approach Flow Rate	141	138	91	163
Proportion LT	0.65	0.26	0.36	0.00
Proportion RT	0.07	0.74	0.00	0.16
Opposing Approach Flow Rate	138	141	163	91
Conflicting Approaches Flow Rate	254	254	279	279
Proportion, Subject Approach Flow Rate	0.26	0.26	0.17	0.31
Proportion, Opposing Approach Flow Rate	0.26	0.26	0.31	0.17
Lanes on Subject Approach	2	1	1	1
Lanes on Opposing Approach	1	2	1	1
LT, Opposing Approach	36	91	0	33
RT, Opposing Approach	102	10	26	0
LT, Conflicting Approaches	33	33	127	127
RT, Conflicting Approaches	26	26	112	112
Proportion LT, Opposing Approach	0.26	0.65	0.00	0.36
Proportion RT, Opposing Approach	0.74	0.07	0.16	0.00
Proportion LT, Conflicting Approaches	0.13	0.13	0.46	0.46
Proportion RT, Conflicting Approaches	0.10	0.10	0.40	0.40
Approach Capacity	807	256	501	400

Intersection Performance Summary

Movement	Approach Flow Rate	Approach Capacity	V/C Ratio	Average Total Delay	LOS
NB	141	807	0.17	1.9	A
SB	138	256	0.54	7.8	B
EB	91	501	0.18	2.0	A
WB	163	400	0.41	4.7	A

Intersection Delay = 4.3
Level of Service (Intersection) = A

HCS: Unsignalized Intersections Release 2.1d BWEDNBAM.HC0 Page 1

Center For Microcomputers In Transportation
University of Florida
512 Weil Hall
Gainesville, FL 32611-6585
Ph: (352) 392-0378

Streets: (N-S) EASTERN DRIVE (E-W) BOW LANE
Analyst..... AW
Date of Analysis..... 7/9/97
Other Information.....NO BUILD CONDITION AM
All-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 2	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Volumes	166	75	49	21	0	43	47	62	0	0	41	18
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9

Volume Summary and Capacity Analysis WorkSheet

	NB	SB	EB	WB
LT Flow Rate	184	23	52	0
RT Flow Rate	54	48	0	20
Approach Flow Rate	321	71	121	66
Proportion LT	0.57	0.32	0.43	0.00
Proportion RT	0.17	0.68	0.00	0.30
Opposing Approach Flow Rate	71	321	66	121
Conflicting Approaches Flow Rate	187	187	392	392
Proportion, Subject Approach Flow Rate	0.55	0.12	0.21	0.11
Proportion, Opposing Approach Flow Rate	0.12	0.55	0.11	0.21
Lanes on Subject Approach	2	1	1	1
Lanes on Opposing Approach	1	2	1	1
LT, Opposing Approach	23	184	0	52
RT, Opposing Approach	48	54	20	0
LT, Conflicting Approaches	52	52	207	207
RT, Conflicting Approaches	20	20	102	102
Proportion LT, Opposing Approach	0.32	0.57	0.00	0.43
Proportion RT, Opposing Approach	0.68	0.17	0.30	0.00
Proportion LT, Conflicting Approaches	0.28	0.28	0.53	0.53
Proportion RT, Conflicting Approaches	0.11	0.11	0.26	0.26
Approach Capacity	927	321	369	151

Intersection Performance Summary

Movement	Approach Flow Rate	Approach Capacity	V/C Ratio	Average Total Delay	LOS
NB	321	927	0.35	3.7	A
SB	71	321	0.22	2.3	A
EB	121	369	0.33	3.5	A
WB	66	151	0.44	5.3	B

Intersection Delay = 3.7
Level of Service (Intersection) = A

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HCS: Unsignalized Intersections Release 2.1d BWEDNBPM.HC0 Page 1

Center For Microcomputers In Transportation
University of Florida
512 Weil Hall
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Ph: (352) 392-0378

Streets: (N-S) EASTERN DRIVE (E-W) BOW LANE
Analyst..... AW
Date of Analysis..... 7/9/97
Other Information.....NO BUILD CONDITION PM
All-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 2	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Volumes	90	38	9	33	0	98	33	52	0	0	125	24
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9

Volume Summary and Capacity Analysis WorkSheet

	NB	SB	EB	WB
LT Flow Rate	100	37	37	0
RT Flow Rate	10	109	0	27
Approach Flow Rate	152	146	95	166
Proportion LT	0.66	0.25	0.39	0.00
Proportion RT	0.07	0.75	0.00	0.16
Opposing Approach Flow Rate	146	152	166	95
Conflicting Approaches Flow Rate	261	261	298	298
Proportion, Subject Approach Flow Rate	0.27	0.26	0.17	0.30
Proportion, Opposing Approach Flow Rate	0.26	0.27	0.30	0.17
Lanes on Subject Approach	2	1	1	1
Lanes on Opposing Approach	1	2	1	1
LT, Opposing Approach	37	100	0	37
RT, Opposing Approach	109	10	27	0
LT, Conflicting Approaches	37	37	137	137
RT, Conflicting Approaches	27	27	119	119
Proportion LT, Opposing Approach	0.25	0.66	0.00	0.39
Proportion RT, Opposing Approach	0.75	0.07	0.16	0.00
Proportion LT, Conflicting Approaches	0.14	0.14	0.46	0.46
Proportion RT, Conflicting Approaches	0.10	0.10	0.40	0.40
Approach Capacity	817	256	492	381

Intersection Performance Summary

Movement	Approach Flow Rate	Approach Capacity	V/C Ratio	Average Total Delay	LOS
NB	152	817	0.19	2.0	A
SB	146	256	0.57	8.7	B
EB	95	492	0.19	2.1	A
WB	166	381	0.44	5.2	B

Intersection Delay = 4.7
Level of Service (Intersection) = A

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HCS: Unsignalized Intersections Release 2.1d BWEDBDPM.HC0 Page 1

Center For Microcomputers In Transportation
University of Florida
512 Weil Hall
Gainesville, FL 32611-6585
Ph: (352) 392-0378

Streets: (N-S) EASTERN DRIVE (E-W) BOW LANE
Analyst..... AW
Date of Analysis..... 7/9/97
Other Information.....BUILD CONDITION PM
All-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 2	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Volumes	90	38	9	42	0	115	46	39	0	0	107	69
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9

Volume Summary and Capacity Analysis WorkSheet

	NB	SB	EB	WB
LT Flow Rate	100	47	51	0
RT Flow Rate	10	128	0	77
Approach Flow Rate	152	175	94	196
Proportion LT	0.66	0.27	0.54	0.00
Proportion RT	0.07	0.73	0.00	0.39
Opposing Approach Flow Rate	175	152	196	94
Conflicting Approaches Flow Rate	290	290	327	327
Proportion, Subject Approach Flow Rate	0.25	0.28	0.15	0.32
Proportion, Opposing Approach Flow Rate	0.28	0.25	0.32	0.15
Lanes on Subject Approach	2	1	1	1
Lanes on Opposing Approach	1	2	1	1
LT, Opposing Approach	47	100	0	51
RT, Opposing Approach	128	10	77	0
LT, Conflicting Approaches	51	51	147	147
RT, Conflicting Approaches	77	77	138	138
Proportion LT, Opposing Approach	0.27	0.66	0.00	0.54
Proportion RT, Opposing Approach	0.73	0.07	0.39	0.00
Proportion LT, Conflicting Approaches	0.18	0.18	0.45	0.45
Proportion RT, Conflicting Approaches	0.27	0.27	0.42	0.42
Approach Capacity	838	299	545	353

Intersection Performance Summary

Movement	Approach Flow Rate	Approach Capacity	V/C Ratio	Average Total Delay	LOS
NB	152	838	0.18	2.0	A
SB	175	299	0.59	9.2	B
EB	94	545	0.17	1.9	A
WB	196	353	0.56	8.2	B

Intersection Delay = 6.0
Level of Service (Intersection) = B

HCS: Unsignalized Intersections Release 2.1d BWEDBDAM.HC0 Page 1

Center For Microcomputers In Transportation
University of Florida
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Streets: (N-S) EASTERN DRIVE (E-W) BOW LANE
Analyst..... AW
Date of Analysis..... 7/9/97
Other Information.....BUILD CONDITION AM
All-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 2	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Volumes	166	75	49	44	0	43	63	45	0	0	40	22
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9

Volume Summary and Capacity Analysis WorkSheet

	NB	SB	EB	WB
LT Flow Rate	184	49	70	0
RT Flow Rate	54	48	0	24
Approach Flow Rate	321	97	120	68
Proportion LT	0.57	0.51	0.58	0.00
Proportion RT	0.17	0.49	0.00	0.35
Opposing Approach Flow Rate	97	321	68	120
Conflicting Approaches Flow Rate	188	188	418	418
Proportion, Subject Approach Flow Rate	0.53	0.16	0.20	0.11
Proportion, Opposing Approach Flow Rate	0.16	0.53	0.11	0.20
Lanes on Subject Approach	2	1	1	1
Lanes on Opposing Approach	1	2	1	1
LT, Opposing Approach	49	184	0	70
RT, Opposing Approach	48	54	24	0
LT, Conflicting Approaches	70	70	233	233
RT, Conflicting Approaches	24	24	102	102
Proportion LT, Opposing Approach	0.51	0.57	0.00	0.58
Proportion RT, Opposing Approach	0.49	0.17	0.35	0.00
Proportion LT, Conflicting Approaches	0.37	0.37	0.56	0.56
Proportion RT, Conflicting Approaches	0.13	0.13	0.24	0.24
Approach Capacity	816	319	353	82

Intersection Performance Summary

Movement	Approach Flow Rate	Approach Capacity	V/C Ratio	Average Total Delay	LOS
NB	321	816	0.39	4.5	A
SB	97	319	0.30	3.2	A
EB	120	353	0.34	3.6	A
WB	68	82	0.83	23.4	D

Intersection Delay = 6.2
Level of Service (Intersection) = B

HCS: Unsignalized Intersections Release 2.1d HDBW97AM.HC0 Page 1

Center For Microcomputers In Transportation
University of Florida
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Ph: (352) 392-0378

Streets: (N-S) HOLMES DRIVE (E-W) BOW LANE
Analyst..... AW
Date of Analysis..... 7/9/97
Other Information.....1996 EXSISTING AM
All-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Volumes	68	51	1	0	44	11	0	1	0	4	0	10
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9

Volume Summary and Capacity Analysis WorkSheet

	EB	WB	NB	SB
LT Flow Rate	76	0	0	4
RT Flow Rate	1	12	0	11
Approach Flow Rate	134	61	1	15
Proportion LT	0.57	0.00	0.00	0.27
Proportion RT	0.01	0.20	0.00	0.73
Opposing Approach Flow Rate	61	134	15	1
Conflicting Approaches Flow Rate	16	16	195	195
Proportion, Subject Approach Flow Rate	0.64	0.29	0.00	0.07
Proportion, Opposing Approach Flow Rate	0.29	0.64	0.07	0.00
Lanes on Subject Approach	1	1	1	1
Lanes on Opposing Approach	1	1	1	1
LT, Opposing Approach	0	76	4	0
RT, Opposing Approach	12	1	11	0
LT, Conflicting Approaches	4	4	76	76
RT, Conflicting Approaches	11	11	13	13
Proportion LT, Opposing Approach	0.00	0.57	0.27	0.00
Proportion RT, Opposing Approach	0.20	0.01	0.73	0.00
Proportion LT, Conflicting Approaches	0.25	0.25	0.39	0.39
Proportion RT, Conflicting Approaches	0.69	0.69	0.07	0.07
Approach Capacity	1108	796	124	77

Intersection Performance Summary

Movement	Approach Flow Rate	Approach Capacity	V/C Ratio	Average Total Delay	LOS
EB	134	1108	0.12	1.6	A
WB	61	796	0.08	1.3	A
NB	1	124	0.01	1.0	A
SB	15	77	0.19	2.1	A

Intersection Delay = 1.5
Level of Service (Intersection) = A

HCS: Unsignalized Intersections Release 2.1d HDBW97PM.HC0 Page 1

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University of Florida
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Streets: (N-S) HOLMES DRIVE (E-W) BOW LANE
Analyst..... AW
Date of Analysis..... 7/9/97
Other Information.....1996 EXSISTING PM
All-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Volumes	42	48	1	0	54	2	1	1	0	6	2	77
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9

Volume Summary and Capacity Analysis WorkSheet

	EB	WB	NB	SB
LT Flow Rate	47	0	1	7
RT Flow Rate	1	2	0	86
Approach Flow Rate	101	62	2	95
Proportion LT	0.47	0.00	0.50	0.07
Proportion RT	0.01	0.03	0.00	0.91
Opposing Approach Flow Rate	62	101	95	2
Conflicting Approaches Flow Rate	97	97	163	163
Proportion, Subject Approach Flow Rate	0.39	0.24	0.01	0.37
Proportion, Opposing Approach Flow Rate	0.24	0.39	0.37	0.01
Lanes on Subject Approach	1	1	1	1
Lanes on Opposing Approach	1	1	1	1
LT, Opposing Approach	0	47	7	1
RT, Opposing Approach	2	1	86	0
LT, Conflicting Approaches	8	8	47	47
RT, Conflicting Approaches	86	86	3	3
Proportion LT, Opposing Approach	0.00	0.47	0.07	0.50
Proportion RT, Opposing Approach	0.03	0.01	0.91	0.00
Proportion LT, Conflicting Approaches	0.08	0.08	0.29	0.29
Proportion RT, Conflicting Approaches	0.89	0.89	0.02	0.02
Approach Capacity	903	714	441	240

Intersection Performance Summary

Movement	Approach Flow Rate	Approach Capacity	V/C Ratio	Average Total Delay	LOS
EB	101	903	0.11	1.5	A
WB	62	714	0.09	1.4	A
NB	2	441	0.00	1.0	A
SB	95	240	0.40	4.5	A

Intersection Delay = 2.6
Level of Service (Intersection) = A

HCS: Unsignalized Intersections Release 2.1d HDBWNBAM.HC0 Page 1

Center For Microcomputers In Transportation
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Ph: (352) 392-0378

Streets: (N-S) HOLMES DRIVE (E-W) BOW LANE
Analyst..... AW
Date of Analysis..... 7/9/97
Other Information.....NO BUILD CONDITION AM
All-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Volumes	68	53	1	0	47	11	0	1	0	4	0	10
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9

Volume Summary and Capacity Analysis WorkSheet

	EB	WB	NB	SB
LT Flow Rate	76	0	0	4
RT Flow Rate	1	12	0	11
Approach Flow Rate	136	64	1	15
Proportion LT	0.56	0.00	0.00	0.27
Proportion RT	0.01	0.19	0.00	0.73
Opposing Approach Flow Rate	64	136	15	1
Conflicting Approaches Flow Rate	16	16	200	200
Proportion, Subject Approach Flow Rate	0.63	0.30	0.00	0.07
Proportion, Opposing Approach Flow Rate	0.30	0.63	0.07	0.00
Lanes on Subject Approach	1	1	1	1
Lanes on Opposing Approach	1	1	1	1
LT, Opposing Approach	0	76	4	0
RT, Opposing Approach	12	1	11	0
LT, Conflicting Approaches	4	4	76	76
RT, Conflicting Approaches	11	11	13	13
Proportion LT, Opposing Approach	0.00	0.56	0.27	0.00
Proportion RT, Opposing Approach	0.19	0.01	0.73	0.00
Proportion LT, Conflicting Approaches	0.25	0.25	0.38	0.38
Proportion RT, Conflicting Approaches	0.69	0.69	0.06	0.06
Approach Capacity	1106	802	125	78

Intersection Performance Summary

Movement	Approach Flow Rate	Approach Capacity	V/C Ratio	Average Total Delay	LOS
EB	136	1106	0.12	1.6	A
WB	64	802	0.08	1.4	A
NB	1	125	0.01	1.0	A
SB	15	78	0.19	2.1	A

Intersection Delay = 1.6
Level of Service (Intersection) = A

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HCS: Unsignalized Intersections Release 2.1d HDBWNBPM.HC0 Page 1

Center For Microcomputers In Transportation
University of Florida
512 Weil Hall
Gainesville, FL 32611-6585
Ph: (352) 392-0378

Streets: (N-S) HOLMES DRIVE (E-W) BOW LANE
Analyst..... AW
Date of Analysis..... 7/9/97
Other Information.....NO BUILD CONDITION PM
All-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Volumes	42	52	1	0	57	2	1	1	0	6	2	77
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9

Volume Summary and Capacity Analysis WorkSheet

	EB	WB	NB	SB
LT Flow Rate	47	0	1	7
RT Flow Rate	1	2	0	86
Approach Flow Rate	106	65	2	95
Proportion LT	0.44	0.00	0.50	0.07
Proportion RT	0.01	0.03	0.00	0.91
Opposing Approach Flow Rate	65	106	95	2
Conflicting Approaches Flow Rate	97	97	171	171
Proportion, Subject Approach Flow Rate	0.40	0.24	0.01	0.35
Proportion, Opposing Approach Flow Rate	0.24	0.40	0.35	0.01
Lanes on Subject Approach	1	1	1	1
Lanes on Opposing Approach	1	1	1	1
LT, Opposing Approach	0	47	7	1
RT, Opposing Approach	2	1	86	0
LT, Conflicting Approaches	8	8	47	47
RT, Conflicting Approaches	86	86	3	3
Proportion LT, Opposing Approach	0.00	0.44	0.07	0.50
Proportion RT, Opposing Approach	0.03	0.01	0.91	0.00
Proportion LT, Conflicting Approaches	0.08	0.08	0.27	0.27
Proportion RT, Conflicting Approaches	0.89	0.89	0.02	0.02
Approach Capacity	913	730	437	233

Intersection Performance Summary

Movement	Approach Flow Rate	Approach Capacity	V/C Ratio	Average Total Delay	LOS
EB	106	913	0.12	1.6	A
WB	65	730	0.09	1.4	A
NB	2	437	0.00	1.0	A
SB	95	233	0.41	4.7	A

Intersection Delay = 2.6
Level of Service (Intersection) = A

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HCS: Unsignalized Intersections Release 2.1d HDBWBDAM.HC0 Page 1

Center For Microcomputers In Transportation
University of Florida
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Ph: (352) 392-0378

Streets: (N-S) HOLMES DRIVE (E-W) BOW LANE
Analyst..... AW
Date of Analysis..... 7/9/97
Other Information.....BUILD CONDITION AM
All-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	0
Volumes	4	128	1	0	58	11	0	1	0	4	5	
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	

Volume Summary and Capacity Analysis WorkSheet

	EB	WB	NB	SB
LT Flow Rate	4	0	0	4
RT Flow Rate	1	12	0	0
Approach Flow Rate	147	76	1	10
Proportion LT	0.03	0.00	0.00	0.40
Proportion RT	0.01	0.16	0.00	0.00
Opposing Approach Flow Rate	76	147	10	1
Conflicting Approaches Flow Rate	11	11	223	223
Proportion, Subject Approach Flow Rate	0.63	0.32	0.00	0.04
Proportion, Opposing Approach Flow Rate	0.32	0.63	0.04	0.00
Lanes on Subject Approach	1	1	1	1
Lanes on Opposing Approach	1	1	1	1
LT, Opposing Approach	0	4	4	0
RT, Opposing Approach	12	1	0	0
LT, Conflicting Approaches	4	4	4	4
RT, Conflicting Approaches	0	0	13	13
Proportion LT, Opposing Approach	0.00	0.03	0.40	0.00
Proportion RT, Opposing Approach	0.16	0.01	0.00	0.00
Proportion LT, Conflicting Approaches	0.36	0.36	0.02	0.02
Proportion RT, Conflicting Approaches	0.00	0.00	0.06	0.06
Approach Capacity	878	749	26	158

Intersection Performance Summary

Movement	Approach Flow Rate	Approach Capacity	V/C Ratio	Average Total Delay	LOS
EB	147	878	0.17	1.9	A
WB	76	749	0.10	1.5	A
NB	1	26	0.04	1.2	A
SB	10	158	0.06	1.3	A

Intersection Delay = 1.7
Level of Service (Intersection) = A

HCS: Unsignalized Intersections Release 2.1d HDBWBDPM.HC0 Page 1

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Ph: (352) 392-0378

Streets: (N-S) HOLMES DRIVE (E-W) BOW LANE
Analyst..... AW
Date of Analysis..... 7/9/97
Other Information.....BUILD CONDITION PM
All-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Volumes	2	103	1	0	141	2	1	2	0	6	2	4
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9

Volume Summary and Capacity Analysis WorkSheet

	EB	WB	NB	SB
LT Flow Rate	2	0	1	7
RT Flow Rate	1	2	0	4
Approach Flow Rate	117	159	3	13
Proportion LT	0.02	0.00	0.33	0.54
Proportion RT	0.01	0.01	0.00	0.31
Opposing Approach Flow Rate	159	117	13	3
Conflicting Approaches Flow Rate	16	16	276	276
Proportion, Subject Approach Flow Rate	0.40	0.54	0.01	0.04
Proportion, Opposing Approach Flow Rate	0.54	0.40	0.04	0.01
Lanes on Subject Approach	1	1	1	1
Lanes on Opposing Approach	1	1	1	1
LT, Opposing Approach	0	2	7	1
RT, Opposing Approach	2	1	4	0
LT, Conflicting Approaches	8	8	2	2
RT, Conflicting Approaches	4	4	3	3
Proportion LT, Opposing Approach	0.00	0.02	0.54	0.33
Proportion RT, Opposing Approach	0.01	0.01	0.31	0.00
Proportion LT, Conflicting Approaches	0.50	0.50	0.01	0.01
Proportion RT, Conflicting Approaches	0.25	0.25	0.01	0.01
Approach Capacity	809	847	43	53

Intersection Performance Summary

Movement	Approach Flow Rate	Approach Capacity	V/C Ratio	Average Total Delay	LOS
EB	117	809	0.14	1.7	A
WB	159	847	0.19	2.0	A
NB	3	43	0.07	1.3	A
SB	13	53	0.25	2.5	A

Intersection Delay = 1.9
Level of Service (Intersection) = A

Center For Microcomputers In Transportation
University of Florida
512 Weil Hall
Gainesville, FL 32611-6585
Ph: (352) 392-0378

Streets: (N-S) HOLMES DRIVE (E-W) BOW LANE
Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... AW
Date of Analysis..... 7/9/97
Other Information.....1996 EXSISTING AM
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	68	51	1	0	44	11	0	1	0	4	0	10
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9
Grade		-4			4			0			0	
MC's (%)	0			0			0	0	0	0	0	0
SU/RV's (%)	1			1			1	1	1	1	1	1
CV's (%)	0			0			0	0	0	0	0	0
PCE's	0.80			1.42			1.01	1.01	1.01	1.00	1.00	1.00

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	58	55
Potential Capacity: (pcph)	1294	1299
Movement Capacity: (pcph)	1294	1299
Prob. of Queue-Free State:	1.00	0.99
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	58	61
Potential Capacity: (pcph)	1609	1603
Movement Capacity: (pcph)	1609	1603
Prob. of Queue-Free State:	1.00	0.96
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	1.00	0.96
Step 3: TH from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	194	189
Potential Capacity: (pcph)	863	868
Capacity Adjustment Factor due to Impeding Movements	0.96	0.96
Movement Capacity: (pcph)	829	834
Prob. of Queue-Free State:	1.00	1.00
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	194	189
Potential Capacity: (pcph)	817	823
Major LT, Minor TH Impedance Factor:	0.96	0.96
Adjusted Impedance Factor:	0.97	0.97
Capacity Adjustment Factor due to Impeding Movements	0.96	0.97
Movement Capacity: (pcph)	786	798

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB	L	0	786 >					
NB	T	1	829 >	829	4.3	0.0	A	4.3
NB	R	0	1294 >					
SB	L	4	798 >					
SB	T	0	834 >	1113	3.3	0.0	A	3.3
SB	R	11	1299 >					
EB	L	61	1603		2.3	0.0	A	1.3
WB	L	0	1609		2.2	0.0	A	0.0

Intersection Delay = 1.1 sec/veh

Center For Microcomputers In Transportation
University of Florida
512 Weil Hall
Gainesville, FL 32611-6585
Ph: (352) 392-0378

Streets: (N-S) HOLMES DRIVE (E-W) BOW LANE
Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... AW
Date of Analysis..... 7/9/97
Other Information.....1996 EXSISTING PM
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 1	0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	42	48	1	0	54	2	1	1		6	2	77
PHF	.9	.9	.9	.9	.9	.9	.9	.9		.9	.9	.9
Grade		-4			4			0			0	
MC's (%)	0			0			0	0		0	0	0
SU/RV's (%)	1			1			1	1		1	1	1
CV's (%)	0			0			0	0		0	0	0
PCE's	0.80			1.42			1.01	1.01		1.00	1.00	1.00

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)		61
Potential Capacity: (pcph)		1290
Movement Capacity: (pcph)		1290
Prob. of Queue-Free State:		0.93
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	54	62
Potential Capacity: (pcph)	1616	1602
Movement Capacity: (pcph)	1616	1602
Prob. of Queue-Free State:	1.00	0.98
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	1.00	0.98
Step 3: TH from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	162	162
Potential Capacity: (pcph)	897	897
Capacity Adjustment Factor due to Impeding Movements	0.98	0.98
Movement Capacity: (pcph)	875	875
Prob. of Queue-Free State:	1.00	1.00
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	206	162
Potential Capacity: (pcph)	805	853
Major LT, Minor TH Impedance Factor:	0.97	0.97
Adjusted Impedance Factor:	0.98	0.98
Capacity Adjustment Factor due to Impeding Movements	0.91	0.98
Movement Capacity: (pcph)	736	836

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)		Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB	L	1	736	>	800	4.5	0.0	A	
NB	T	1	875	>					4.5
SB	L	7	836	>					
SB	T	2	875	>	1229	3.2	0.2	A	3.2
SB	R	86	1290	>					
EB	L	38	1602			2.3	0.0	A	1.1
WB	L	0	1616			2.2	0.0	A	0.0

Intersection Delay = 1.6 sec/veh

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Streets: (N-S) HOLMES DRIVE (E-W) BOW LANE
Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... AW
Date of Analysis..... 7/9/97
Other Information.....NO BUILD CONDITION AM
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	68	53	1	0	47	11	0	1	0	4	0	10
PHF	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9
Grade		-4			4			0			0	
MC's (%)	0			0			0	0	0	0	0	0
SU/RV's (%)	1			1			1	1	1	1	1	1
CV's (%)	0			0			0	0	0	0	0	0
PCE's	0.80			1.42			1.00	1.00	1.00	1.00	1.00	1.00

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

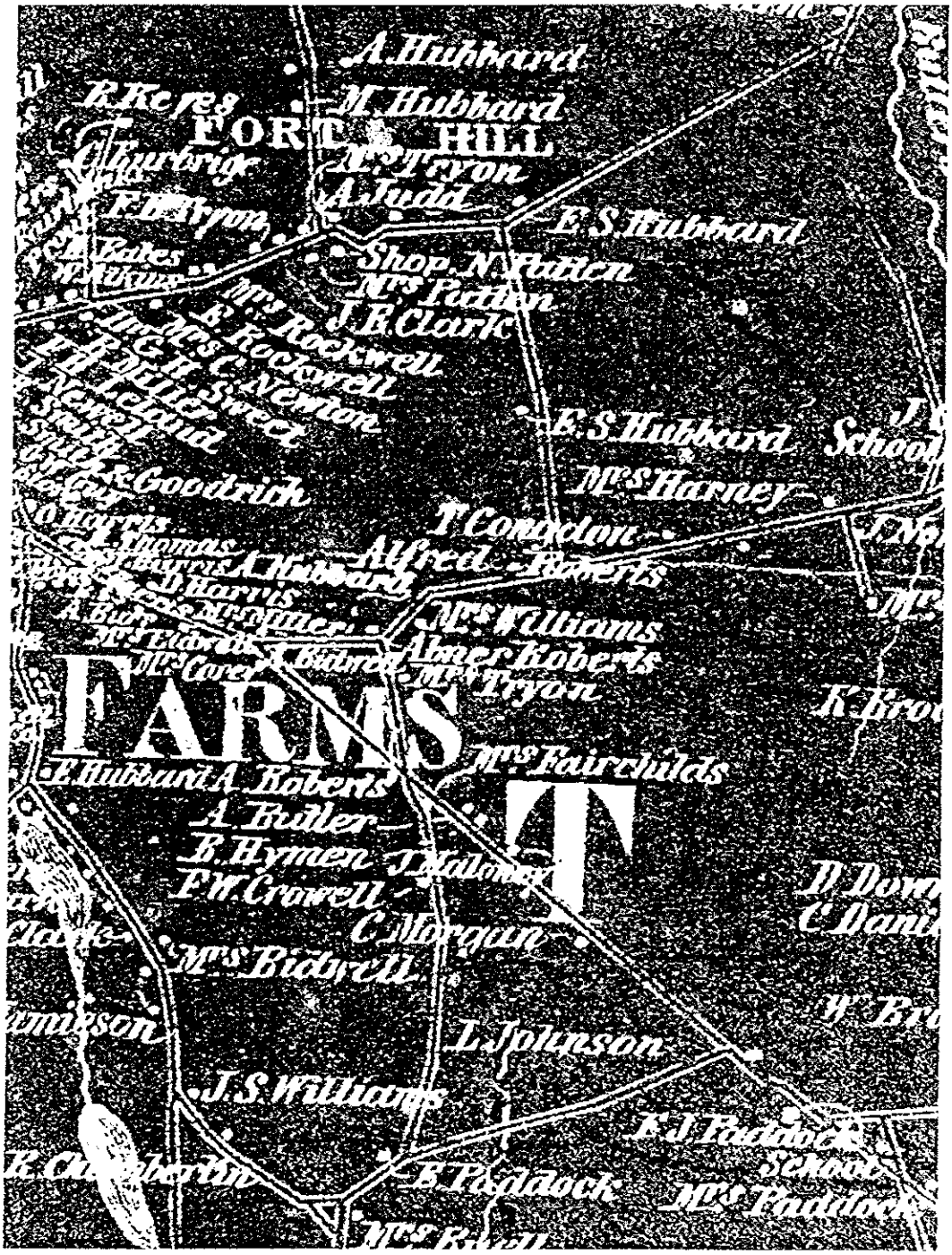
Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	60	58
Potential Capacity: (pcph)	1291	1294
Movement Capacity: (pcph)	1291	1294
Prob. of Queue-Free State:	1.00	0.99
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	60	64
Potential Capacity: (pcph)	1605	1598
Movement Capacity: (pcph)	1605	1598
Prob. of Queue-Free State:	1.00	0.96
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	1.00	0.96
Step 3: TH from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	200	194
Potential Capacity: (pcph)	857	863
Capacity Adjustment Factor due to Impeding Movements	0.96	0.96
Movement Capacity: (pcph)	823	829
Prob. of Queue-Free State:	1.00	1.00
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	199	194
Potential Capacity: (pcph)	812	817
Major LT, Minor TH Impedance Factor:	0.96	0.96
Adjusted Impedance Factor:	0.97	0.97
Capacity Adjustment Factor due to Impeding Movements	0.96	0.97
Movement Capacity: (pcph)	781	792

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
SB L	0	824 >					
SB T	0	866 >	1323	3.0	0.2	A	3.0
SB R	121	1323 >					
EB L	58	1642		2.3	0.0	A	1.1
WB L	0	1605		2.2	0.0	A	0.0

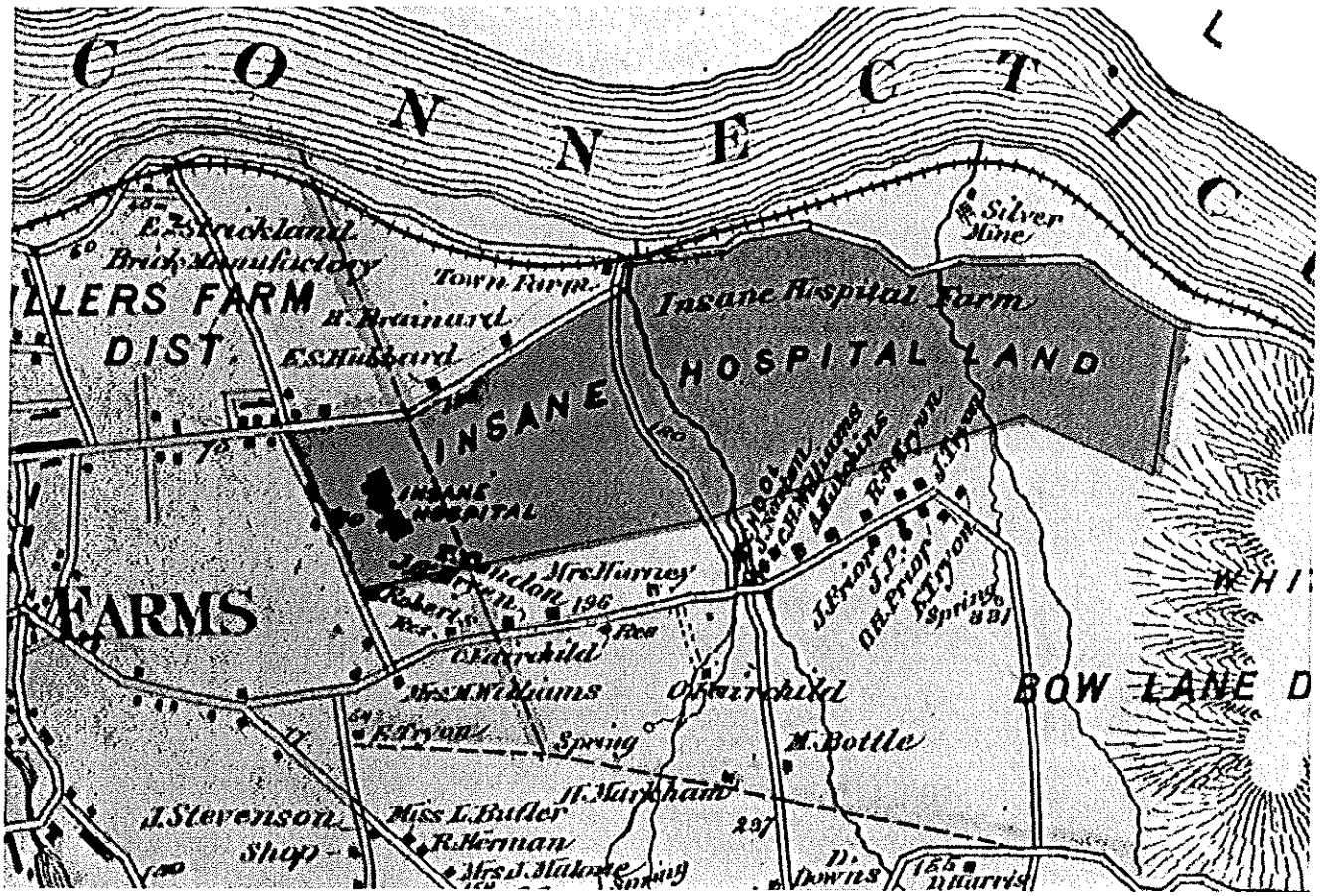
Intersection Delay = 1.8 sec/veh

APPENDIX J
Historic Maps



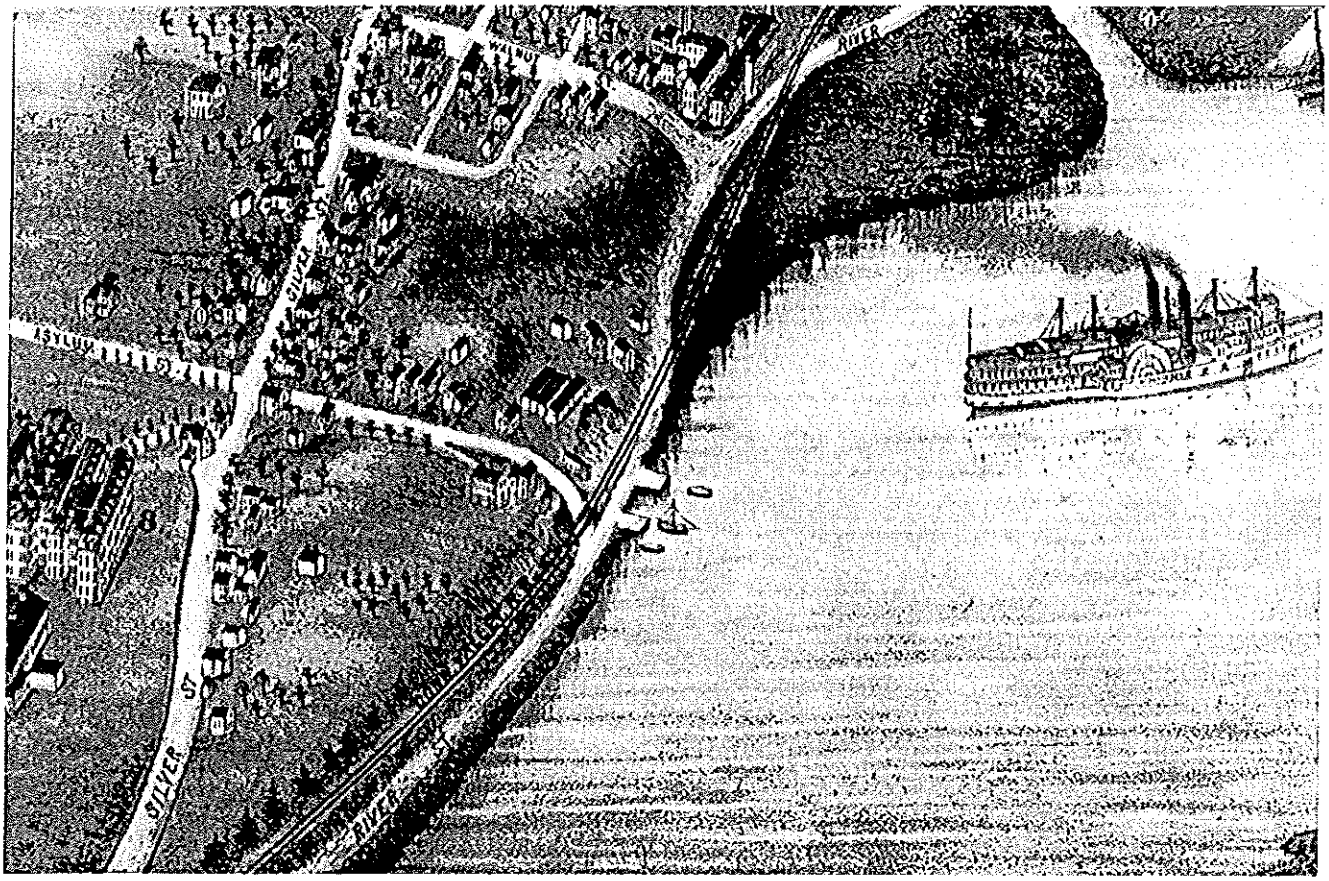
1859 Smith Map of
Middlesex County,
showing project area

N



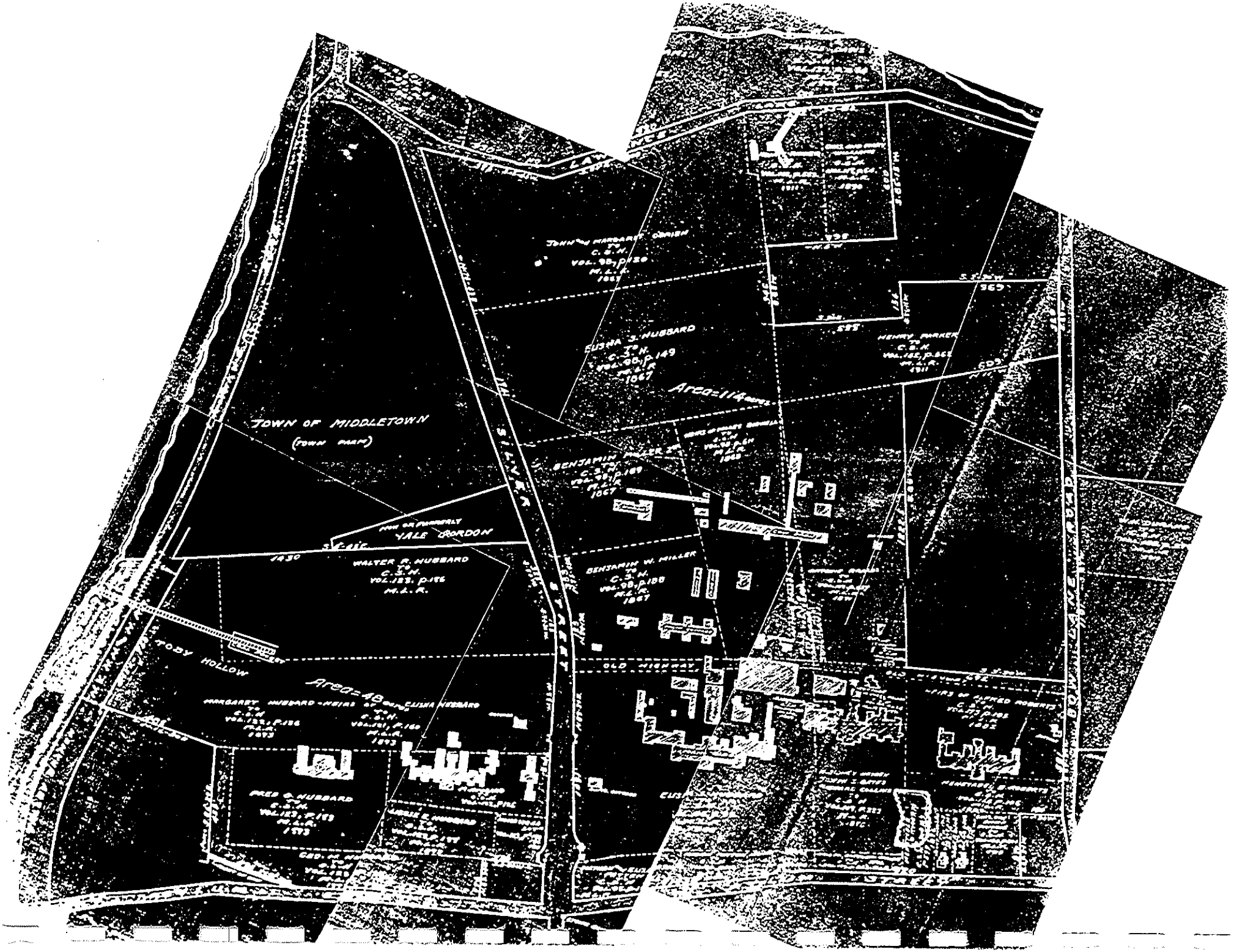
1874 Beers Atlas
of Middlesex County,
showing project area

N



1877 Bailey Bird's-Eye View, showing partial project area

N


TOWN OF MIDDLETOWN
(TOWN FARM)
SILVER STREET
YALE GORDON
WALTER R. HUBBARD
BENJAMIN W. MILLER
ELISHA J. HUBBARD
TOBY HOLLOW
OLD HIGHWAY
Area=48
Area=114