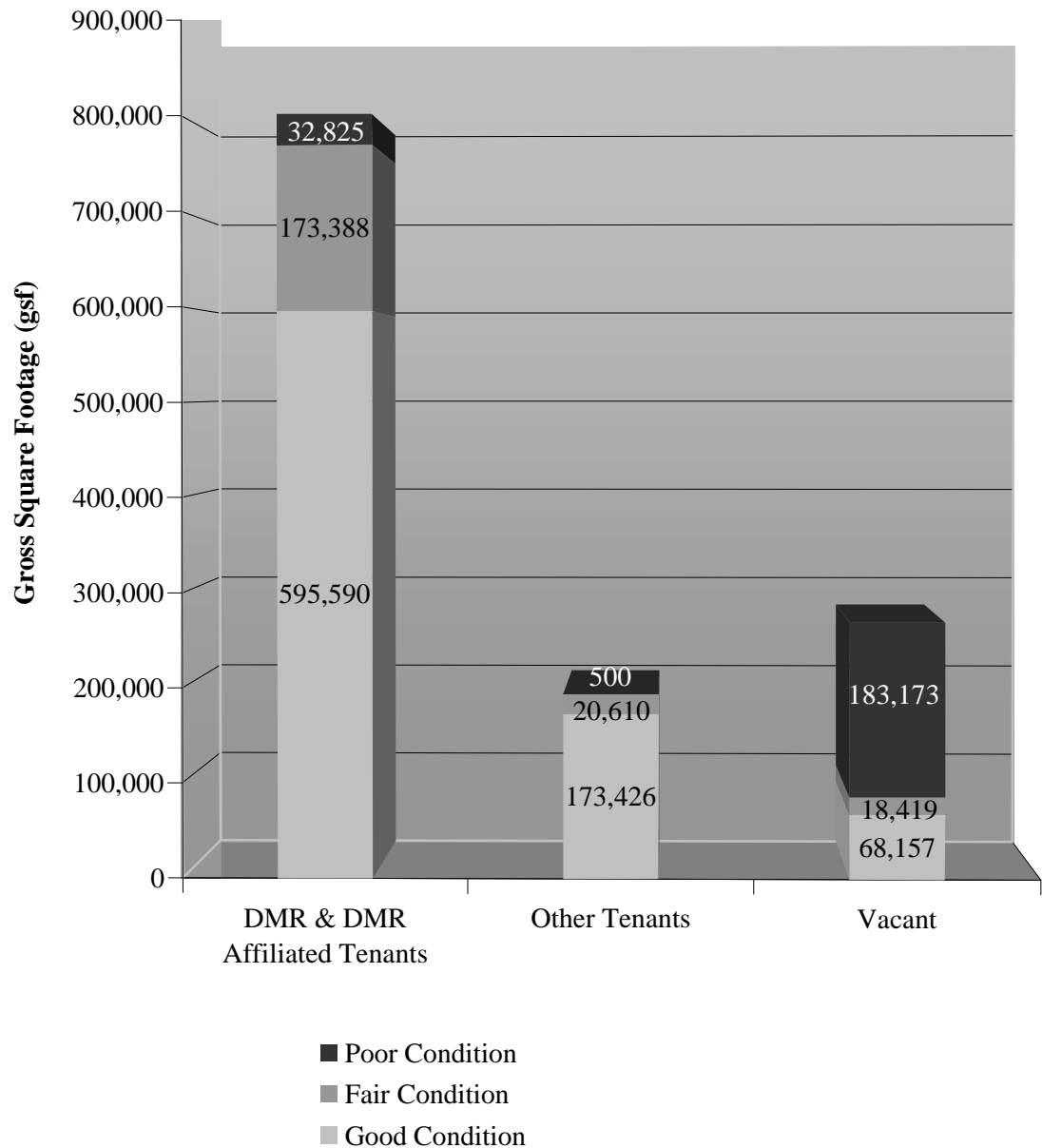


**APPENDIX 1: AGGREGATE OCCUPANCY**

This Chart shows the relative condition of the gross square footage (gsf) currently occupied by each “Tenant Category”. For a description of the particular tenants included in each category please reference Section 2.3 of this document.



## Appendix 2: Building Inventory

Identification			Size		Construction Information				Heat/Hot Water Supply	Current Condition	Utilization			
Building Number	Name	Location	Height	GSF	Year Constructed	Renovated	ADA Accessibility	Potential Asbestos Hazard			Past		Current	
											Past Use		Current Use	DMR Current Usage Code
001	Waverley Hall	East Campus	3 Stories W/ Basement	32,298	1891	No	None	Yes	System	unusable	Admin/ Staff Residential	Vacant	Additional Structure	
002	North Building	East Campus	2 Stories W/ Basement	24,834	1897	Yes	All Floors	No	System	good	Program/ Client Residential	Program/ Offices	Mixed-Use	
003	Old Activity Center	East Campus	2 Stories W/ Basement	21,766	1891	No		Yes	System	unusable		Vacant	Additional Structure	
004 & 005	Gym and Schoolhouse	East Campus	2 Stories W/ Basement	37,325	1891	Yes	1st Floor Only	No	System	good	School	Program/ Offices	Mixed-Use	
006	Chipman	East Campus	2 Stories W/ Basement	10,704	1892	No		Yes	System	unusable	Client- Residential	Vacant	Additional Structure	
007	North Nurses	East Campus	2 Stories W/ Basement	17,190	1904	Yes	None	No	System	good	Nurse - Staff Residential	DMR Regional Offices	Admin.	
009	East Nurses	East Campus	2 Stories W/ Basement	8,640	1906	No	None	Yes	System	fair	Nurse - Staff Residential	DOE Offices	Admin.	
010	Manual Building	East Campus	2 Stories W/ Basement	34,851	1904	Yes	All Floors	No	System	good	Training Building	Program/ Offices	Day Program	
011	Warren Hall	East Campus	2 Stories W/ Basement	16,296	1906	Yes	None	No	System	good	Client - Residential (22 Beds)	Vacant	Residential	
012	South Nurses	East Campus	2 Stories W/ Basement	17,172	1907	Yes	None	No	System	good	Nurse - Staff Residential	Middlesex County Law Enforcement	Residential	
013	Thom Building	Center Campus	4 Stories	32,116	1952	Yes	All Floors	No	System	good	Hospital/ Infirmary	Multi-Use (29 Beds)	Mixed-Use	
014	Vault 55	Center Campus	1 Story	400	1921	N/A	None	No	None	poor	Electrical Distribution	Electrical Distribution	Additional Structure	
015	Main Garage	East Campus	1 Story	3,405	1932	No	None	Yes	System	fair	Garage	Garage	Support	
016	Storeroom	East Campus	2 Stories	23,940	1891	No	None	Yes	System	fair	Storage	Fernald Storeroom/ Bentley College	Support	
017	Cottage 17	East Campus	2 Story W/ Basement	2,264	1925	No	None	Yes	Independent Oil	poor	Doctor - Staff Residential	Vacant	Additional Structure	
018	Cottage 18	East Campus	2 Story W/ Basement	2,264	1925	No	None	Yes	Independent Oil	poor	Doctor - Staff Residential	Vacant	Additional Structure	
019	ICF 19	East Campus	2 Story W/ Basement	2,264	1925	Yes	None	No	Independent Gas (metered)	good	Doctor - Staff Residential	Client - Residential (4 Beds)	Residential	
020	ICF 20	East Campus	2 Story W/ Basement	2,264	1925	Yes	None	No	Independent Gas (Metered)	good	Doctor - Staff Residential	Client - Residential (4 Beds)	Residential	
021	Southard Research Lab (Howe Library)	Center Campus	1 Story W/ Basement	8,030	1921	No	None	Yes	System	good	Research Lab	Plant Operations Offices/ Research Library/ Media Center	Support	
022	Therapeutic Equipment Center	Center Campus	1 Story W/ Basement	27,192	1928	1/2	1st Floor Only	Yes	System	good	Laundry	Laundry/ Therapeutic Equip. Repair	Support	
023	Lavers	Center Campus	1 Story W/ Basement	12,036	1914	No	None	Yes	System	fair	Client Residential	DMR Facility Safety/ Weights & Measures	Support	
024	Maintenance Building	Center Campus	1 Story W/ Basement	14,322	1930	No	None	Yes	System	fair	Maintenance	Maintenance	Support	
026	Power Plant	Center Campus	1 Story W/ Basement	19,440	1925	No	None	Yes	System	fair	Power Plant	Power Plant	Support	
028	Grounds Garage (Maintenance Shed)	Center Campus	1 Story	2,016	1947	No	None	No	System	poor	Garage	Garage	Support	
031	Truck Garage	Center Campus	1 Story	748	1928	Yes	None	No	System	poor	Garage	Garage	Support	
032	Tarbell	Center Campus	4 Stories W/ Basement	38,924	1934	No	All Floors	Yes	System	good	Client Residential (72 Beds)	Middlesex County	Residential	
033	West Building	West Campus	2 Stories W/ Basement	49,041	1890	No	None	Yes	System	unusable	Client Residential	Vacant	Additional Structure	
034	Belmont House	West Campus	1 Story W/ Basement	6,416	1890	Yes	1st Floor Only	Yes	System	good	Client Residential	Vacant	Day Program	
035	Seguin	West Campus	1 Story W/ Basement	21,521	1933	Yes	1st Floor Only	No	System	good	Client Residential (32 Beds)	Vacant	Residential	
036	McDougall Hall	West Campus	2 Stories W/ Basement	23,376	1898	Yes	1st Floor Only	No	System	good	Client Residential	Middlesex County	Residential	
037	Dolan Hall	West Campus	2 Stories W/ Basement	15,252	1906	Yes	None	No	System	good	Client Residential	Vacant	Residential	
038	West Nurses	West Campus	2 Stories W/ Basement	6,912	1906	No	None	Yes	System	poor	Nurse - Staff Residential	Vacant/ Storage	Support	
039	Wheatley Hall	West Campus	1 Story W/ Basement	11,640	1933	No	None	Yes	System	poor	furniture repair	Vacant	Support	
040	Old Food Service Bldg	Center Campus	2 Stories	36,838	1931	No	None	Yes	System	fair	Food Service	Maintenance Stock Room	Support	
041	Howe Hall	Center Campus	2 Stories	17,362	1933	Yes	All Floors	No	System	good	Assembly/ Canteen	Copy Center/ Storage	Support	
042	East Dowling Hall	Center Campus	2 Stories W/ Basement	24,107	1906	No	None	Yes	System	poor	Client Residential	Program/ Redemption Center, Union offices	Day Program	
043	Hillside	Center Campus	2 Stories W/ Basement	8,115	1904	Yes	None	No	Independent Gas	good	Client Residential	Client - Residential (13 Beds)	Residential	
044	Hillside Garage	Center Campus	1 Story	484	1912	No	None	No	None	fair	Garage	Storage	Support	
045	Baldwin Cottage	West Campus	2 Stories W/ Basement	3,402	1931	No	None	Yes	Independent Oil	good	Staff Residential	Daycare	Support	

## Appendix 2: Building Inventory

Identification			Size		Construction Information				Heat/Hot Water Supply	Current Condition	Utilization			
Building Number	Name	Location	Height	GSF	Year Constructed	Renovated	ADA Accessibility	Potential Asbestos Hazard			Past		Current	
											Past Use	Current Use	DMR Current Usage Code	
046	Wallace Building	East Campus	1 Story W/ Basement	29,550	1936	Yes	All Floors	No	System	good	Client Residential	Client - Residential (32 Beds)	Residential	
047	Administration	Center Campus	2 Stories W/ Basement	26,656	1933	N	None	Yes	System	good	Administration/ Offices	Administration/ Offices	Admin.	
048	Farrell Hall	West Campus	2 Stories W/ Basement	49,940	1960	Yes	All Floors	No	System	good	Client Residential	Client - Residential	Residential	
049	Bowen Hall	East Campus	1 Story W/ Basement	12,000	1893	No	None	Yes	System	unusable	Client Residential/ Program	Vacant	Additional Structure	
050	Greene Unit	West Campus	3 Stories W/ Basement	113,000	1953	Yes	All Floors	No	System	good	Client Residential	Client - Residential (108 beds)/ Program	Residential	
051	Trapelo Cottage	East Campus	2 Stories W/ Basement	2,877	1860	No	None	Yes	Independent Oil	good	Staff Residential	Daycare	Support	
052	Cardinal Cottage	West Campus	2 Stories W/ Basement	4,354	1850	No	None	Yes	Independent Oil	good	Staff Residential	Volunteer Center	Support	
053	Cardinal Cottage Garage	West Campus	1 Story	440	1947	No	None	No	None	good	Garage	Garage/ Storage	Support	
055	Cottage 17 Garage	East Campus	1 Story	1,344	1925	No	None	No	None	poor	Garage	Vacant	Support	
056	ICF 20 Garage	East Campus	1 Story	440	1930	No	None	No	None	fair	Garage	Garage	Support	
057	ICF 19 Garage	East Campus	1 Story	440	1955	No	None	No	None	fair	Garage	Garage	Support	
100	Kelly Hall	East Campus	3 Stories	43,740	1961	No	None	Yes	System	poor	Client Residential	Vacant	Additional Structure	
102	Withington	East Campus	3 Stories W/ Basement	40,428	1969	Yes	All Floors	Yes	System	good	Client Residential (64 Beds)	Offices	Mixed-Use	
103	CERC Building	East Campus	1 Story W/ Basement	32,369	1969	Yes	All Floors	Yes	System	good	UMass Med. School	UMass Med School	Admin.	
105	ICFMR Cottage 5	West Campus	1 Story	8,827	1976	No	All Floors	No	System	fair	Client Residential	Client Residential	Residential	
106	ICFMR Cottage 6	West Campus	1 Story	8,827	1976	No	All Floors	No	System	fair	Client Residential	Client Residential	Residential	
107	ICFMR Cottage 7	West Campus	1 Story	8,827	1976	No	All Floors	No	System	fair	Client Residential	Client Residential	Residential	
108	ICFMR Cottage 8	West Campus	1 Story	8,827	1976	No	All Floors	No	System	fair	Client Residential	Client Residential	Residential	
109	ICFMR Cottage 9	West Campus	1 Story	8,827	1976	No	All Floors	No	System	fair	Client Residential	Client Residential	Residential	
110	ICFMR Cottage 10	West Campus	1 Story	8,827	1976	No	All Floors	No	System	fair	Client Residential	Client Residential	Residential	
111	ICFMR Cottage 11	West Campus	1 Story	8,827	1976	No	All Floors	No	System	fair	Client Residential	Client Residential	Residential	
112	ICFMR Cottage 12	West Campus	1 Story	8,827	1976	No	All Floors	No	System	fair	Client Residential	Client Residential	Residential	
113	ICFMR Cottage13	West Campus	1 Story	8,827	1976	No	All Floors	No	System	fair	Client Residential	Client Residential	Residential	
114	ICFMR Cottage 3	West Campus	1 Story	8,827	1979	No	All Floors	No	System	fair	Client Residential	Client Residential	Residential	
115	ICFMR Cottage 4	West Campus	1 Story	8,827	1979	No	All Floors	No	System	fair	Client Residential	Client Residential	Residential	
116	Brookside Building	West Campus	1 Story	11,520	1981	New	All Floors	No	System	good	Client Residential	Program	Day Program	
117	Woodside Building	West Campus	1 Story	11,520	1981	New	All Floors	No	System	good	Client Residential	Program	Day Program	
118	Training/Activities Center, New Greenhouse	West Campus	1 Story	18,130	1983	New	All Floors	No	Independent Oil	good	Program/ Recreation	Program/ Greenhouse	Day Program	
119	Chapel	West Campus	1 Story W/ Basement	17,112	1960	No	1st Floor Only	Yes	System	good	Chapel	Chapel	Support	
120	Old Greenhouse	Center Campus	1 Story	3,655	1946	No	None	Yes	System	fair	Greenhouse	Program	Day Program	
121	Vault #14	East Campus	1 Story	150	1954		None	No	None	poor	Electrical Distribution	Electrical Distribution	Additional Structure	
122	Electrical Substation	Center Campus	1 Story	150	1963		None	No	None	good	Electrical Distribution	Electrical Distribution	Additional Structure	
123	Maintenance Building - Plumbing Shop	Center Campus	1 Story	180	1937	No	None	Yes	System	fair	Maintenance/ Plumbing Shop	Maintenance/ Plumbing Shop	Support	
124	Grounds Department	Center Campus	1 Story	5,760	1973	No	None	Yes	Propane	poor	Grounds Department	Grounds Department	Support	
125	Eunice Kennedy Shriver Center	East Campus	4 Stories W/ Basement	48,757	1973	No	All Floors	Yes	System (Gas)	good	Research	UMass Med School	Admin.	
126	Old Pool Area (not a bldg.)	West Campus		4,950	1973	No		?	Propane	good	Pool - Recreation	Pool - Recreation	Additional Structure	
127	Pool Shed 1	West Campus	1 Story	64	1982	No	None	?	Propane	poor	Pool Filtration and Pump (Heater)	Pool Filtration and Pump (Heater)	Additional Structure	
128	Pool Shed 2	West Campus	1 Story	80	1979	No	None	?	Propane	poor	Pool Filtration and Pump (Storage)	Pool Filtration and Pump (Storage)	Additional Structure	
210	Malone Park ICF #21	West Campus	1 Story	4,123	1986	New	All Floors	No	Independent Oil	good	Client Residential	Client Residential (8 Beds)	Residential	

## Appendix 2: Building Inventory

Identification			Size		Construction Information						Utilization		
Building Number	Name	Location	Height	GSF	Year Constructed	Renovated	ADA Accessibility	Potential Asbestos Hazard	Heat/Hot Water Supply	Current Condition	Past	Current	
											Past Use	Current Use	DMR Current Usage Code
220	Malone Park ICF #22	West Campus	1 Story	4,123	1986	New	All Floors	No	Independent Oil	good	Client Residential	Client Residential (8 Beds)	Residential
230	Malone Park ICF #23	West Campus	1 Story	4,123	1986	New	All Floors	No	Independent Oil	good	Client Residential	Client Residential (8 Beds)	Residential
240	Malone Park ICF #24	West Campus	1 Story	4,123	1986	New	All Floors	No	Independent Oil	good	Client Residential	Client Residential (8 Beds)	Residential
400	Pearlman Building (New Food Service)	Center Campus	2 Stories	27,712	1993	New	None	No	System (Gas)	good	Food Prep/ Distribution	Food Prep/ Distribution	Support
501	Site 5 Building	West Campus	1 Story	12,000	1986	New	All Floors	No	Independent Oil	good	Program/ Client Residential	Program	Day Program
700	Site 7 Building	West Campus	1 Story	20,064	1985	New	All Floors	No	Independent Oil	good	Flow Inc. Program	Flow Inc. Program	Day Program
701	Greenhouse Sales	East Campus	1 Story on Slab	100	?	No	None	No	Electric Heat	good	Program	Program	Day Program



**Key:**

Site Boundary



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The Walter E. Fernald  
Developmental Center

# Aerial Photo

(MassGIS Image, 1994)

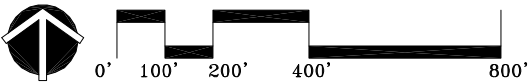
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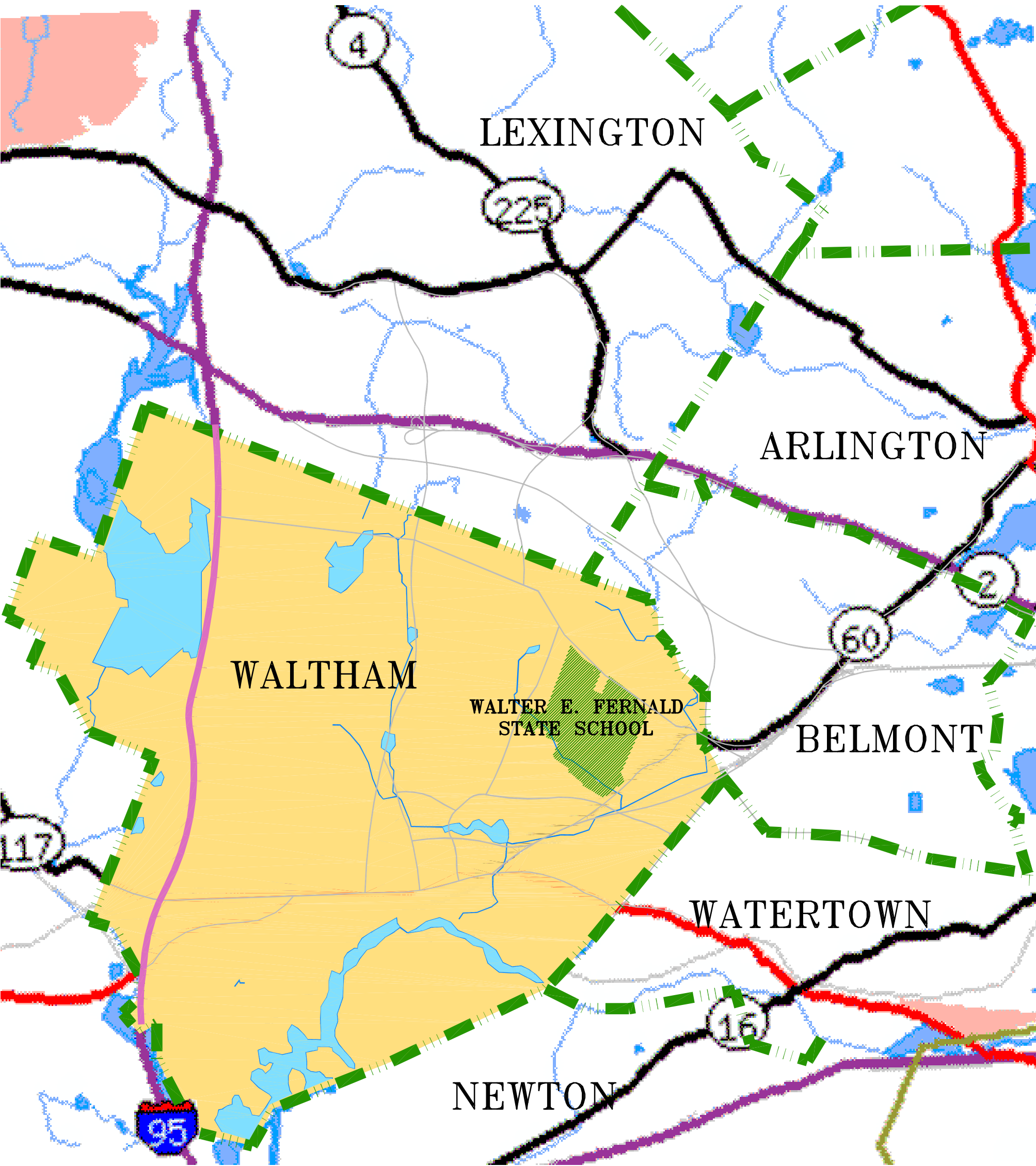
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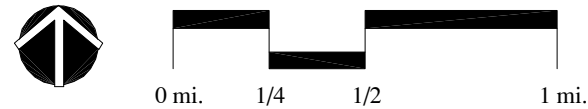
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**Key:**

-  Municipal Boundary
-  City of Waltham
-  Water



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# Location Map

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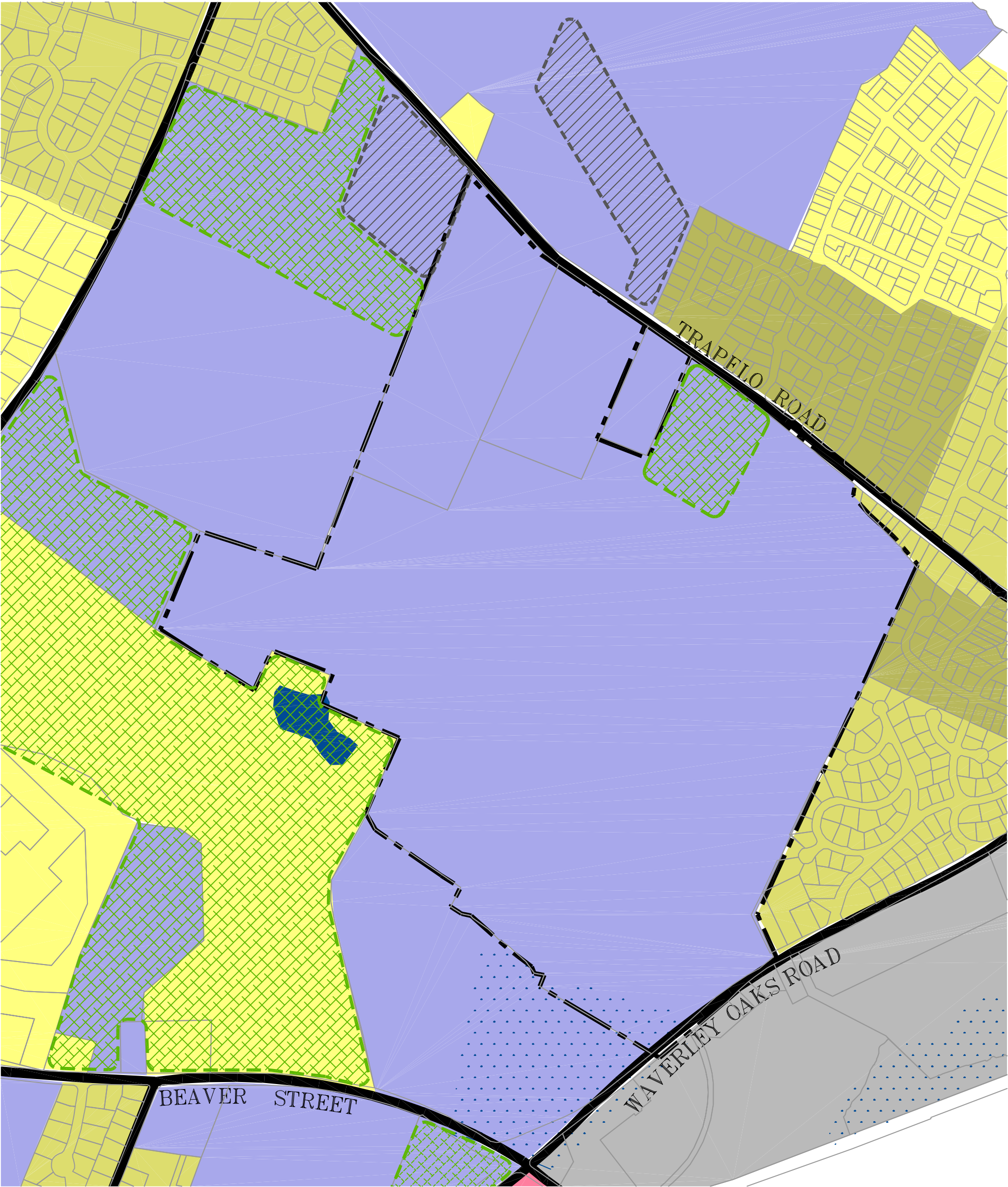
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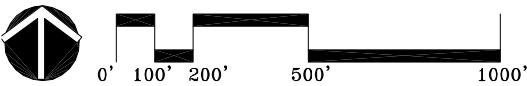
# MAP 1





Key:

- |   |  |   |  |
|---|--|---|--|
|  | Zoned Business 'B'                       |  | Wetland                                |
|  | Zoned Residential 'A2' ( 15,000 SF lots) |  | Public and Semi-Public Recreation Area |
|  | Zoned Residential 'A3' ( 9,600 SF lots)  |  | Governmental Facilities                |
|  | Zoned Residential 'A4' ( 7,000 SF lots)  |  | Water                                  |
|  | Zoned Conservation/ Recreation 'CR'      |  | Municipal Road                         |
|  | Zoned Commercial                         |  | Site Boundary                          |



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Land Use  
(MassGIS Data circa 1990)

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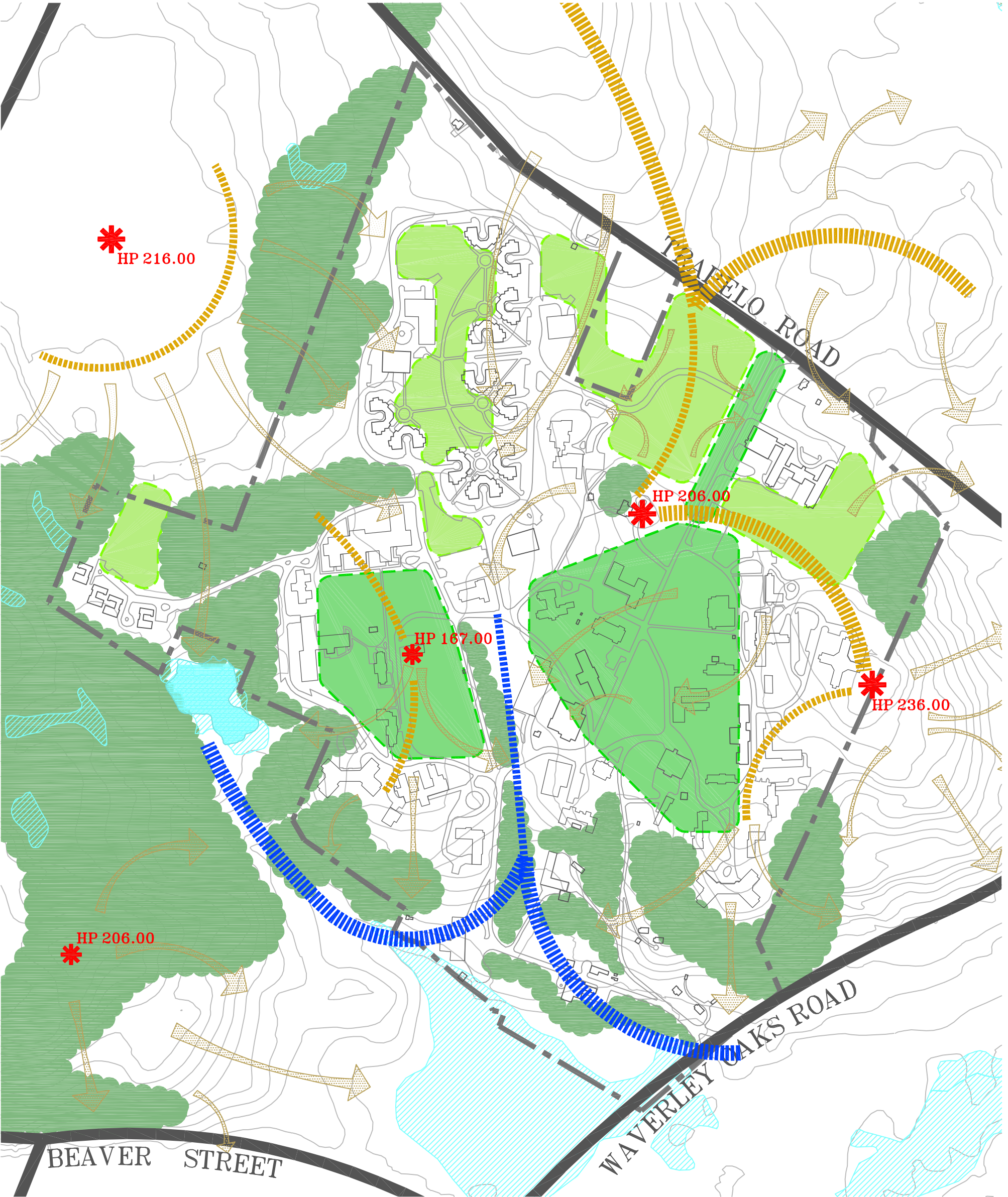
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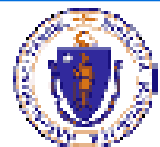
MAP 2





Key:

- |  |                 |   |                   |  |                |
|--|-----------------|---|-------------------|--|----------------|
|  | Wetland         |  | Node / High Point |  | Forested Areas |
|  | Lake            |  | Primary Ridge     |  | Grove Areas    |
|  | Primary Swale   |  | Secondary Ridge   |  | Turf Areas     |
|  | Secondary Swale |  | Down Slope        |  |                |



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# Physical Site Features

(MassGIS data circa 2000)

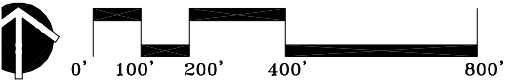
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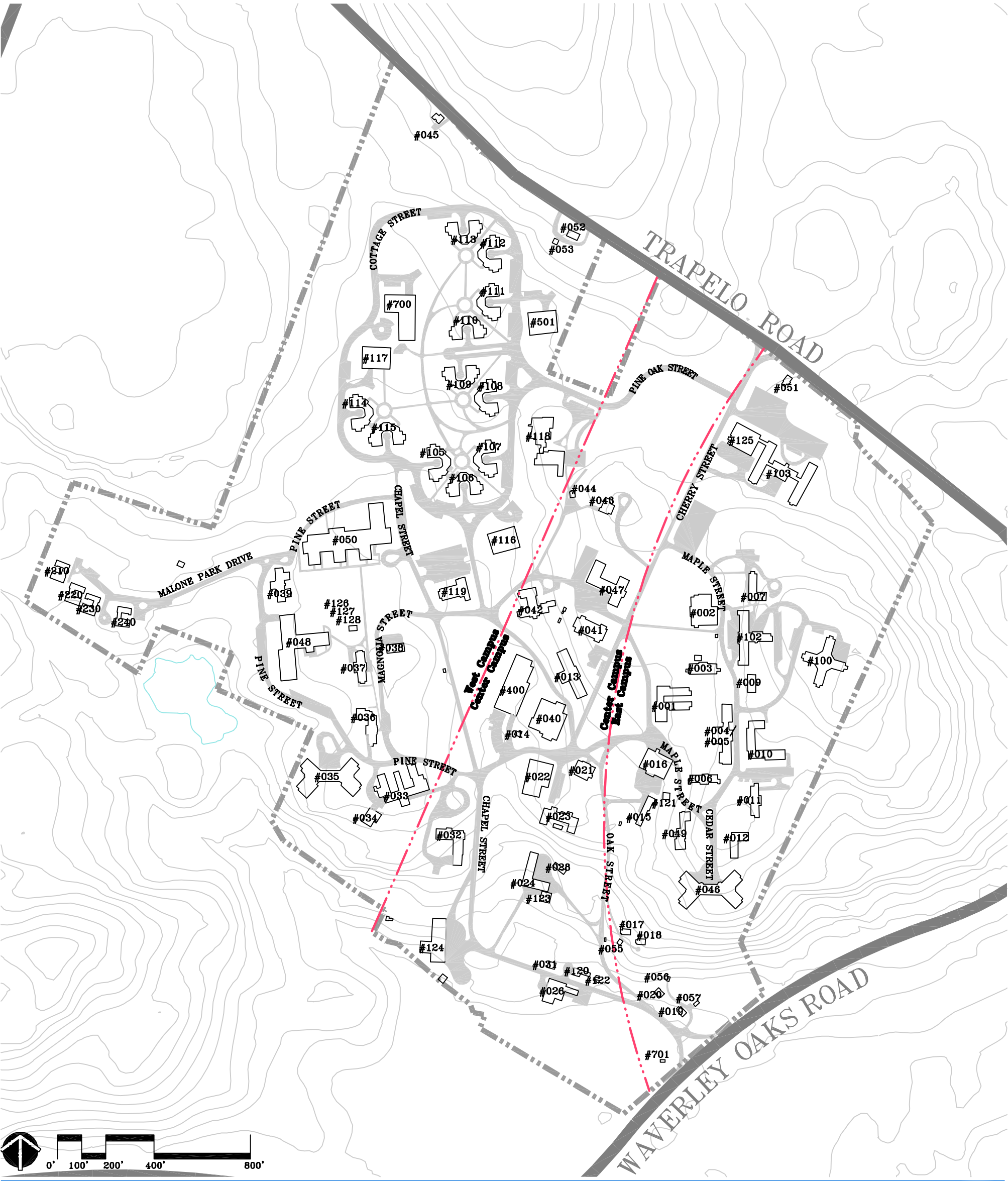
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Note: For building descriptions by number, see text section immediately to follow.  
Further information about particular buildings is also available in Appendix 2.



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# Building Index

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Key:

- Primary Pedestrian Routes
- Secondary Pedestrian Routes
- Parking Areas
- Conflict Point Between Vehicular And Pedestrian Traffic



Site Entrance



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# Site Circulation

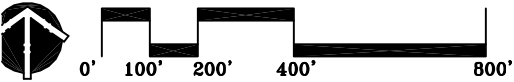
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Utilities Master Plan, 1995  
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









TSA # 01063.100







Key:

- |  |  |   |
|--|--|---|
|  Building Serviced By Steam: East Branch     |  Building Serviced By Oil (tank stored) |  Gas Line                              |
|  Building Serviced By Steam: West Branch 'a' |  Steam Line: East Branch                |  Forced Hot Water Line (Hydronic Loop) |
|  Building Serviced By Steam: West Branch 'b' |  Steam Line: West Branch 'a'            |   |
|  Building Serviced By Natural Gas            |  Steam Line: West Branch 'b'            |   |



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Developmental Center

Site Utilities  
(data from Fernald State School  
Utilities Master Plan, 1995)

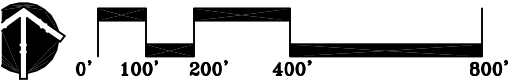
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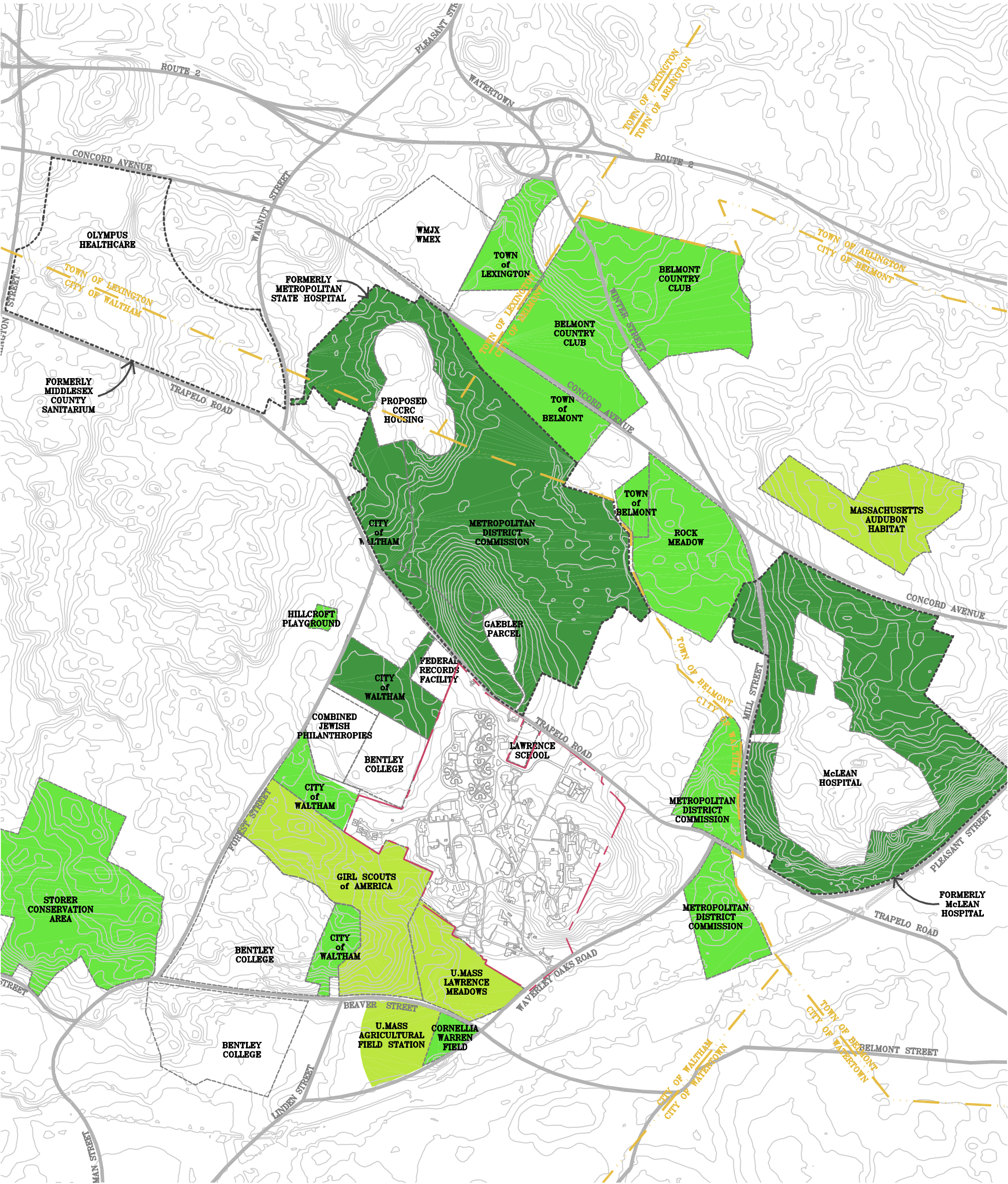
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Key:

Semi-Public Open Space


Public Open Space

Newly Designated Open Space

Private Land Potential Open Space Linkage

Former Contiguous Parcel

Municipal Boundary



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Neighboring Large Parcels

(MassGIS data circa 2000, All  
Boundaries Are Approximate)  
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MAP 9

0'

400'

800'

1600'

3200'

1/2 Mi.

# DMR-FERNALD DEVELOPMENTAL CENTER SITE STUDY

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# DMR-FERNALD DEVELOPMENTAL CENTER SITE STUDY

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---

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Robert N. Cohen - Deputy Director, Office of Real Estate Services

Roberta L. Carney - Project Manager, Office of Real Estate Services

### **Department of Mental Retardation (DMR)**

The Commonwealth of Massachusetts

William Hetherington - Assistant Commissioner Office of Management & Finance

Vincent O'Connell - Regional Operations Manager, Fernald Development Center

Paul J. Antonellis - Facilities Director, Fernald Development Center

Maurice O'Connell - Plant Superintendent, Fernald Development Center

### **THE SARATOGA ASSOCIATES**

Landscape Architects, Architects, Engineers and Planners, P.C.

Boston ? Saratoga Springs ? New York City

Michael S. Rudden, AIA - Principal in Charge

Thomas M. Paine, ASLA - Project Manager

Jennine Talbot

### **University of Massachusetts Medical Center**

The Commonwealth of Massachusetts

Thomas Manning – Vice Chancellor of Operations

Bob Murphy – Chief Operating Officer, Shriver Center

Timothy Fitzpatrick – Director of Facilities

Joe Sodi – Facilities Manager, Shriver Center

This report has been prepared at the Massachusetts Department of Mental Retardation's (DMR's) request to support planning for the consolidation and productive use of the Fernald Developmental Center campus and facilities in Waltham.

**Site and Buildings**

- 163 acres and 71 major structures in Waltham
- Total building area of 1,266,000 gross square feet ("gsf"); DMR and DMR affiliated uses currently occupy 802,000 gsf.
- 837,000 GSF (66%) is rated in good condition by Fernald staff; only 217,000 gsf (17%) is in poor condition.
- Campus served by central steam system in poor condition which DMR hopes to replace with individual boilers.
- The UMass Medical School occupies 96,500 gsf in the Shriver Center, CERC, and parts of Withington and Howe Hall; the rest of the space is either licensed to third parties or vacant.

**Planning Assumptions**

- Existing DMR and DMR affiliated uses will be moved to the west side of Cherry Street using existing vacant, underutilized or licensed space. No new construction will be required as long as the Center's population does not increase beyond its current level of approximately 300 clients; more clients would require construction of more program space and, if the population increased beyond 570, more residential space.
- Moving existing DMR and DMR affiliated uses to the West side of Cherry Street would leave about a third of the total usable space (392,000 gsf, 80% in good condition) on about 73 acres on the east side of Cherry Street for other uses, including relocation of DMR's Central Office from downtown Boston and existing UMass Medical School uses.
- Other possible uses include expansion of UMass Medical uses, affordable housing, courthouse, state and/or private office and research space, and conservation and recreation areas.

**Context**

- Access roads are already heavily used and could limit further development.
- Access to MBTA bus and Fitchburg line commuter rail a mile away at Waverley connects to Red Line at Harvard and Porter Squares.
- The campus is an informal part of a system of public and semi-public open space and recreation, including de facto trails and sledding area.
- Other planning efforts recently concluded at McLean Hospital, the former Metropolitan State Hospital site, and the former Frederick C. Murphy Center (a Federal site) will set political context and likely agenda for redevelopment.
- City of Waltham has right of first refusal for any property surplus by the state.



### 2.1. Background

In mid-2001 the Office of Programming, Department of Capital Asset Management, Commonwealth of Massachusetts, retained THE SARATOGA ASSOCIATES (TSA) to study the Walter E. Fernald Developmental Center site (hereafter “Fernald” or the “site”). In broadest terms, over the last twenty years a once intensely used institutional campus for the mentally retarded has substantially downsized, posing long-term questions as to the site’s possible evolution. This report fulfills the first major task of that process: documenting existing conditions.

DMR’s seven Developmental Centers are: Dever State School (now closing as a residential facility) in Taunton, Fernald in Waltham, Glavin Regional Center in Shrewsbury, Hogan Regional Center in Danvers, Monson, Templeton Colony, and Wrentham. These centers provide 24-hour residential and rehabilitative services to approximately 1,200 clients, down from 2,800 clients ten years ago.. New admissions at the centers have been effectively closed, so that the resident client population will decline through attrition, increasing the attractiveness of further scaling down and consolidating Fernald Center’s facilities and functions.

Services at the Fernald Center include residential (i.e., food and clothing) life skills training, nursing, medical, vocational and clinical services such as occupational therapy, physical therapy, psychology and communication in compliance with Medicaid Title XIX regulations.

### 2.2 Site Location

Fernald is located in the northeast quadrant of the City of Waltham, Middlesex County, MA, near the neighboring towns of Watertown, Belmont and Lexington, with a street address of 200 Trapelo Road. The site abuts Federal, State, City, and institutional properties to the northwest, west, south and residential properties to north and east. Access to the 163-acre campus is via a main entrance on Trapelo Road and a secondary entrance on Waverley Oaks Road (Route 60). The nearest access by public transportation is by the T bus (to the Red Line) and commuter rail (Fitchburg Line) stations in Waverley approximately one mile east of the main entrance. The frontage is some 2,250 feet on Trapelo Road and almost 700 feet on Waverley Oaks Road.

Waltham is a metropolitan city with a population of 57,878, situated nine miles from Boston, encompassing a total area of 13.6 square miles, bordered by Lexington on the north, Belmont and Watertown on the east, Lincoln and Weston on the west, and Newton on the south. Waltham is situated on the Charles River, 9 miles west of Boston, 33 miles east of Worcester. Principal highways are State Route 128 and cross-state highway U.S. Route 20, which intersect in Waltham. Please refer to **Map 1: Location Map**.

### 2.3. Surrounding Land Use

Until recently the immediate surroundings of the site had evolved into a mix of institutional, single family residential, commercial, and open space/recreation uses, but moving forward the area is being transformed dramatically as institutional facilities no longer in full-scale operation adjust to accommodate new uses, notably continuing care retirement housing, educational, commercial, and open space/recreation. The sites undergoing these changes abut Fernald on the west, face Fernald across Trapelo Road on the north, and lie within half a mile to the east and west.

Like the neighboring institutional parcels to the north, west, and south, the site is zoned CR, conservation/recreation, although state-owned property is exempt from local zoning. Commercial-zoned land lies across Waverley Oaks Road from that entrance. Residential neighborhoods abutting to the east and across Trapelo Road to the north are zoned RA-3 and RA-4 with 9,600 and 7,000 SF lots respectively, as indicated in **Map 2: Land Use**.

The northeastern quadrant of the site, comprising all the perimeter between the two entrances, is abutted by, or faces across Trapelo Road, built-out single family residential neighborhoods. The northwestern quadrant faces, across Trapelo Road, the former Metropolitan State Hospital, and abuts the Federal Records Center and former Frederick Murphy/Army Corps of Engineers site; the former is being preserved as recreational open space, with communal care retirement housing redevelopment on existing building footprints, and the former Army Corps of Engineers site is to be divided roughly into thirds, one third as recreational open space, two thirds redeveloped as campus facilities for two institutions. Additionally in this quadrant, a City school abuts the site on a lot south of Trapelo Road, which is half undeveloped and has potential for active recreation. The southwestern quadrant faces conservation land and recreational open space. The southeastern quadrant abuts a designated wetland and faces, across Waverley Oaks Road, commercial-light industrial uses in an area dominated by an office/retail park. Except as noted above, none of the surrounding land uses are known to face substantial redevelopment. For more detail on surrounding ownership, refer to subsequent sections and to **Map 9: Neighboring Large Parcels**

### 2.4. Physical Site Features

From a geological standpoint the site occupies elevated bedrock on the edge of the Boston Basin Fault line, as does McLean Hospital to the east and Bentley College to the west. Most of the campus lies on rolling terrain between elevations of 150 and 220 feet above sea level saddled between low hills to the east and west. The high point on the site is the summit of Owl Hill (el. 236 ft.), a glacial drumlin on the east site boundary, which is not much higher than the plateau-like summit (el. 216 ft.) of the former Army Corps site west of the site, but the ground tends to fall slightly to the west. There are two knolls, local high points that offer views, one at the center of the campus

(area of Administration Building, el. 206) with westerly views over the lower and newer campus; the other in the west-central campus, near MacDougall. The major landform in the view shed is Mackerel Hill (el. 300 ft.), the drumlin with the standpipe to the north across Trapelo Road on the former State Hospital site.

A branch of Clematis Brook drains from the northwest corner of the site in a swale running southward that fans out into Lawrence Meadow, the wetland that straddles the site boundary on the south; approximately 2000 feet of the brook in the northern half of the site was culverted several decades ago to accommodate the Cottage Complex. The only wetlands now on site would appear to be an area of approximately one acre that is part of the 35-acre Lawrence Meadow wetland.

The soils in the region are typically glacial till. In the most recent *Middlesex County Soil Survey* (1991), the flat terrain on the site is classified as “urban land complex”, the undeveloped strip along the western property line is classified as “rock outcrop complex”, and an irregular strip along the southern property line is classified as “slopes greater than 15%” with a pocket of soil at the foot of this slope and bordering the wetland south of the site classified as “moderately drained”. In general terms, the site is developable with the caveats that statutory setbacks from existing wetlands and streams will discourage if not limit further encroachment on the Clematis Brook tributary, and that ledge conditions prevail on much of the western perimeter and steeper slopes.

There are three zones of vegetation. On the northern quarter of the site, **turf areas**, both athletic fields and the northern slopes of Owl Hill, predominate, and are highly visible to the public traveling on Trapelo Road. Another secluded open field survives at the westernmost extremity of the site. On the historic central, east-central, and west-central areas, as well as along the main entrance drive, are **grove areas** of mature indigenous hardwood trees and some evergreens planted in wide expanses of turf many decades ago and offering great scenic value, in style and character almost like an arboretum or college campus. The single most magnificent tree is the immense American Beech east of Thom. Along the fringes east, west and most particularly south of this core area are **forest areas** of second-growth southern New England hardwoods punctuated on the west with native evergreens, but not as dense as the evergreen stands found on undeveloped sites abutting to the south. The south edge of the site includes a scrub-covered abandoned railroad spur from the Boston & Maine line serving Waverley. Please refer to **Map 3: Aerial Photo** and **Map 4: Physical Site Features**.

## 2.5. Historical Significance and Evolution

The Walter E. Fernald Center is the second home of the first public institution for the mentally retarded in the western hemisphere (founded in 1848). It retains much of its historic “cottage system” and extensive lawn and shade tree landscape character established in the first two or three decades of occupancy. Most notably, the elevated, upland pasture Waverley site, acquired in the 1880s, offered ample opportunity for

siting each client cottage to take advantage of southern exposure in an informal, suburban layout rather than an urban “checkerboard”, as well as the opportunity for clients to engage in agricultural work. Two pre-Civil War farmhouse structures on Trapelo Road retained after the school relocated in Waltham still survive; these are Trapelo Cottage (051) and Cardinal Cottage (052).

The site has evolved over the past 110 years into a campus-like facility with a wide variety of buildings and an irregular circulation system spreading over the site. The most active building periods were the **Initial Phase** of establishing the campus (1890-1910), the **Middle Phase** (1921-40), and the **Consent Decree Phase** (1971-1990). The guiding influence from the start was the dynamic superintendent, Walter E. Fernald, for whom the school was named after his death in 1924. The architect of all 19 buildings of the Initial Phase was William G. Preston, noted for many distinguished institutional buildings in the region. The influence of the contemporaneous McLean Hospital, laid out a mile away by landscape architect Frederick Law Olmsted on a cottage plan, can be inferred. The east-west bifurcation of the site began at the outset. By the end of the period, the school accommodated 1,000 resident clients, with resident nurses housed in four dormitory buildings. In the Middle Phase, the campus acquired adjacent acreage (Baldwin) and grew to 1,500 resident clients. This period coincides with the Colonial Revival campus style, of which the Administration Building is the most distinguished, and the Chapel the most recent, example. The resident client population rose to a maximum of 2,600 in the 1960s. The Consent Decree Phase added numerous court-mandated facilities, most notably the Cottage Complex, and adjacent Day Program buildings, which covered the school’s farmland, coinciding with the reduction of the resident client population, and elimination of nurse housing on site. The only building constructed since 1990 is Pearlman New Food Service Building. On a decade-by-decade basis, building activity occurred as summarized in **Table 1**.

**TABLE 1: BUILDING ACTIVITY BY DECADE**

<b>Period</b>	<b>Bldgs.</b>	<b>Period</b>	<b>Bldgs</b>
<i>1850-1860</i>	2	<i>1941-1950</i>	3
<i>1890-1900</i>	10	<i>1951-1960</i>	6
<i>1901-1910</i>	9	<i>1961-1970</i>	4
<i>1911-1920</i>	2	<i>1971-1980</i>	15
<i>1921-1930</i>	12	<i>1981-1990</i>	10
<i>1931-1940</i>	10	<i>1991-2000</i>	1

In 1993 Fernald was nominated to the National Register of Historic Places. In the nomination form, structures were classified as to age and style. Implicit in evaluating significance was the degree of “integrity” of the site, whether integrity of location, design, setting, materials, workmanship, feeling or association. Fernald was determined to have all of these. Structures predating World War Two were considered sufficiently



historic to contribute to integrity. Over half the structures were considered to be contributing. In stylistic terms the contributing structures are roughly 61% Queen Anne, Craftsman or Tudor Revival, 16 % Colonial Revival, and the rest utilitarian.

From the nomination form it can be inferred that the architectural character of Fernald is in large part defined by (1) the “typical turn-of-the-century Fernald materials and features, including red brick construction, fieldstone foundation, slate hip roof with large interior chimneys, sandstone window surrounds, burnt header belt courses, and round-arched entries” of pre-Depression era construction, and (2) the continued use of brick and 2 to 3 story massing in the Colonial Revival buildings starting in the 1930s.

In 1994, Fernald was listed on the State Register of Historic Places. Under MGL Chapter 9, Sections 26-27, any project undertaken, funded or licensed by a state body is subject to review by the Massachusetts Historical Commission as to whether the project might have any adverse effect, direct or indirect, on the listed property. The state body would thereby be required to submit a Project Notification Form (PNF) to the Massachusetts Historical Commission. The Commission’s review would extend to the whole project to identify all prudent and feasible means to eliminate, minimize or mitigate the adverse effects.

## 2.6. Buildings

There are 71 principal buildings and 14 other structures (garages, sheds, vaults, substation, outdoor pool) on the site comprising a diverse mix of size, function, condition, and character. First, it is important to understand the site in aggregate. The space on the site totals 1,266,088 gross square feet (gsf). **DMR and DMR-Affiliated Tenants (defined as third party tenants who currently support the DMR mission as their primary reason for presence on site) occupy 801,803 gsf or 64% of total space.** Of DMR and DMR-Affiliated space, 44% is residential, 23 % each for Day Programs and Support, and 10% for Administration, both Region 6 and Fernald-specific. DMR-Affiliated tenants occupy 10% of this space.

Other tenants occupy 15% of total space. The balance of space (21%) is vacant; this includes six buildings long in disuse that DMR has identified for possible demolition. The foregoing is summarized in **Table 2** below.

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**TABLE 2: AGGREGATE OCCUPANCY**

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<b>DMR and DMR-Affiliated</b>	<b>Gsf</b>	<b>% DMR</b>	<b>% Total</b>
Residential	349,638	44	
Day Program (DMR)	149,125	19	
Day Program (Affiliate)	36,064	4	
Administration	79,691	10	
Support (DMR)	137,640	17	
Support (Affiliate)	49,645	6	
<b>Subtotal</b>	<b>801,803</b>	<b>100</b>	64
<b>Other Tenants</b>	194,536		15
<b>Vacant</b>	269,749		21
<b>TOTAL SPACE</b>	<b>1,266,088 gsf</b>		<b>100</b>

This breakdown is also shown graphically in the chart in **Appendix 1: Aggregate Occupancy**. In the discussion that follows, it is important to understand that the site has been divided into three zones, **East** campus, **Center** campus, and **West** campus, as shown on **Map 5: Building Index**. These zones make sense for examining existing conditions across a diverse site.

#### DMR and DMR-Affiliated Tenant Space.

Almost three quarters of the space is rated by DMR to be in good condition, one quarter in fair condition. Almost half the space is in the West campus, three quarters in the West and Center combined portions, (roughly a quarter in each of Center campus and East campus). Space in good condition is heavily weighted in the West and Center campus areas (51% of all DMR space). Clearly, the “center of gravity” for DMR is already in the West-Center area. This can be seen in the following summary table.

**TABLE 3: DMR AND DMR-AFFILIATED TENANT SPACE (GSF)**

	<b>Good</b>	<b>Fair</b>	<b>Poor</b>	<b>Total (gsf)</b>	<b>%</b>
<b>East</b>	184,683	16,255	150	201,088	25
<b>Center</b>	132,933	60,036	32,531	225,500	28
<b>West</b>	277,974	97,097	144	375,215	47
<b>Combined</b>	<b>595,590</b>	<b>173,388</b>	<b>32,825</b>	<b>801,803</b>	100
<b>%</b>	74	22	4	100	

#### Other Tenant Space

Tenants other than those whose primary focus is support of DMR operations and mission occupy only one location in the West campus. Clearly, the “center of gravity” for “other tenants” is the East-Center campus area, with the East predominating (60%). The condition of 89% of the space is rated as good, the balance (except for 500 gsf, less than one percent) as fair. This can be seen in the following summary table.

**TABLE 4: OTHER TENANT SPACE (GSF)**

	<b>Good</b>	<b>Fair</b>	<b>Poor</b>	<b>Total (gsf)</b>	<b>%</b>
<b>East</b>	96,626	20,610	0	117,236	60
<b>Center</b>	53,424	0	500	53,924	28
<b>West</b>	23,376	0	0	23,376	12
<b>Combined</b>	<b>173,426</b>	<b>20,610</b>	<b>500</b>	<b>194,536</b>	100
<b>%</b>	89	11	0	100	

Vacant Space

Over half of the 269,749 gsf of vacant space is located in the East campus, over two thirds of which is in poor condition. Over 40% of vacant space is in West campus, and almost 40% of it is in good condition. This can be seen in the following summary table.

**TABLE 5: VACANT SPACE (GSF)**

	<b>Good</b>	<b>Fair</b>	<b>Poor</b>	<b>Total (gsf)</b>	<b>%</b>
<b>East</b>	24,968	0	115,580	140,548	52
<b>Center</b>	0	18,419	0	18,419	7
<b>West</b>	43,189	0	67,593	110,782	41
<b>Combined</b>	<b>68,157</b>	<b>18,419</b>	<b>183,173</b>	<b>269,749</b>	100
<b>%</b>	25	7	68	100	

Long in disuse are four buildings in the East campus totaling almost 66,000 gsf, and two buildings in the West campus totaling almost 61,000 gsf, included in the above totals for vacant space in “poor” condition. DMR has secured them and indicated a desire to demolish.

Building Descriptions

Building-specific information follows in the form of brief narrative descriptions of each of the 71 buildings, keyed to **Map 5: Building Index**. For further information, see **Appendix 2: Building Inventory**, summarizing the latest information supplied by DMR. The numeration system adopted for this study is based on the latest inventory supplied by DMR. Other sources consulted include the inventory compiled in 1989, exterior site inspection, and visits inside selected buildings.

**Waverley** (001): poor condition, vacant, has been proposed for demolition, although its large footprint (3 floors, 32,298 gsf), former layout as administrative offices, central high-visibility location, and distinguished architectural character suggest further study of demolition/renovation decision.

**North Building** (002): good condition, large footprint (2 floors, 24,834 gsf), in use for DMR Region 6 Offices and Day Programs.

**Old Activity Center** (003): poor condition, vacant, has been proposed for demolition, although its large footprint (2 floors, 21,766 gsf), central high-visibility location and architectural character suggest further study of demolition/renovation decision.

**Gym** (004) and **Schoolhouse** (005): attached structures, in good condition, in use for Audiology Lab and in low-level use for Day Programs to be phased out at this location in the heart of the east half of the site, together offer a large footprint (2 floors, 37,325 gsf) and distinguished architectural character.

**Chipman** (006): poor condition, vacant, has been proposed for demolition, originally residential cottage therefore small footprint (2 levels, 10,704 gsf)

**North Nurses** (007): good condition, medium footprint (2 floors, 17,190 gsf) originally housed nurses, later clients, now houses DMR Regional 6 operational offices (procurement, contracts, union relations).

**East Nurses** (009): only fair condition, small footprint (2 floors, 8,640 gsf) half that of North Nurses, originally housed nurses, later clients, now houses Massachusetts Department of Education Offices.

**Manual Training** (010): good condition, in low-level use for Day Programs to be phased out at this location, has a large footprint (2 levels @ 34,851 gsf).

**Warren Hall** (011): good condition, vacant, offers medium footprints (2 floors @ 16,296 gsf), residential.

**South Nurses** (012): like North Nurses, good condition, medium footprint (2 floors, 17,172 gsf) originally housed nurses, later clients, now houses Middlesex County Law Enforcement Offices.

**Thom Building** (013): good condition, medium footprint (4 floors, 32,116 gsf total), highly visible and centrally located, in mixed use by DMR, third party tenants supporting DMR operations, and Marquart Nursing Care Facility, a DMR (Region 6) Title 18 care facility, 21 beds

**Vault 55** (014): poor condition, 400 gsf, is utility structure in use for electrical distribution.

**Main Garage** (015): fair condition, (1 level, 3,405 gsf), supports DMR operations, largest garage on site.

**Storeroom** or **Storehouse** (016): fair condition, utilitarian structure, 2 floors totaling 23,940 gsf, houses DMR and Bentley College files and equipment.

**Cottage 17** (018): poor condition, small footprint (2 floors, 2,264 gsf) is vacant.

**Cottage 18** (019): poor condition, small footprint (2 floors, 2,264 gsf) is vacant.

**ICF 19** (019): good condition, small footprint (2 floors, 2,264 gsf) is in residential use (4 beds).

**ICF 20** (020): good condition, small footprint (2 floors, 2,264 gsf) is in residential use (4 beds).



**Southard Research Lab/Howe Library** (021): good condition, small footprint (1 floor, 8,030 gsf), supports DMR operations, including Central Office and Region 6, with plant operations offices, library and media center.

**Therapeutic Equipment Center** (022): good condition, very large footprint (1 floor, 27,192 gsf), supports DMR operations with linen pickup/dropoff for offsite laundering, balance of building no longer used as laundry per se but for storage, therapeutic equipment maintenance, repair, storage.

**Lavers** (023): fair condition, large footprint (1 floor, 12,036 gsf), formerly residential, now houses DMR Facility Safety, and Massachusetts Division of Weights and Measures.

**Maintenance Building** (024): only fair condition, large footprint (1 floor, 14,322 gsf), undistinguished architectural character, currently supports DMR operations but could be vacated.

**Power Plant** (025): only fair condition, large footprint (1 floor with basement, 19,440 gsf), currently provides central heat and is important in electrical and water distribution systems, is focus of Utility Master Plan.

**Grounds Garage/Maintenance Shed** (028): poor condition, small structure (2,106 gsf), supports DMR.

**Truck Garage** (031): poor condition, very small structure (748 gsf) currently supports DMR (3 bays).

**Tarbell** (032): good condition, large footprint (4 floors, 38,924 gsf), formerly residential, now houses Middlesex County Shelter, also in nearby McDougall (036).

**West Building** (033): poor condition, vacant, very large footprint (2 floors, 49,041) originally residential, has been proposed for demolition.

**Belmont House** (034): good condition, medium footprint (1 floor, 6,416 gsf), originally residential, has recently housed Day Program not far from client residences.

**Seguin** (035): good condition, large footprint (1 floor, 21,521 gsf), though vacant, is maintained in readiness for short-term client residential needs by DMR, 32 beds.

**McDougall Hall** (036): good condition, large footprint (2 floors, 23,376 gsf), architecturally distinguished, originally residential, now houses Middlesex County Shelter, also in nearby Tarbell (032).

**Dolan Hall** (037): good condition, medium footprint (2 floors, 15,252 gsf), vacant, architecturally distinguished, originally residential.

**West Nurses** (038): poor condition, small footprint (2 floors, 6,912 gsf), vacant and storage.

**Wheatley Hall** (039): poor condition, vacant, proposed for demolition, large footprint (1 floor, 11,640 gsf), architecturally distinguished, originally residential, later furniture repair, storage.

**Old Food Service Building** (040): fair condition, large footprint (2 floors, 36,838 gsf), upper level vacant, lower level maintenance, repair in support of DMR operations, is architecturally distinguished.

**Howe Hall** (041): good condition, medium footprint (2 floors, 17,362 gsf), architecturally distinguished, originally canteen, lower level copy center supports DMR operations, upper level houses tenant storage.

**East Dowling Hall** (042): poor condition, large footprint (2 floors, 24,107 gsf), formerly residential, now houses Day Program (Redemption Center) and tenant Office (AFSCME Union).

**Hillside** (043): fair condition, small footprint (2 floors, 8,115 gsf), architecturally distinguished, central and visible location, residential (13 beds).

**Hillside Garage** (044): fair condition, 484 gsf, utilitarian, 2 bays.

**Baldwin Cottage** (045): good condition, small footprint (2 floors, 3,402 gsf), supports DMR operations with day care provided by Waverley Oaks Child Development, third party tenant.

**Wallace Building** (046): good condition, large footprint (1 floor, 29,550 gsf), though vacant, houses community respite (short-term non-intensive care, 60-90 days) program for community based clients in transition, staffed by Region 6, 8 beds in use, 32 bed capacity.

**Administration** (047): good condition, large footprint (2 floors, 26,656 gsf), architecturally distinguished, visible and central location, DMR administration offices including Regional.

**Farrell Hall** (048): good condition, very large footprint (2 floors, 49,940 gsf), residential, houses most dependent and challenging clients, 32 beds.

**Bowen Hall** (049): poor condition, vacant, large footprint (1 floor, 12,000 gsf), formerly residential, has been identified as site suitable for future additional parking for Seguin/Warren area.

**Greene Unit** (050): good condition, largest footprint on site (3 floors, 113,000 gsf), is primarily residential for dependent clients, 108 beds, houses Day Programs and indoor heated pool for residential and community clients and community at large and steam conversion system for Cottage Loop.

**Trapelo Cottage** (051): good condition, small footprint (2 floors, 2,877 gsf), supports DMR operations with day care provided by Waverley Oaks Child Development, third party tenant.

**Cardinal Cottage** (052): good condition, small footprint (2 floors, 4,354 gsf), supports DMR mission with small office for volunteers provided by Walter E. Fernald Association, third party tenant.

**Cardinal Cottage Garage** (053): good condition, small footprint (440 gsf), utilitarian, supports DMR operations, 2 bays.

**Cottage 17 Garage** (055): poor condition, small footprint (1,344 gsf), vacant.

**ICF 20 Garage** (056): fair condition, small footprint (440 gsf), utilitarian, supports DMR Region 6.

**ICF 19 Garage** (057): fair condition, small footprint (440 gsf), utilitarian, supports DMR Region 6.

**Kelly Hall** (100): poor condition, large footprint (3 floors, 43,740 gsf), vacant, was originally residential.

**Withington** (102): good condition, large footprint (3 floors, 40,428 gsf), formerly residential (64 beds), houses Region 6 Offices and third party tenants which both support DMR mission (Fernald League, UNICO, Tufts University Dental) and could do so (UMass Medical).

**CERC Building** (103): good condition, very large footprint (1 floor and basement, 32369 gsf), houses UMass Medical Center.

**ICFMR Cottage 5** (105): fair condition, 1 floor, 8,827 gsf, residential for independent clients, 16 beds.

**ICFMR Cottage 6** (106): fair condition, 1 floor, 8,827 gsf, residential for independent clients, 13 beds.

**ICFMR Cottage 7** (107): fair condition, 1 floor, 8,827 gsf, residential for independent clients, 14 beds.

**ICFMR Cottage 8** (108): fair condition, 1 floor, 8,827 gsf, residential for independent clients, 14 beds.

**ICFMR Cottage 9** (109): fair condition, 1 floor, 8,827 gsf, residential for independent clients, 16 beds.

**ICFMR Cottage 10** (110): fair condition, 1 floor, 8,827 gsf, residential for independent clients, 13 beds.

**ICFMR Cottage 11** (111): fair condition, 1 floor, 8,827 gsf, residential/clinical for intensive nursing, sub-acute hospitalization, 2 long-term, 7 short-term, total 9 beds.

**ICFMR Cottage 12** (112): fair condition, 1 floor, 8,827 gsf, senior independent clients, 16 beds.

**ICFMR Cottage 13** (113): fair condition, 1 floor, 8,827 gsf, senior independent clients, 15 beds.

**ICFMR Cottage 3** (114): fair condition, 1 floor, 8,827 gsf, behaviorally challenged clients, 13 beds.

**ICFMR Cottage 4** (115): fair condition, 1 floor, 8,827 gsf, independent clients, 14 beds.

**Brookside Building** (116): good condition, large footprint (1 floor, 11,520 gsf), houses Day Programs for adjacent cottage residents

**Woodside Building** (117): good condition, large footprint (1 floor, 11,520 gsf), houses Day Programs for adjacent cottage residents.

**Training/Activities Center/Greenhouse** (118): good condition, large footprint (1 floor, 18,130), houses Day Programs for adjacent cottage residents.

**Chapel** (119): good condition, 17,112 gsf, supports DMR mission.

**Old Greenhouse** (120): fair condition, 3,655 gsf, houses Day Programs for adjacent cottage residents.

**Vault # 14** (121): poor condition, 150 gsf, is minor utility structure in use as electrical distribution.

**Electrical Substation** (122): good condition, 150 gsf, is minor utility structure in use as electrical distribution.

**Maintenance Building/Plumbing Shop** (123): fair condition, 1,800 gsf, supports DMR operations.

**Grounds Department** (124): poor condition, small footprint (1 floor, 5,760 gsf), prefab structure, supports DMR operations.

**Eunice Kennedy Shriver Center** (125): good condition, large footprint (4 floors and basement, 48,757 gsf), UMass Medical Center office, wet and dry lab.

**Pool Shed 1** (127): poor condition, very small prefab structure, 64 gsf.

**Pool Shed 2** (128): poor condition, very small prefab structure, 80 gsf.

**Malone Park ICF #21** (210): good condition, small footprint (1 floor, 4,123 gsf), houses most independent of residential clients, 8 beds.

**Malone Park ICF #22** (220): good condition, small footprint (1 floor, 4,123 gsf), houses most independent of residential clients, 8 beds.

**Malone Park ICF #23** (230): good condition, small footprint (1 floor, 4,123 gsf), houses most independent of residential clients, 8 beds.

**Malone Park ICF #24** (240): good condition, small footprint (1 floor, 4,123 gsf), houses most independent of residential clients, 8 beds.

**Pearlman Building/New Food Service** (400): good condition, large footprint (2 floors, 27,712 gsf), food preparation and distribution supports DMR operations, including other sites, tenant operated (Morrison).

**Site 5 Building** (501): good condition, large footprint (1 floor, 12,000 gsf), houses Day Programs including paper shredding, crayon making.

**Site 7 Building** (700): good condition, very large footprint (1 floor, 20,064 gsf), houses Day Program operated by Flow, Inc., third party tenant.

**Greenhouse Sales** (701): good condition, very small footprint (100 gsf), houses Day Program.

## 2.7. Vehicular Circulation and Parking

The following discussion draws heavily from a five-volume report, *Fernald State School Utilities Master Plan* (May 1995) prepared by Ganteaume & McMullen Inc. for the Division of Capital Planning and Operations (now Division of Capital Asset Management) and the Department of Mental Retardation (hereafter “*Utilities Master Plan*”). In this section the citations refer to volume, task, and section of that report.

Access is by the main entrance (Cherry Lane) off Trapelo Road and by a second entrance (Chapel Street) off Waverley Oaks Road. The nearest access by public transportation is by the T station in Waverley, approximately one mile east of the main entrance. An hourly shuttle bus runs between Fernald and Waverley Square MBTA stop during normal business hours. As shown in **Map 6: Site Circulation**, the internal vehicular circulation and parking system serving the 71 principal campus buildings has evolved irregularly over many decades into a haphazard system of loops and dispersed parking lots with uneven standards of signage and construction. All are maintained by the Fernald Center Grounds Department. Intersection abnormalities include the main entrance on Trapelo Road, the intersection of Cherry Lane and Crabtree Street, and the traffic island at Malone Park (I.3.Executive Summary). Segments of Crabtree, Magnolia and Maple Streets are designated as one-way. Segments of Crabtree and Magnolia Streets, as well as most of Maple Street, have been identified as redundant and recommended for elimination.

In the mid 1990s, before further client population attrition, major parking lot deficiencies at peak hours were found at Administration (047), Manual Training (010), and Greene (050). Areas with parking shortages due to the lack of a large lot in proximity included the area near Seguin (035), Belmont (034), West (033), and MacDougall (036); the Storehouse (016) area along Pine Street, the area near Wallace (046) and South Nurses (012), resulting in overcrowded turnaround; and Withington (102), whose visitors use the Cherry Lane lot but need extra spaces close by since staff

fill spaces more appropriate to short term parking. Conversely, the lots at Cherry Lane, Chapel (119), Greene (050), Tarbell (032), the (Old Food) Service Building (040), and Shriver (125) were underutilized.

As between the three options of either repaired or minimally expanded existing parking, decentralized parking and centralized parking, the decentralized option was recommended as the most economical approach that satisfies the program goals of minimizing pedestrian and vehicle conflict and maximizing short-term building accessibility. Specifically, *Utilities Master Plan* recommended the following improvements to the parking lots: expanding the Administration lot with minimal regrading, repaving the Thom (013) lot, restriping the angled spaces at Farrell Hall (048) as perpendicular to increase capacity (by 40%), restriping the Greene (050) lot and striping the Manual Training (010) lot, and constructing a new lot for Wallace (046) and South Nurses (012) on the site of Bowen (049), recommended by DMR for demolition (I.3.7.2). Related to this is the recommendation, also identified in the *Utilities Master Plan*, of renovating the existing Building Maintenance and Central Storage buildings plus constructing a new Vehicle Maintenance Building (recommended at an estimated cost of \$2,333,000 in III.5.Executive Summary).

## 2.8. Pedestrian Circulation

According to the *Utilities Master Plan*, the pedestrian pathway system is deficient and hazardous, with nine major vehicular-pedestrian conflict points as indicated on **Map 6: Site Circulation**. Many streets lack sidewalks, and many locations lack proper railings, handicap ramps, signage, and striping. (I.3/Ex.Summary) Among the major deficiencies are the lack of uniform handicapped accessibility (width, gradient, system coverage, handrail, ramp chain link fence coverage) and the widespread presence of extremely hazardous conditions for the handicapped. The *Utilities Master Plan* recommended adding approximately 2400 lineal feet of pathways on major routes: Chapel Street from Pine to Waverley Oaks, Pine from the Chapel (119) to Food Service (040), and the Administration lot toward the Recreation Center, plus 7200 lineal feet on lesser routes (I.3.7).<sup>\*</sup> The main pedestrian routes of the system run along Cherry, portions of Pine, Oak, Chapel, portions of Cottage, and Magnolia Streets. Secondary routes run along Maple Street, Pine-Oak and portions of Pine.

## 2.9. Utilities

The following discussion of the utility systems at Fernald —gas thermal, steam and condensate thermal, electricity—draws heavily from the *Utilities Master Plan*. In

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<sup>\*</sup> Capital improvements recommended in the *Utilities Master Plan* include safety and deferred maintenance improvements at an estimated cost of \$131,000, regional parking lot improvements of \$237,000, roadway improvements at \$352,000 and pedestrian improvements for increased handicapped accessibility (9000 LF of pathways) at \$281,000 (III.5.6.6).



this section the citations refer to volume, task, and section of that report. Also included are observations from interviews with DMR staff. The gas thermal system, individual oil, and steam condensate thermal system are shown in **Map 7: Site Utilities**. Not shown are water and electricity, which do not pose problems of supply and distribution comparable to heat sourcing.

### Gas Thermal System

A 2-inch gas supply off a 6-inch intermediate main in Trapelo (there is also a 12-inch low pressure main there) currently serves 3 buildings: Shriver (125), Hillside (043), and Perlman (400). Adding gas service to the rest of the campus is the option recommended in the *Utilities Master Plan*, as described in the section below on the steam and condensate thermal system.

### Individual Oil

According to DMR staff, eleven buildings are served by individual oil-fueled heat systems: Cottage 17 (017), Cottage 18 (018), Baldwin Cottage (045), Cardinal Cottage (052), Training/Activities Center (118), Malone Park ICF Nos. 21 through 24 (210, 220, 230, 240), Site 5 (501), and Site 7/Flow Inc. (700). These predominate in the Cottage Complex area and the westernmost extremity of the site, and indicate that in prior decision-making, the steam system was deemed inappropriate in areas remote from the existing steam service.

### Steam and Condensate Thermal System

Apart from the buildings served by gas or individual oil boilers mentioned above, the majority of buildings—fifty—are heated by a centralized high-pressure steam-pipe system fueled by the oil-fired Power Plant (026). The steam pipe system consists of asbestos-insulated iron piping in reinforced concrete utility maintenance tunnels from which direct burial piping leads to individual buildings, with the exception of lines running through the basement of one building to next building on the East Branch. The two-branch system directly serves 38 buildings as follows: the East Branch serves 18 buildings, and the West Branch serves 20 buildings plus a hydronic loop in the northwest quadrant of the site. Linked at Greene (050) to the high-pressure steam system, the hydronic loop serves 13 buildings, including the Cottage Complex of 11 cottages constructed in 1976 (105-115) plus Brookside (116) and Woodside (117). A majority of the buildings have steam-to-hot-water converters.

The system deficiencies identified in the *Utilities Master Plan* are even truer today, and there was then already a sense of urgency about the state of the system. The existing Central Power Plant and Steam Distribution System was termed extremely unreliable and energy inefficient. Several pieces of equipment were described as only running through extreme diligence and costly repair, while several major pieces of equipment were described as having been recommended for replacement by studies

performed ten years earlier (1980-1985), and the possibility of Fernald residents being without heat was considered extremely likely if improvement options were not implemented immediately.

The reliability of the existing power plant equipment, especially during peak demand, is unpredictable because of age and condition. Despite recent expenditures (approximately \$1.4 million in five fiscal years 1997-2001, of which over one third was in 2001 alone, according to data from Fernald) to repair or replace equipment in the power plant, it is fundamentally obsolete, costly to operate, and vulnerable to failure. The plant has five oil-fuel boilers, the most recent of which was replaced in 1976, preceded by 2 installed in 1967 with 9 years useful life left (in 1995), and the 2 oldest in 1954 near end of useful life. Condition was only “fair” in 1995 (Table III-2). Two new 20,000 gallon fuel storage tanks were installed in 1997.

The *Utilities Master Plan* did not investigate the actual condition of the high-pressure steam pipe system. Most leaks observed were in the West branch (I.3.2.2). Staff members have indicated that the tunnels have not been renovated, have asbestos, and lack adequate lighting. Since the *Utilities Master Plan* so recommended, the hydronic loop was recently replaced to eliminate repeated failure.

Four alternatives were evaluated (III.5.2.8): (1) do nothing, (2) renovate the Power Plant, (3) replace it with a new plant, and (4) abandon the central power plant concept in favor of individual boilers in each building. The latter was analyzed to compare oil versus gas. The working assumption was that use, either through DMR consolidation or tenant expansion, would not grow more than a modest degree, with future demand not expected to exceed 60,000 pounds per hour, a level that was within the capabilities of the central system but which required that three to four of the five boilers be in use at one time. Cogeneration was explored for the central power plant options.

**The individual boiler option was recommended by the *Utilities Master Plan* for implementation since it best satisfies the long-term goals for FSS. Even if the central plant system had many years of useful life ahead, it is not the most appropriate and economical system for a facility that does not need to use all the existing structures on the system. As the resident population declines and buildings are closed, operating and maintaining a large central facility will be more costly than for individual boiler installations. Even a newly constructed power plant using existing high-pressure steam would require many operating engineers, perhaps nearly as many as for the existing system, which requires 15 engineers. The 44 buildings that the *Utilities Master Plan* identified as needing such heat could in fact be served by individual boilers in 35 locations. As between oil or gas fuel for these individual boilers, **natural gas appears to be the least costly fuel choice.** The cost for installing individual gas-fired boilers (boilers, equipment, fit-up, hydronic loop, water pump station, and a new chiller for Shriver (125), but excluding underground gas service piping and Boston Gas installation charges) was estimated at \$3,258,000 (III.5.Executive Summary), which is about \$900,000 less than the oil option (which necessitate underground 30-day fuel tanks at each location) but adding**

in the Boston Gas and gas pipe costs would reduce this cost difference. The extra cost abandoning the power plant (demolition or mothballing) was not addressed (III.5.2.5). As for operating costs, although the oil fuel option could result in energy savings of \$23,000 per year, it would be dependent on oil truck delivery. Whether using oil or gas, the individual boiler option allowed for a reduced labor cost in the range of \$100,000 per year compared to the central power plant options. Given this recommendation, staff have indicated that as client and service population have continued to decline, DMR did not wish to move ahead with conversion to separate new boilers in specific buildings that might soon be vacated, so no action has been taken on such replacement. For further detail refer to **Appendix 3**.

There continues to be interest in cogeneration, and what level of benefit would make the central power option more economically attractive. As of 1995, anticipated benefits from cogeneration at the Power Plant, whether renovated or replaced, did not sufficiently offset the higher cost of these options over the gas-fueled individual boiler option (III.5.2.11). Since the alternates of renovating the existing power plant utilizing cogeneration and installing individual boilers in each of 35 buildings were found to be equally attractive economically (III.5.2.11), the greater flexibility of the latter was preferable. Only if other factors determined that a central power plant is the preferred option, based on site's internal needs and not external market demand, would cogeneration be attractive. Though in the late 1980s Fernald was ranked eighth among DCAM tracked sites statewide, and DMR's facility at Dever even higher, cogeneration has been introduced at neither.

If a central plant system were to remain in use, and serves non-DMR users, staff indicate that separate metering of steam usage by buildings occupied by non DMR users is possible. The estimated cost is \$7,000 per building.

### Electricity

According to the *Utilities Master Plan* and interviews with personnel, electricity is delivered to Fernald by a system configured as follows (I.3.3.1): 2 Boston Edison Company lines (13.8 KV or 13,800 V) serve DMR's main switchgear (15 KV) in Fernald's main substation, located northeast of the Power Plant (026); one is standby safety feature, automatically activated if the active line experiences loss of voltage. Primary metering is in this substation. From this electric building are 6 feeder breakers, as shown in **Table 6**.

Though there are no meters by specific user now, it is not unfeasible to install a meter for a particular user. Currently, users are not directly charged for electric use. UMass Medical is seeking proposals to bring in separate electric service.

While functioning adequately, the electrical system was found in the *Utilities Master Plan* to need immediate maintenance. A systems testing program and maintenance plan were recommended to minimize system shutdown and future

replacement costs. (I.3.Executive Summary\*), but the Plan's acknowledged lack of data on sizes and capacities would seem to indicate that this was not a priority (I.3.3.6). Staff indicated that any major work on the electric system could shut down service across the site.

**TABLE 6: ELECTRIC SYSTEM**

	Line	KV	Service
<b>Northeast Circuit</b>			
	Branch "A"	13.8	overhead/underground, alternate feeder to 2500 K.V.A. transformer
	Branch "B"	13.8	overhead/underground
<b>Northwest Circuit</b>			
	Branch "A"	13.8	overhead/underground
	Branch "B"	13.8	overhead/underground, alternate feeder to 2500 K.V.A. transformer
<b>Metro. State Hospital</b>		4.1	overhead feeder to Met. State Hospital and Shriver Center; feeder to Metropolitan State Hospital disconnected at Trapelo Road.
<b>Power Plant Feeder</b>		4.1	underground to Power Plant electric vault which divides into three feeders:
	Center Feeder	4.1	overhead/underground service
	East Feeder	4.1	overhead/underground service
	Cottage Feeder	4.1	overhead/underground service

Capital improvements recommended in the *Utilities Master Plan* include repair of 5 kV switchgear, distribution towers and emergency generators, a new 13.8 kV feeder to the Cottage Complex to conform to rest of Fernald system for standby protection and some deferred maintenance at a total estimated cost of \$120,800 (III.5.Executive Summary). Emergency power systems need repair and minor upgrade, and some residences that now lack emergency power require it (I.3.Executive Summary). Only 7 buildings have emergency generators: Thom (013), Seguin (035), Howe (041), Wallace (046), Farrell (048), Greene (050), and Shriver (125).

#### Air Conditioning

Thom (013), Farrell (048), Greene (050), Withington (102), and Cottages 3 through 13 (105-115) all have central air conditioning.

#### Domestic Water

Except for Baldwin (045), Trapelo (051), and Cardinal (052), all buildings at Fernald are supplied by a water system shared with UMass Medical Center, and until

\* Executive Summary of *Utilities Master Plan*, also cited hereafter in utility sections of this report.

recently also shared with the former Metropolitan State Hospital and Army Corps of Engineers (Murphy Hospital) sites. The water system is supplied by a 12-inch branch main connecting the MWRA-MDC main in Waverley Oaks Road to the Power Plant, from which water is pumped at night via a 12-inch main to the water tower located on Mackerel Hill on the Metropolitan State Hospital property. In daytime, pipe flow reverses direction, from the water tower back to Fernald. A 6-inch main from Waltham is in place for emergency backup. Capacity was adequate for 1995-projected “campus needs” (II.4.Executive Summary).

Leakage may be substantial. (I.3.1) The two Fernald pumps require manual (not automatic) operation at night, and there is no emergency generator backup should Power Plant power failure occur. The *Utilities Master Plan* recommended that since the pumps were old and unreliable they should be replaced with new controls for automatic and standby operation and for controlling the water level in the standpipe. A stand-alone station, that is, one that does not rely on the Power Plant, which may be abandoned, is estimated at a cost of \$200,000 (III.5.Executive Summary) which is included in the overall cost estimate for abandoning the central steam Power Plant as described in an earlier section.

Massachusetts Water Resources Authority has recently conducted a hydraulic study of Fernald’s water supply system and its relationship to the water tower. Apart from investigating the problem of water loss and the need for backflow prevention, MWRA has determined that the water tower is nearing the end of its useful life and is uncovered and therefore poses a threat of contamination, even though tests have indicated acceptable water quality. DCAM, in conjunction with MWRA, has proposed a capital project to install new pumps at Fernald, located near the Power Plant, to boost water pressure for fire suppression and replace the need for linkage to the Water tower, which will be removed within a time frame of perhaps a year. Part of the plan would include generator for backup with enough capacity to provide extra power to other needs the site. Fernald authorities generally support the plan.

#### Fire Protection, Fire Alarm System, and Fire Code

For fire protection Fernald relies primarily on hydrants and depends on the Power Plant water pump. There is no provision for a separate fire pump (I.3.1.1). Fire Protection and hydrant system is adequate (II.4.Executive Summary). Low flow and pressure problems may hamper fire-fighting efforts and was recommended for further study at an estimated cost of \$30,000 (III.5.Executive Summary). Further study regarding fire alarm code compliance was also recommended (II.4.Executive Summary).

There are pumps in Thom (013) and Greene (050). All residential buildings except Hillside (043) are sprinklered.



Sanitary and Storm Sewer

The *Utilities Master Plan* found that these systems were in good condition. The only reported problems were minor: the localized drainage (run-off) conditions, not tied to the overall drainage system (I.3.Executive Summary). They are adequate (II.4.Executive Summary) and no capital expenditure was recommended (III.5.Executive Summary)

Code issues: Massachusetts Building Code and ADA

The primary and controlling building code is 780 CMR, the Massachusetts Building Code, 6<sup>th</sup> Edition, 1999, which by reference includes a number of other regulatory standards of local and national origin, some with general application, and some more specific and technical. According to the *Utilities Master Plan*, areas of nonconformance or noncompliance include emergency lighting, smoke monitoring at Power Plant, fuel tanks and Withington sprinkler water pressure (I.3.Executive Summary). Alterations made subsequent to January 22, 1992, must comply with specific standards if appropriate, of the Americans with Disabilities Act (ADA) as well as 521 CMR Architectural Access Board. Construction preceding that date must be corrected if “readily achievable” to make “reasonable accommodations” for employees with disabilities. ADA compliance is uneven across Fernald; refer to **Appendix 1**.

Safety concerns

Other, non-Code, concerns are the integrity of the steel towers, emergency power for boiler operations and for water pumping operations, and periodic maintenance and inspection of State Hospital standpipe (I.3.Executive Summary).

### 3.1. Tenant Occupancy

DMR is of course the prime tenant of the site. Third-party tenants also occupy space, typically on a year to year basis under a standard license to occupy State-owned real property with DMR as Licensor. DMR typically provides such tenants heat, water and electricity. Among these, the major tenant is UMass Medical Center. In this section, since they dominate in the utilization of buildings, the general activities of DMR and UMass Medical Center will be described in much more detail than the other tenants. Please refer to **Map 8: Building Utilization**

### 3.2. Department of Mental Retardation (DMR)

According to DMR staff, DMR uses at Fernald are fourfold, to be discussed below: (1) Residential, (2) Day Program, (3) Administration, and (4) Support. In aggregate, almost half of DMR utilization is in the West campus, and only a quarter in East campus. The aggregate allocation of space by function is distributed as follows:

**TABLE 7: DMR AND DMR-AFFILIATE AGGREGATE ALLOCATION OF SPACE BY FUNCTION**

	<b>West</b>	<b>Center</b>	<b>East</b>	<b>Total</b>	<b>%</b>
Residential	276,529	39,031	34,078	349,638	44
Day Program	53,170	3,655	84,693	149,125	19
Day Program (Affil.)	20,064	23,607	0	36,064	4
Administration	0	26,656	53,035	79,691	10
Support	17,696	103,539	16,405	137,640	17
Support (Affiliate)	7,756	29,012	12,877	49,645	6
<b>Totals</b>	<b>375,215</b>	<b>225,500</b>	<b>201,088</b>	<b>801,803</b>	100
%	47	28	25	100	

#### Residential

As a Title 19 ICFMR Facility, Fernald currently cares for 295 resident clients, and DMR staff expect the population, absent a planned increase in client population, to remain at that level (200 to 300). These clients live in 18 out of 25 residential buildings (Hillside, Farrell, Greene Unit, Cottage # 3-13, and Malone ICF # 21-24). Their current aggregate population of 295 is 24 less than their aggregate maximum capacity per Medicaid. These are predominantly located in the West campus. Of the other 7 residential buildings, 4 are currently vacant or substantially underutilized (Warren, Seguin, Dolan, Wallace) and 3 buildings are currently occupied by third party tenants (South Nurses, Tarbell, and MacDougall). Withington is the only formerly residential buildings (capacity of 54) whose “highest potential use” classification is not residential. The 3 tenant occupied buildings and 4 vacant residential buildings are in good

condition. Of the 18 client occupied buildings, 7 are in good condition (Hillside, Farrell, Greene Unit, Malone ICF 21-24) are in good condition, whereas the Cottages (# 3-13) are in fair condition.

Currently 64% of clients are housed in highly institutional buildings, Greene (050) and Farrell (048). Greene houses the disabled, intensive care population, and Farrell, the younger, more behaviorally challenged population. In the Cottage Complex, the population is more independent living in established groups of up to sixteen clients, with these exceptions: Cottage 3 is for behaviorally challenged clients; Cottage 11 is a clinical unit for intensive, subacute hospitalization (2 beds permanent, 6 short-term); and Cottages 12 and 13 are for a more aged population. Finally, the Malone units, located in a secluded corner of the site, house the most independent clients, some of whom do their own cooking at this time.

Nursing staff is divided into three groups, each responsible for two residential clusters. Residential care staff is divided into 6 clusters, each responsible for 45-55 clients, and organized by a composite or matrix of residential and program groups, to perpetuate inter-client and staff-client relationships. Medically intensive care facilities are staffed 24/7. Residential staff feed, do clothing (non linen) laundry, physical care, and programmed activities.

Rounded to 300 clients, the existing client population is serviced by 2,672 gsf per client, which is distributed across uses as shown in **Table 8**. Comparing these amounts to standards, either DMR or national, is outside the scope of this study.

**TABLE 8: GROSS SQUARE FEET OF DMR USED SPACE PER CLIENT BY  
USE FOR A 300-CLIENT POPULATION**

	<b>gsf</b>	<b>gsf/client</b>	<b>%</b>
Residential	349,638	1,165	44
Day Program	149,125	497	19
Day Program (Affiliate)	36,064	120	4
Administration	79,691	266	10
Support	137,640	459	17
Support (Affiliate)	49,645	165	6
<b>Total</b>	<b>801,803</b>	<b>2,672 (rounded)</b>	<b>100</b>

Fernald is now an end-point facility for clients in need of specific and intensive care, at the rare of 10-12 admissions per year. DMR staff anticipate that the client population is unlikely to exceed the current level of 296 clients (stabilize at 200-300 clients).

Also on site is the 29-bed Marquart Skilled Nursing Care Facility located in Thom (013), here classified as residential, under DMR but independent of Fernald. Lastly,

Wallace (046) houses a respite program managed by DMR Region 6 for non-resident clients for short-term residence during periods between community care placement.

#### Day Programs

Currently 46% of Day Program space is located in East campus, and 80% of clients live in West campus (and another 10% in Center campus). Staff members have indicated that most clients participate in Day Programs near their place of residence. Since most clients live in the West campus, the Day Program space in the East campus poses logistical costs and challenges, and may therefore be used less intensively or efficiently than Day Program space in the West campus, although use efficiency was not investigated. However, ongoing relationships and commitments keep the East Campus based Day Program space in use during a period of transition and attrition. Keeping program locations flexible has helped maintain important client relationships and encourage, for each client, the least restrictive environment that is appropriate.

The proximity of cottages to peripheral activity buildings (Training/Activities Center, Brookside, Woodside, Site 5) in the West campus reflects recent planning methodology. Currently programs are flexible, to avoid pigeonholing clients. As the population ages, the line between program and treatment blurs. All Day Programs operated by Affiliates are located in the West campus. Activities include paper shredding and crayon making (Site 7) and sorting recyclables (East Dowling), programs run by FLOW, Inc., the Fernald League Affiliate. The Fernald League has offices in Withington (102). The Greenhouse programs are also used by community-based (non-resident) clients.

#### Administration

At Fernald, site and Region 6 administrative functions have become much more integrated, in some functional areas, than elsewhere in the DMR system. Region 6 administrative staff (human resources, payroll, records, legal) occupies space in Administration Building (047), whereas Region 6 operation staff (procurement) occupies offices in North (002) and North Nurses (007).

There is no Central Office presence on site as yet. However, **the relocation of DMR Central Offices to Fernald at the expiration of a five-year-lease on downtown Boston office space can be considered a given.** The requirement, currently estimated to be 50,000 gsf, and currently assumed to fit most readily into Kelly in the East campus, could also be accommodated within a five year time frame on other sites on campus.

#### Support

Support functions are overwhelmingly (70%) located in the Center campus area. They include food preparation, laundry, maintenance, repair, and storage. Specialized

therapeutic equipment repair and maintenance occurs here as well. The services provided by third-party tenant affiliates generally seem to have extra capacity. Medical Management maintains a small pharmacy, and Liberty Healthcare Inc. maintains a small clinic facility, both in Thom (013). Food preparation is run by Morrison Healthcare, Inc., in Pearlman (400). Morrison under a 5-year contract provides food primarily for DMR's Region 6, as well as McLean, a local institution. The diet and texture menu is state-of-the-art. Meals are distributed from this centralized facility across the campus for rethermalization at destination. The facility may have extra capacity. Other functions include:

- Housekeeping (cleaning) services are provided by UNICO, a tenant affiliate located in Withington, UNICO under a 3 to 5 year contract.
- Linen and towel laundry services are contracted offsite. Pickup and drop off is located at Therapeutic Equipment Center (022).
- Day Care for staff dependents (and others) is provided by Waverley Oaks Child Development in the Baldwin (045) and Trapelo (051) cottages. DMR provides space, utilities and maintenance in exchange for reduced rates for DMR staff
- Specialized dental care for clients has long been provided by Tufts Dental Care, located in Withington (102). Offsite dental patients are also accepted.
- Volunteers who support the Fernald mission have offices in Cardinal (052).

### **3.3. University of Massachusetts Medical Center**

This section was developed from interviews with staff. The University of Massachusetts Medical Center ("UMass Medical"), 55 Lake Avenue North, Worcester MA 01655, houses operations in three facilities at Fernald, centered in Shriver Center (125) and the Community Evaluation and Research Center ("CERC") (103), but also including space in Withington (102), together comprising the Eunice Kennedy Shriver Center for Mental Retardation. Originally a non-profit research foundation studying mental retardation, the Eunice Kennedy Shriver Center was finally merged with UMass Medical July 1, 2001.

UMass Medical is experiencing rapid growth across the state. In the last four years, it has expanded by 200,000 SF, typically in blocks of 30,000 to 50,000 SF. The nearest UMass Medical campus is in Worcester. Further growth in greater Boston at such sites as Fernald is consistent with its mission.

Existing Programs at Fernald are divided between approximately (1) 32,000 SF of dry laboratory/office space, for psychological research, in CERC and Withington, and (2) 48,000 SF of wet lab/office space, for biomedical research projects, in Shriver. UMass Medical runs several programs related to mental retardation and developmental disabilities and anticipates adding others as opportunities arise. The existing programs to be retained include:



- LED, a Federal-grant supported program for training specialists in MR and DD healthcare professions such as physical therapists and audiologists.
- New England Index, database and referral service for centralized health information (e.g., MR or DD care providers) for municipalities, agencies and citizens.
- CEDER (Center for Developmental Disabilities Evaluation and Research), providing DMR with assessments of quality of care.

Although UMass Medical does not collaborate with or provide services to DMR other than CEDER, both entities recognize that they may well do so in the future, and accordingly entered into an interagency service agreement to that effect in 2001. The existing facilities are as shown in **Table 9**.

**TABLE 9: EXISTING FACILITIES OF UNIVERSITY OF MASSACHUSETTS MEDICAL CENTER**

<b>Building</b>		<b>Date constructed</b>
Shriver Center (125)		1973
<b>Level</b>	<b>Gsf</b>	<b>Use</b>
Level 1	10,250	Offices, lobby/ reception/ waiting, wet labs, dark room, mail room, shared equipment support
Level 2	10,850	Offices, conference room, library, dark room, wet labs, shared equipment support, general storage
Level 3	10,850	Offices, wet labs, dark room, shared equipment support, general storage
Level 4	6,557	Animal cage rooms, cage washing, wet labs, offices, general storage
<b>Subtotal</b>	<b>48,757</b>	
CERC (103)		1969
<b>Level</b>	<b>Gsf</b>	<b>Use</b>
Basement	11,554	Offices, dry labs, general storage, MEP equipment
Level 1	20,815	Offices, dry labs, conference rooms
<b>Subtotal</b>	<b>32, 369</b>	
Withington (102)		1969
<b>Level</b>	<b>Gsf</b>	<b>Use</b>
Level 3	7,000	Offices, dry lab
<b>Subtotal</b>	<b>7,000</b>	
Howe (041)		1933
<b>Level</b>	<b>Gsf</b>	<b>Use</b>
Level 2	8,500	Storage
<b>Subtotal</b>	<b>8,500</b>	
<b>TOTAL (GSF)</b>	<b>96,526</b>	

Over the next three years, which is an interim period in planning integration of the Fernald operations with other UMass Medical operations, UMass Medical expects to increase its operating budget from the current level of \$10 million to \$15 million, without needing to expand beyond its current space. The Medical Genetics Program are being phased out, and the Mass Spectrometer Program is being relocated to the Worcester campus, freeing up space in the short term for new or expanded programs.

The facilities are now approximately 30 years old and some systems are in need of upgrading and repair. The *Building Evaluation Study* prepared for Shriver Center for Mental Retardation, Inc. by Hoskins Scott & Partners, Inc. (May 2001), reviews options for Shriver and CERC (but not Withington) ranging from code and equipment changes necessary to operate the facility at code for 3-5 years without meeting current planning standards, to a total replacement facility on the site. The option recommended by that report for further study keeps the existing programs and functions in place but recommends replacement, modification or correction to building equipment, systems and distribution.

Recommended projects for Shriver and CERC are either immediate, short term and deferrable long term projects. Specific projects estimated to cost in excess of \$100,000 include repointing/caulking exterior and a building evaluation study (immediate), new electrical service from Trapelo Road and roof exhaust fans (short term), and (deferrable long-term) electric distribution and emergency power, HVAC upgrades, and correction of code violations (ADA accessible toilets, lab water separated from potable water per plumbing code, AAALAC accredited lab animal air handling backup system, minor asbestos removal).

The condition of Withington is assumed to be generally good, except for the rooftop units, which need replacement, according to DMR's most recent inventory. The building is in active use with a variety of users. Withington also houses DMR offices, Fernald League, UNICO (housekeeping service), and Tufts University dental offices.

Once existing space now occupied by UMass Medical is fully allocated, additional space needs are likely to be as follows:

In the short term, within three to five years

- Dry Lab Space: equivalent to office space, to replace existing dry-lab space in Shriver basement and for net growth, totaling up to 10,000 SF. The most logical contiguous space would be in Withington.
- Wet Lab Space: minimal additional requirement; if any needed, preference is to build new, not renovate older building.

In the mid term, within five to ten years

- Office and Data Center Space for Commonwealth Medicine program, providing health services and research support to other clients of state agencies in conjunction with the New England Index (see above), requiring 10,000 SF minimum.
- Translational Research Space, a hybrid of wet-lab and dry-lab space, is more suitable for some programs than either purely wet or purely dry lab or purely office space. Example: the Audiology lab, in CERC, could incorporate wet-lab cell research with dry-lab testing of subjects. Total requirement is 5,000 GSF.
- Storage Space, for archived academic and research records consolidated from other UMass Medical facilities, or even other state agencies, requiring space with sufficient loading capacity totaling 20,000 to 40,000 GSF

In the long term, after ten years, the Fernald location becomes attractive for a number of possibilities:

- Office space up to 100,000 GSF for larger Commonwealth Medicine presence (treatment, research, training of specialists)
- Graduate School of Public Health east campus analogous to the campus in Amherst

As UMass Medical expands, and as DMR makes buildings or sites available, the most desirable locations at Fernald for UMass Medical are those closest to current operations. Building attractiveness is increased if condition is good or recently renovated and if footprint is at least 10,000 GSF, although footprints as small as 5,000 SF in a desirable location with possibility for an addition are worthy of consideration. For new construction on an available site, the preferred footprint is 10,000 to 20,000 gsf, in a 2:1 ratio for double loading corridors, minimizing circulation/common area space. In all cases, current electrical infrastructure could not support the high-tech teledata standards for modern scientific/medical dry-lab research and would have to be upgraded. Likewise, in all cases current HVAC infrastructure would need to be upgraded to meet standards for modern scientific/medical dry-lab research.

**3.4. DMR-Affiliated Tenants and Other Tenants**

Of the 283,900 gsf of third-party tenant space, less than a third (31%) supports the DMR mission. Those tenants who provide services in support of the DMR mission have been described briefly; information is per DMR staff. A summary of tenants in order of approximate gross square footage (gsf) is shown in **Table 10**.

**TABLE 10: DMR-AFFILIATED TENANTS (DESCENDING ORDER BY GSF)**

<b>Tenant</b>	<b>Building</b>	<b>Level</b>	<b>gsf</b>	<b>Purpose</b>
<i>FLOW, Inc</i>	Site 7 (700)	entire	20,064	rehabilitative workshop
	East Dowling (042)	basement, 1 <sup>st</sup>	16,000	can redemption
	Old Greenhse (120)	entire	3,655	rehabilitative workshop
	<b>Subtotal</b>		<b>39,719</b>	
<i>Morrison Healthcare</i>	Pearlman (400)	entire	27,712	food service
	<b>Subtotal</b>		<b>67,431</b>	
<i>Waverley Oaks Child Development</i>	Baldwin (045)	entire	3,402	child care
	Trapelo (051)	entire	2,877	child care
	<b>Subtotal</b>		<b>6,279</b>	
<i>Walter E. Fernald Association</i>	Cardinal (052)	main	4,354	office for volunteers
<i>Fernald League</i>	Withington (102)	basement	10,000	office
<i>UNICO</i>	Withington (102)	basement	<i>included</i>	housekeeping service
<i>Tufts University</i>	Withington (102)	basement	<i>in above</i>	dental offices for clients
<i>Medical Management Inc.</i>	Thom (013)	main	800	pharmacy
<i>Liberty Healthcare Inc.</i>	Thom (013)	basement	500	clinic space
<b>Total DMR-affiliated Tenants</b>			<b>89,364 gsf</b>	

Two thirds of third-party tenant space is for tenants who do not now support DMR operations, “other tenants”. Besides UMass Medical described above, several other tenants occupy significant surplus space on site, that is, at no opportunity cost to the DMR mission. These are the Middlesex Human Service Agency, Inc., which runs a shelter in two locations on site, Bentley College, which uses relatively storage space, Department of Education and Middlesex District Attorney, both of which maintains offices in the East campus independent of the DMR mission. Lastly the State Division of Weights and Measures has space in the Center campus, and AFSCME has a small office in East Dowling. Information was supplied by DMR staff. These are shown in **Table 11**.

**TABLE 11: OTHER TENANTS (DESCENDING ORDER BY GSF)**

Tenant	Building	Level	gsf	Purpose
UMass Medical School	Shriver (125)	entire	48,757	wet lab, office
	CERC (103)	entire	32,369	dry lab, office
	Withington (102)	2 <sup>nd</sup> (half)	7,000	office
	Howe (041)	2 <sup>nd</sup>	<u>8,500</u>	storage
	<b>Subtotal</b>		<b>96,626</b>	
Middlesex Human Service Agency, Inc.	Tarbell (032)	entire	38,924	residential
	MacDougall (036)	entire	<u>23,376</u>	residential
	<b>Subtotal</b>		<b>62,300</b>	
Bentley College	Central Storeroom (016)	basement	11,970	storage
Dept. of Education (DOE)	East Nurses (009)	entire	8,640	office
Middlesex District Attorney	South Nurses (012)	1 <sup>st</sup> (half)	8,500	storage
Division of Standards, Weights & Measures	Lavers (023)	main (half)	6,000	office
AFSCME Local 402	East Dowling (042)	2 <sup>nd</sup>	<u>500</u>	meeting and office
<b>Subtotal Other Tenants</b>			<b>194,536</b>	

**TOTAL ALL TENANTS****283,900 gsf**

Noteworthy in the recent evolution of space utilization at Fernald over the past twenty years of DMR downsizing has been **the fragmentation of building use** in the East and Center campus area, from Withington (102) and North (002) on the northeast, to Howe (041) and East Dowling (042) in west Center to the Storeroom (016) and Lavers (023) in the south East and Center campus areas. The pattern is clearly delineated by the cross-hatched buildings on **Map 8: Building Utilization**.



#### **4.1. Two kinds of Context**

This section discusses off-site “players” in future decision making for Fernald. As such it includes both surrounding properties and interested agencies as context for understanding the site. First, the properties surrounding Fernald are described, in clockwise order. Particularly important to an understanding of the context is the concentration of undeveloped land and dedicated open space land in the area as shown in **Map 9: Neighboring Large Parcels** and **Table 12: Open Space Resources Surrounding Fernald Developmental Center**.

#### **4.2. Phineas Lawrence School**

The Lawrence School on Trapelo Road, occupies approximately a 3.5-acre lot which is mostly undeveloped and surrounded on three sides by Fernald land. The City-owned property is used for special programs, and the undeveloped southern half of the parcel, with minimal slope, is a potential Field of Dreams active recreational site for the City.

#### **4.3. Federal Records Center and Former Army of Corps. of Engineers**

The federally owned site of 76.68 acres abutting Fernald to the west was taken from the City of Waltham during World War Two for a military hospital, and evolved later into an Army Corps of Engineers facility. The L-shaped parcel occupies a plateau developed with 1-story structures and extensive road system and clear of tree cover except at the periphery, especially along the Fernald property line. It has frontage on Trapelo Road and Forest Street and abuts a residential development at the intersection of those roads, City of Waltham conservation land to the south, and Fernald to the east. The former State Hospital faces the site across Trapelo Road to the north.

Several decades ago, the Federal Government constructed the Federal Records Center, 380 Trapelo Road, at the foot of the plateau, in the northeast corner of the site. While the Federal Records Center will remain as an active facility of the National Archives and Record Administration on a 12-acre site, the General Services Administration is currently disposing of the former Army Corps of Engineers (ACE) site, also known as the Frederick C. Murphy Center or Murphy Hospital, which occupies the rest of the site, approximately 64 acres. Scheduled to be completed by October 2001, the disposition that was initiated in 1999 will transfer separate portions to three entities, the City of Waltham, Bentley College and New Jewish High School. All buildings in this area will be razed, but only the City received Federal funding for cleanup.

The City of Waltham is acquiring 25 acres in the northernmost portion of the site, west of the Federal Records center. With minimal frontage on Trapelo Road, the site

abuts Bentley College and the New Jewish High School to the south, and a residential neighborhood to the west. The City intends to use the site for recreational facilities and will construct 4 multipurpose fields, 2 softball fields, a field house and parking area, and restore buffer areas to passive recreation space. The multipurpose fields can be used for soccer, football, lacrosse and field hockey. These facilities meet community needs identified in the *Waltham Open Space and Recreation Plan—2000 Update*, prepared by the Waltham Planning Department. As part of the deal, Bentley and the New Jewish High School are contributing to the construction cost, making up in some measure for the sense in Waltham that the entire surplus site should have gone back to Waltham from which it was taken by eminent domain during World War Two. The site is zoned CR.

Bentley College is acquiring a 19-acre parcel with shared cul-de-sac access from Forest Street but no direct frontage on Forest Street. The main Bentley College campus occupies land on the corner of Forest Street and Beaver Street, directly south of the parcel but not contiguous to it. The parcel abuts Fernald to the east and south, the Federal Records Center and the City of Waltham to the north, and the New Jewish High School to the west, and City of Waltham open space to the south. It is to be used, at least initially, for 4 playing fields, an indoor athletic facility, and a parking lot. Bentley College has experienced rapid growth in recent years, most notably acquiring the former DeVincent Farms, across Beaver Street southeast of the main campus, for residential and athletic facilities and parking. The College may be contemplating expansion of its existing pre-law programs to complement its business-oriented curriculum and is participating in a consortium of regional colleges pooling resources to provide shared graduate student housing

New Jewish High School, affiliated with the Combined Jewish Philanthropies will occupy a 19-acre site with Forest Street frontage and with shared cul-de-sac access off Forest Street. The site abuts Bentley College to the east, and the City of Waltham to the north and south, but does not abut Fernald. The High School will occupy an 85,000 square foot building with gym and will construct three athletic fields.

#### **4.4. Forest Street Park**

The City of Waltham owns a 14.99-acre parcel fronting on Forest Street that abuts Fernald to the east and the Girl Scouts to the south. While not conservation/recreation land per se, the site is zoned CR and is in its natural state, consisting of wetlands at the headwaters of Clematis Brook. This wetland habitat is protected under state law, since a species of special concern, painted turtles, has been found here. It is zoned CR.

#### **4.5. Girl Scouts**

The Cedar Hill Outdoor Program Center of the Patriots Trail Council of the Girl Scouts of America occupies a 75.5-acre parcel abutting Fernald to the north, Lawrence Meadows to the east, Bentley College and City of Waltham's Waltham Woods to the

south, where Cedar Hill offers fine views to the south. An informal road network and extensive handicapped-accessible trail network links several historic structures (the 1730 Isaac Mixer house, a Girl Scout Museum and the Country Store), recreational facilities (pools), nature center, a spring-fed pond, and camp sites that take advantage of this wooded site of diverse plant and tree species drained by Clematis Brook. Cedar Hill is fenced for the safety of the children camping there, but a hiker can trek along the border without entering the Girl Scout camp. The organization has owned the site since 1923. It is zoned CR.

#### **4.6. Lawrence Meadows**

The University of Massachusetts owns this 35-acre parcel at the intersection of Beaver Street and Waverley Oaks Road. The parcel abuts Fernald to the north and the Girl Scouts to the west. Like the Girl Scouts property next door and Waltham Woods nearby, this property was a bequest of Cornelia Warren. Half the parcel is upland, with several structures predating the bequest, forested terrain, and a sloping field; the other half is wetland meadow. The wetland portion is protected under state wetlands protection law. The site is zoned CR.

The combined acreage of the Girl Scouts, Forest Street Park, Waltham Woods and Lawrence Meadows comprise 137 acres of contiguous open space currently in a predominantly natural state. Across Beaver Street south of the Girls Scouts and Lawrence Meadows are an additional 33 acres of open space, the 28.18-acre University of Massachusetts Field Station, also used for community gardens, and the 4.84 Cornelia Warren Field, an athletic field named for the benefactor who left many of the parcels discussed above to their current owners.

#### **4.7. Former Metropolitan State Hospital**

Fernald and the 339-acre former Metropolitan State Hospital site share approximately 900 feet of frontage across from each other on Trapelo Road, opposite the Cottage complex. Straddling three communities, Waltham, Lexington, Belmont, the former State Hospital site is being disposed of following simultaneous negotiations with them, the transfers to be concluded later this year, as directed by DCAM. This is the result of many years of study and active citizen participation in the three communities. The outcome is an impressive win for conservation within the greater Boston area in that so much of this site has remained in pristine natural condition throughout decades of intense suburbanization, and has avoided the parcel-wide development of other institutional parcels in the area such as the GSA site and Fernald. Protected are a variety of habitats: cattail marshes, red maple swamps, mature oak-hickory forests, vernal pools, new forests, and open meadows.

MDC will protect 300 acres, primarily by acquiring in fee simple a contiguous 250 acre reservation (for now known as the State Hospital Reservation) spread over the three communities, but also by acquiring a conservation restriction on the golf course

owned by Waltham for an additional 49.82 acres, protecting some 4,000 feet along Trapelo Road, including the 900 feet opposite Fernald. Adding to the MDC reservation approximately 100 acres of abutting conservation land in Belmont (Rock Meadow, 70.2 acres) and Lexington, the densely developed region now has a 400-acre nature reserve.

The Waltham portion (222 acres) of the former hospital property will be divided between (1) MDC protected reservation land (156 acres) with trails for hiking and skiing west of Mackerel Hill and linking to Belmont, Lexington and through informal use of Fernald to city conservation lands on Beaver and Forest Street, (2) a municipal 9-hole golf course (49.82 acres) along Trapelo Road and opposite Fernald, over which MDC will hold a conservation restriction for added protection (Waltham has no golf course), (3) a golf course clubhouse on the site of an existing structure (1.33 acres), (4) communal care retirement community housing (8.38 acres) as described for Lexington, and (5) a 6.36 acre parcel east of the water tower on Mackerel Hill occupied by the 50,000 SF 4-story Gaebler facility for troubled youths which closed in 1995-6. MDC hopes to remove the standpipe on Mackerel Hill, which according to MWRA is no longer needed for local water supply.

The Gaebler site has been considered for the proposed Middlesex County Courthouse to be located somewhere in Waltham. Current thinking is that a site of approximately 10-12 acres is needed for a 250,000 gsf building and parking for 600-700 cars. Therefore it now seems unlikely that the courthouse could be accommodated on the Gaebler parcel.

The Lexington portion (84.20 acres) will comprise (1) MDC protected reservation land (60.55 acres) linking to town conservation land with existing trails into the Waltham and Belmont portions of the total, and (2) continuing care retirement community housing (23.65 acres), 300-500 units divided between the Lexington and Waltham portions of the site to be constructed within the aggregate “footprint” of the existing buildings. These units will be approximately 80% market rate, 20% affordable. Access from Trapelo Road will remain as is, with a deliberately convoluted circulation system (an MDC Parkway) routed through an expanded parking lot well off Trapelo Road to discourage through driving, the result of the City of Waltham’s expressed concern about the traffic congestion on Trapelo Road, as is the reduction in the scale of the development from allowable density.

The Belmont portion (32.74 acres) will comprise, apart from a sliver of land for development (0.18 acres), MDC protected reservation land (32.56 acres) abutting Belmont Rock Meadow conservation land and linking to MDC’s Beaver Brook Reservation, Massachusetts Audubon’s Habitat environmental education property, recently protected 125-acre portion of McLean Hospital, and Lexington conservation land. Trails already link the three towns’ portions of the total.

#### 4.8 Other large properties in area

Several properties within half a mile of Fernald play a key contextual role.

##### Beaver Brook Reservation

The 59-acre reservation straddling Beaver Brook is one of the oldest in the Metropolitan Park District, dating from 1893. It provides ponds, pools, trails, play facilities and protects remnants of the original grove of white oaks once considered the finest in the region.

##### McLean Hospital

McLean Hospital, now owned by Partners Healthcare, occupies a 240-acre site in Belmont, abutting Trapelo Road approximately one mile east of Fernald. Somewhat analogously to the public-sector disposition process in play elsewhere in the vicinity of Fernald, this privately owned site is to be divided between a senior lifecare community (486 units), attached cluster townhouses (122 units), an R&D center (200,000 SF), and modest growth of the existing hospital (50,000 SF added for a total of 668,000 SF), leveraging historic preservation bonuses and the preservation of open space on the perimeter, divided between public open space (106.70 acres), private open space (18 acres), and a municipal cemetery (13.91 acres). Like Fernald, the site was originally developed in the nineteenth century as a campus of architecturally distinguished cottages set in an arboretum-like grove on high ground.

##### Former Olympus Specialty Hospital

Another institutional site facing possible reuse in the short term is the 36-acre former Olympus Specialty Hospital site at 775 Trapelo Road, Waltham, which was acquired by HCRI Holdings Trust in September 2000 from Westborough, MA based Olympus Healthcare Group, which had acquired the former County Hospital site around 1995 and subsequently went bankrupt. This site (25 acres in Waltham and 11 in Lexington) is one and one half miles west of the Fernald main entrance. The parcel includes a variety of woods and meadows with hiking paths, and connects to wetlands being acquired by MDC behind Falzone Field. A Chapter 40B (affordable) housing project has been proposed for portions of the site that may affect on-site historic farmhouse whose preservation is of local concern. It is zoned CR.

##### Massachusetts Audubon/Habitat and Highland Farm

North of McLean Hospital in Belmont, across Concord Road, lie the adjoining properties totaling 68.30 acres. Devoted to environmental education, the properties are connected to each other by a trail system, and link to the rest of the potential regional greenway through residential neighborhoods. Generally this quadrant of Belmont has the largest institutional and open space presence in the town, also including the Belmont Country Club and Belmont Hill School.



**TABLE 12: OPEN SPACE RESOURCES SURROUNDING FERNALD  
DEVELOPMENTAL CENTER**

<b>SITE</b>	<b>SIZE (acres)</b>	<b>OWNER</b>	<b>PROTECTION</b>	<b>NOTES</b>
<b>State Hospital Reservation</b>	249.00	MDC	State Conservation/ Recreation	Pending, trails, Mackerel Hill, former State Hospital
<b>Beaver Brook Reservation</b>	59.00	MDC	State Conservation/ Recreation	Straddles Trapelo Road, trails, ponds, play facilities
<b>Waltham Municipal Golf Course</b>	49.82	Waltham	MDC Conservation Restriction	Pending, 900 ft opposite site, former State Hospital
<b>Else Turner Field</b>	6.0	Waltham	Zoned CR	Women's Softball, abuts above, 421 Trapelo Road
<b>Waltham athletic fields parcel</b>	25.00	Waltham	Zoned CR	Pending, includes 8-acre passive rec., former Fed. ACE site
<b>Forest Street Park</b>	14.99	Waltham	Zoned CR	Abuts site; Parks & Recreation, not conservation land per se
<b>Patriot Trail Girl Scouts</b>	75.50	Girl Scouts	Zoned CR	Abuts site; Parks & Recreation, not conservation land per se
<b>Waltham Woods</b>	11.80	Waltham	Zoned CR	Beaver St between Bentley and Girl Scouts, not deed restricted
<b>Lawrence Meadows</b>	35.00	UMass	Zoned CR; part wetland	Abuts site; half upland
<b>UMass Field Station</b>	28.18	UMass	Zoned CR	South of Beaver St across from Girl Scouts, community gardens
<b>Cornelia Warren Field</b>	4.84	Waltham	Zoned CR	South of beaver Street across from Lawrence Meadows; athletic field
<b>Concord Avenue conservation land</b>	30.00 approx.	Belmont	Deed restriction	Abuts State Hosp. Res. and Rock Meadow, trail
<b>Rock Meadow</b>	70.20	Belmont	Deed Restriction	Abuts State Hosp. Res. and conservation land, trail
<b>McLean Hospital</b>	92.00	Belmont	Deed Restriction	Pending, trails, forest, cemetery
<b>McLean Hospital</b>	27.00	Partners Healthcare	Deed Restriction	Pending; trails, forest
<b>Habitat</b>	24.00	Mass. Audubon	None	Near McLean, abuts Highland, trails

<b>Highland Farm</b>	44.30	Mass. Audubon	None	Near McLean, abuts Habitat, trails
<b>Former Olympus Hospital</b>	54.04	HCRI Holdings	Zoned CR	Unprotected; historic site
<b>TOTAL</b>	<b>900.67</b>			

#### 4.9 Interested Agencies

Several state agencies and semipublic organizations will be involved in the future course of Fernald.

##### Metropolitan District Commission

Fernald lies well within the Metropolitan Park District. The MDC is the state agency whose mission is to acquire and protect important open space parcels of significance for passive recreational use or natural resource protection, and of historic or scenic value. It may also construct parkways, such as that designed for the State Hospital property. While the Department of Environmental Management (DEM) Forest and Parks Department has equivalent responsibilities outside the district, it does not acquire state parks or forests within the district. The DEM Greenway Program could complement MDC in the future. As noted in an earlier section, the MDC is actively acquiring a reservation on the site of the former State Hospital, across from Fernald. Although Beaver Brook Reservation per se has few expansion opportunities, the MDC recognizes that the Beaver Brook corridor is a critical link in the local system of contiguous open space, as well as an important tributary of the Charles River, focus of one of the major reservations in the MDC Parks system. Therefore MDC is augmenting protection of Beaver Brook by seeking to acquire conservation restrictions on developed residential lots along the west bank of Beaver Brook, north of Trapelo Road, and already has one in place. There is currently no open space protection activity south of Trapelo Road closer to Fernald.

##### MassDevelopment

Over the past twenty years, MassDevelopment (formerly Massachusetts Development Finance Agency or MDFA) has provided \$10 billion in financing and created nearly 100,000 jobs, most notably at Fort Devens. The organization, structured with a CEO and Board of Directors drawn from the private sector and government, uses a wide array of unique, specialized financial tools and real estate services to help businesses, institutions, and communities throughout Massachusetts. In addition to offering the economic development incentives of a quasi-public agency, MassDevelopment operates like an entrepreneurial company. Working closely with developers and private businesses, financial institutions and industry councils, state and federal government agencies, foundations and non-profit organizations, community and

civic leaders, community development corporations and local redevelopment authorities, and local public-private partnerships, MassDevelopment devises and implements creative strategies to achieve local economic growth. Potential involvement ranges from feasibility analysis to identifying funding sources, to project development and management. Tools and services fall into four core areas: Real Estate Services, Bond Financing, Economic Development Lending, Community Development & Technical Assistance, and. MassDevelopment is among the state's leading issuers of bonds, utilizing public and private sources to provide more than \$10 billion in tax-exempt bonds for more than 2,600 projects.

Using market, financial, demographic, engineering, environmental, and other relevant data, MassDevelopment conducts **Feasibility Analysis** to help communities identify worthwhile real estate development opportunities. Once a community prioritizes its development goals, MassDevelopment provides **Technical Development Services** to move development projects through engineering, design, consensus building, approvals, and construction. MassDevelopment can help with **Marketing, Leasing, and Sales** support from initial market positioning or targeting of tenants through final negotiation. Lastly, MassDevelopment offers Post-Construction Services to help communities identify and, in some cases, participate in the functions of an appropriate property management/ownership entity.

**Tax-exempt bond** financing provides manufacturers, non-profit organizations, long-term care facilities, and environmental enterprises with cost-effective financing for large-scale expenditures. Terms on these bonds are extremely flexible and interest rates are historically among the lowest available in the market. This financing, either Industrial Development or 501(c)(3) for non-profits, is appropriate for purchasing and/or renovating existing facilities such as at Fernald. Capital Financing 501 provides Massachusetts 501(c)(3) corporations with capital that can be borrowed and repaid as needed. For companies who no longer have access to tax-exempt bonds, **taxable bonds** offer flexibility in rates and terms for major industrial and commercial real-estate projects. **Equipment Lease/Purchase Program** provides manufacturers, non-profit institutions, and environmental enterprises with a low-cost alternative for financing \$300,000 or more in new equipment needs.

Among the Economic Develop Lending Programs relevant to Fernald in the near future are: **Business Loans**, for real estate acquisition, renovation, new construction, and inventory; **Equipment Loan Program** providing below-market-rate financing for new equipment purchases; **Techdollars**: Technology Equipment Financing for Non-Profits for technology equipment purchases and installation; **Permanent Financing** at the conclusion of a project's development phase and upon achievement of substantial occupancy; **Industrial Park Financing** for the development of land, including roadways and infrastructure for new business facilities; **Development Loans** to fill gaps in development costs; **Special Project Fund** for unique investments that can revitalize a community through, for example, reuse of vacant buildings; **Brownfields Redevelopment Fund** for remediation of contaminated sites being redeveloped;

**Emerging Technology Loan**, or co-lending agreement with another lending institution, for the financing of technology-based companies; and several **loan guarantee programs**.

Massachusetts Department of Housing and Community Development (DHCD)

DHCD is a state level agency concerned with local issues and community development, making available state and federal funds and technical assistance to strengthen communities and help them plan new developments, encourage economic development, revitalize older areas, improve local government management, build and manage public housing, stimulate affordable housing through the private sector and respond to the needs of low-income people. DHCD administers the state's public housing programs, coordinates its anti-poverty efforts, allocates federal community development programs and provides a variety of services to local government officials.

The **Division of Neighborhood Services** is responsible for planning, implementing and monitoring the delivery of federal and state anti-poverty, neighborhood economic development, homelessness prevention, fuel assistance and weatherization programs across the Commonwealth, working in cooperation with the federal government, other state agencies, local and regional non-profits and the private sector.

The **Division of Municipal Development** is involved with infrastructure development and improvement, municipal government capacity building, land use planning, local economic development, housing rehabilitation and social services. Municipal Development also provides direct consulting, information and training services programs to all local governments.

The **Division of Public Housing and Rental Assistance** has administrative oversight of all state-aided public and private housing programs which address the housing needs of low- and moderate-income families, the elderly and persons with disabilities. The Division is comprised of: the Bureau of Federal Rental Assistance, which cover rental subsidies, upgrading of substandard rental housing and a wide spectrum of support services tied to a rental subsidy, and the Bureau of Massachusetts Rental Assistance, which provides rental subsidies in a flexible way that is more responsive to client choices; the Bureau of Housing Management which oversees the operation and management of 254 local housing authorities and their 49,368 public housing units; the Bureau of Housing Finance which has fiscal oversight of the financial records and capital expenditures of local housing authorities; and the Bureau of Housing Development and Construction which has responsibilities for the design, development and construction of new public housing units and the modernization of existing ones.

The **Division of Private Housing** provides affordable homeownership and rental opportunities in the private sector. Among the programs that are administered by the

division are those that fund and encourage the development of mixed-income projects sponsored by community housing partnerships and developers, that make housing overstock and foreclosure properties available to first time homebuyers, and that provide advantageous home financing terms for low- and moderate-income families.

#### City of Waltham

Fernald is currently zoned CR, “conservation/recreation” as are other large institutional parcels in this quadrant of the City. For more detail see **Table 12: Open Space Resources Surrounding Fernald Developmental Center**, above. The Department recently completed *Waltham Open Space And Recreation Plan—2000 Update*. The City is committed to taking advantage of any opportunities to create open space and develop recreational opportunities on what was once institutional land, as reflected in Goal 2, “Protect, acquire and conserve Waltham’s open space” and more specifically, Objective 3: “Plan for the protection of State and Federal owned open spaces, as opportunities become available” and Goal 6, “Acquire, develop and protect open spaces during the disposition process of Federal and State property.”

Two objectives are relevant: Objective 1, “Maintain conservation/recreation zoning for land acquired through disposition process,” and Objective 2, “Draft legislation to grant the City of Waltham first priority and right of first refusal in the disposition of federal and state properties.” As background, it should be noted that the federal disposition process of the Army Corps of Engineers (Murphy Hospital) site, originally open space which had been bequeathed to the City before World War Two and which had been taken by eminent domain during wartime for a war hospital, nevertheless did not grant the City the right of first refusal in the disposition process.

The projected growth of City population indicates a growing need for open space and recreational facilities. Regional demand for large open space access is an additional demand. Waltham has a shortage of field space (baseball, softball, soccer, football) for its own municipal needs. Although Fernald is *not* identified as a “special landscape feature” survey results collected as part of the *Plan* process indicate strong support for open space acquisition for activities such as fitness walking, cross country skiing, hiking, bicycle riding, and focusing on such acquisition priorities as “Augment open space at Fernald.”

The Greater Waltham Association for Retarded Citizens runs a summer day camp program that may benefit from resources available at Fernald, although this connection was not made in the *Plan*.

Since the release of the *Plan*, Mayor Gately has formed a Committee to Study Land Acquisition for Preservation of Open Space in Waltham, comprised of Councillor Robert S. Kelly, Councillor Edmund P. Tarallo, Laura Cannon-Ordile Esq., Gregory Smizer, and Catherine Cagle, Ex-Officio (Principal Planner, Planning Department). In May 2110 the Planning Department, with the assistance of the Waltham Land Trust,

produced a plan, *Open Space Inventory, 2001*, recommending key corridors to link together throughout the City. One a key component identified, #9, is “Fernald School Woods”, the undeveloped perimeter on the west boundary of Fernald. In September 2001 Mayor Gately announced the acquisition of two parcels of open space for protection, including a 25-acre parcel abutting Storer Conservation Land within one mile of the site, and the commitment to acquire other parcels in the Trapelo Road corridor.

#### Metropolitan Area Planning Council

In its *MetroPlan 2000*, adopted in 1991 as amended in 1994, the MAPC importantly included a Land Resources Protection Element, referred to as MetroGreen, which extends the notion of the town common and Olmsted’s Emerald Necklace in Boston to include land which “contributes to the environmental health of the metropolitan region” by supplying the regional community with “clean water, flood protection, recreation, natural beauty and a sense of place or local character.” The *Plan* makes one particularly relevant recommendation: “Retain federal and state “surplus” lands for long-term benefits,” by which is meant the following: “The procedure for disposition of surplus lands must involve seeking public uses first before consideration of putting the land on the private market.”

#### Waltham Land Trust, Inc.

Founded in 1999 as a private non-profit corporation dedicated to preserving open space in Waltham, the Waltham Land Trust is working closely with the City of Waltham Planning Department toward open space protection goals. It maintains a web site that describes its mission as acquiring, preserving or restoring land in a way that balances conservation and access and permanently protects and conserves natural resources.

The Trust is interested in the applicability of the greenway concept to Waltham, and has posted a web site\* describing the proposed “Western Greenway”, a six-mile corridor beginning in Belmont and Lexington, and looping through Waltham as far south as Beaver Street, importantly crossing Fernald. “Running along the western border of the Fernald Center, adjacent to the former Army Corps of Engineers site, is a strip of land with trails. The open space at the Fernald Center is crucial in linking the greenway to the Beaver Street properties...This property includes Owl Hill, a 250-foot elevation between Trapelo Road and Waverley Oaks Road. The hill is largely undeveloped on its north and south slopes, and is used for sledding by Waltham children.”

The Trust is working toward official recognition of the Western Greenway by the City Council and by the Massachusetts Department of Environmental Management

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\* ([walthamlandtrust.org/greenway.html](http://walthamlandtrust.org/greenway.html))



Greenways Program, and toward educating other state departments who may be involved, specifically naming DMR among others. It is working, as well, for broad support of owners and citizens of Waltham.

(This section is in the process of being revised.)

### 5.1 Possible Future Consolidation

**DMR is committed to consolidation of Fernald functions west of Cherry Lane**, the main entrance road, in the areas designated in this study as Center campus” and West campus. Two functions would remain in the East campus: Tufts Dental and Audiology mission support activities in Withington (102) and Schoolhouse (005) respectively.

### 5.2 Space Available

Without presuming to suggest, at this stage, what specific scenarios make sense in planning alternative futures on the site, nevertheless cursory analysis does reveal a strong impetus westward. Case in point: **All other DMR uses remaining in East Campus occupy approximately 148,228 gsf). Aggregate space available in Center and West Campus totals 149,550 gsf.** Available space is either vacant or designated by DMR as available after discontinuation or relocation of current less-than-best uses (Redemption Center in East Dowling, storage in West Nurses and Old Food Service). If the use of existing occupied space in East Campus is assumed to be inefficient (e.g., Day Programs do not need all the space “used” in Gym/Schoolhouse or Manual), then the fit is even more striking. The assumed space needs across all uses might very well reduce as shown in the right column of **Table 13**.

**TABLE 13: SUPPLY OF SPACE IN WEST CAMPUS COMPARED TO EXISTING USES IN EAST CAMPUS**

<b>East Campus</b>			
<b>Building</b>	<b>gsf occupied</b>	<b>Purpose</b>	<b>Assumed gsf</b>
North (002)	24,834	Region 6 Off/Progrm	24,834
North Nurses (007)	17,190	Region 6 Office	17,190
ICF 19 (019)	2,264	6 beds (vacant)	0
ICF 20 (020)	2,264	6 beds (vacant)	0
Gym/Schoolhouse (004/005)	37,275	Day Program	18,637
Manual (010)	34,851	Day Program	17,426
Wallace (046)	29,550	Region 6 Respite 32 beds @ 500	16,000
<b>Total occupied</b>	<b>148,228 gsf</b>		
<b>Estimated total demand</b>			<b>94,087 gsf</b>

Center and West Campus

Building	gsf	Condition	Notes	Cumulative
Dolan (037)	15,252	Good		15,252
Old Food Svc (040)	36,838	Fair	Renovate	52,090
East Dowling (042)	24,107	Poor	Renovate	76,197
West Nurses (038)	6,912	Poor	Renovate	83,109
Grounds Dept.(124)	5,760+	Poor	New site	88,869
West (033)	49,041	Poor/Demo	New site	137,910
Wheatley (039)	11,640	Poor/Demo	New site	149,550
<b>Total supply</b>	<b>149,550 gsf</b>			

The above calculation conservatively assumes that new buildings would not exceed existing footprint sizes. This assumption is most unlikely in the case of Grounds Dept, where the prefabricated structure occupies a fraction of the former footprint, and that footprint is not in relative proximity to other structures, suggesting a substantially larger footprint than 5,760 gsf could easily be accommodated.

### 5.3 Residential Client Population

Client residential uses can be accommodated **in the existing facilities in West and Center Campus up to a population level of 529, well above (76% to 165% above) the expected steady-state population of 200-300 clients indicated by Fernald staff.** As such, the maximum capacity of West and Center comprise 82% of the site-wide maximum capacity. (In the following table, 529 is the sum of 445 for West and 84 for Center.)

**TABLE 14: DMR RESIDENTIAL POPULATION, EXISTING AND CAPACITY**

	West	Center	East	Total	%
Residential Existing	288	7	0	295	46
Extra Capacity	157	77	114	348	54
<b>Total</b>	<b>445</b>	<b>84</b>	<b>114</b>	<b>643</b>	<b>100</b>
%	69	13	18	100	10

DMR currently houses 295 residential clients in 18 out of 26 potentially residential buildings (Hillside, Farrell, Greene Unit, Cottage # 3-13, and Malone ICF # 21-24). Those 18 buildings have a projected added capacity of 32 for a total maximum capacity of 328. If the other 8 potentially residential buildings (Warren, South Nurses and Withington in East, Tarbell in Center, and Seguin, McDougall, Dolan, and Wallace in West) were all returned to residential (highly unlikely in case of Withington at least), then the projected maximum capacity that could be absorbed by all 26 buildings from other DMR facilities by consolidation is 643, of which 121 is in 4 currently vacant or substantially underutilized buildings (Warren, Seguin, Dolan, Wallace), 131 is in 3 buildings currently occupied by third party tenants (South Nurses, Tarbell, and MacDougall), 64 in Withington, and the balance of 327 in the 18 buildings already in use but at a level 32 fewer than maximum capacity. Assuming the steady-state

population scenario, new client placements in the future, estimated to be 10-12 per year, will mostly replace attrition, with minimal net increase in population. Even in the case of the most challenging clients, Greene and Farrell currently have extra capacity (4% or 3 beds for Greene, 20% or 8 beds for Farrell) for such clients. Assuming a dramatic influx of clients transferred from other DMR facilities, considerable excess capacity exists in the West campus area alone.

#### **5.4 Residential Client Housing**

**The West Campus offers flexibility of residential types.** Housing can accommodate the range of client housing needs, from relatively independent living (Malone ICF units, Cottage complex) to continuous care (Cottage 11, Greene Unit, Farrell). The buildings most in need of renovation are currently in residential use: Cottages (#3-13), described as in fair condition. The other 7 client occupied buildings (Hillside, Farrell, Greene Unit, Malone ICF 21-24) are in good condition, as are the 3 tenant occupied buildings (South Nurses, Tarbell, and MacDougall) and 4 vacant or substantially underutilized residential buildings (Warren, Seguin, Dolan, Wallace). Although Withington, in the East Campus, was originally residential with a capacity of 54 clients, DMR has determined that its “highest potential use” is not residential.

#### **5.5 Day Programs**

**Existing and foreseeable Day Programs can be accommodated in the West Campus.** In the future, clients will not travel as far to Day Programs as they have in the past. Indeed, the trend is toward locating day programs either next door or within the residential location. The current configuration of the Cottage Complex and peripheral Day Program Buildings (Training/Activities Center, Site 5, Site 7/Flow, Woodside and Brookside) reflects this thinking. Those programs currently located in older buildings in the East Campus can be accommodated in the West Campus, within the aggregate supply of 143,000 gsf, as described above, except for Tufts Dental in Withington (102) and the Audiology Lab in Schoolhouse (005). Not only would this reduce transportation demand, it would place programs in newer structures with fewer problems of obsolescence for DMR to overcome. If programs evolve that require substantial space, not only are other new sites available nearby, but also within that same 143,000 gsf aggregate supply existing buildings could be renovated or building sites accommodate new buildings.

#### **5.6 Administration**

**Administration, from Fernald-specific to Central, could ultimately be accommodated in the Central and West Campus.** The current Regional and Fernald administration offices now divided between East Campus (North Building, North Nurses) and Center Campus. Fernald staff anticipate that DMR Central Offices will move from Boston to Fernald within four years, after an interim move to downtown office space (Harrison Avenue). Current thinking is that Central Offices, requiring

approximately 50,000 gsf, move to East campus vacant space such as that in Kelly (100).

### 5.7 Support Services

**Support services can continue to be accommodated in the Center where they now predominate convenient to both DMR and other tenants in the East campus.** To the extent that affiliated tenant support service providers (Morrison, Tufts, FLOW, Inc.) have extra capacity, the site has an added asset.

### 5.8 University of Massachusetts Medical School

**UMass Medical offers opportunities for synergy with DMR.** Fortuitously located at the part of the campus farthest from the “center of gravity” of DMR, now and into the future, this stakeholder is well positioned to be interested in space which DMR surpluses, as a potential win-win.

### 5.9 Campus Sub-Parcels

Once needs of stakeholders on site have been taken into account, a hidden asset lies in the fact that **there is great potential for consolidation of large subparcels** of space free of other uses; making the parcel more marketable to potential new users attracted to this location and proximity to its existing tenants. Ten acres in one large parcel will attract larger users than ten separate one-acre parcels. Consolidated is preferable to piecemeal, but even scattered site have some potential. **Absent a master plan process in place, continued fragmentation of use, both in sub-areas, and within buildings, can be expected to continue. While not always undesirable, in some cases fragmentation could pose an opportunity cost over upgrading the use of larger portions of the site.** Among the site’s attractions are its **highly desirable metropolitan location, its campus-like landscape, and its architectural character**, defined by several architecturally distinguished buildings, some scheduled for demolition simply because a state agency is not in the business of renovation let alone historic preservation, but a prospective new user may view the matter differently.

### 5.10 Utilities

The *Utilities Master Plan* recommendation to **replace the centralized steam thermal system be replaced with boilers at individual buildings** makes even more sense now than it did when first recommended in 1995, to maximize the flexibility of options of use and location across the campus, in an environment of either DMR consolidation or reconfiguration.

### 5.11 Regional Opportunities



**Recent activity in large institutional parcels in the region indicate both the opportunities** (potential marketplace for housing and office, for example) **and the vigorous community involvement that change at Fernald will elicit. At the least a trail linkage to adjacent open space can be assumed to be on the community wish-list.** This point is worth elaborating in more detail.

Fernald lies within a 500-plus acre large-parcel institutional area in Waltham whose status is all in flux, notably GSA Army Corps of Engineers disposition and State Hospital disposition. It also lies within an area roughly twice that size straddling the neighboring communities of Lexington and Belmont as well. If and when DMR decides to make significant portions of the 163-acre Fernald campus available to other users, it will benefit from examining the recent experience of three other large institutional parcels lying in that larger three-community region ranging in size from 77 to 339 acres: the former State Hospital, the former Army Corps of Engineers, and McLean Hospital. Together they suggest what could lie ahead for Fernald: strong community interest in open space preservation and the market demand for new commercial, institutional and residential space.

Like Fernald, the former State Hospital and McLean Hospital are highly scenic campus-like properties of substantial acreage with many older buildings of historic and architectural significance and a mature landscape also of historic significance, including wooded uplands that define the landscape in the region. The former Army Corps site is less scenic or architecturally distinguished but by virtue of location and elevated smoothly contoured terrain holds great promise. McLean Hospital, an Olmsted-designed campus, also has the most architectural and landscape significance, fully documented as part of the disposition process. Having experienced declining use in recent decades, the facilities have undergone examination as real estate assets.

Each was developed centrally rather than along road frontage. Each has substantial acreage, particularly at the perimeter and along road corridors, that is undeveloped, in its natural state, and highly desirable as open space within a region of rapidly diminishing open space acquisition opportunities. All are in a demographically strong area attractive to development of a number of uses, including elderly housing and office. All adjoin single-family residential areas.

Federally owned, the former **Army Corps** site (77 acres) is undergoing partial disposition, with substantial acreage being restored as open space (City of Waltham), and the core redeveloped as institutional uses (Bentley College and New Jewish High School), while the Federal records center will be retained. Portion of site preserved/restored as open space: 33%.

State owned, the former **State Hospital** site (339 acres) is also undergoing disposition, with the substantial perimeter acreage being preserved as regional open space (MDC reservation and City of Waltham golf course), the core to be redeveloped

as privately owned communal care retirement housing, and the Gaebler Center. Portion of site preserved as open space: 88%.

Privately owned, **McLean's Hospital** site (240 acres) is undergoing an analogous process of disposition, here with due recognition of real estate market forces and fiscal impacts on the community. The agreement reached calls for attached cluster townhouses (122 units), a senior life-care community (486 units), and an R&D center (200,000 SF) in addition to modest hospital growth (50,000 SF added for a total of 668,000 SF), historic preservation bonuses, and the preservation of open space on the perimeter, divided between public open space (106.70 acres), a municipal cemetery (13.91 acres), and private open space (18 acres). Portion of site preserved as open space: 59%.

**The larger the site, the higher percentage of open space protection that emerges from the process.**

#### **5.12 The Challenge Ahead.**

Once DMR has completed its internal planning process (scheduled to be completed by early 2002), then a detailed master planning process can move forward. Opportunities for better use of the site can be given physical form that reflects both the detailed likely scenarios which DMR envisions for its operations at Fernald, and addresses specific market opportunities to put vacant and underutilized buildings and sites back to use in a refurbished landscape. A master planning process would identify the range of possibilities that could take advantage of a metropolitan-suburban site as well located as Fernald in an uncertain economic climate. The direction that process might take will build on this report of existing conditions.



**APPENDIX 3: CAPITAL COSTS OF OPTIONS FOR HEATING BUILDINGS  
NOW ON CENTRALIZED THERMAL STEAM SYSTEM.**

<b>Option</b>		<b>Capital Cost</b>	<b>O&amp;M Costs (annual)</b>	<b>Energy Costs (annual)</b>
1. No Build		0	500,000	870,000
2. Renovate Plant		3,121,500	490,000	640,000
3. New Plant		8,237,000	475,000	580,000
4. Individual Boilers				
	Oil	4,177,000	100,000	847,000
	Gas	3,258,000	100,000	870,000

**Life Cycle Analysis:**

<b>Option</b>		<b>Net Present Value (\$000,000)</b>	<b>Payback Period (Yrs)</b>	<b>Savings to Investment Ratio</b>
1. No Build		39.0	NA	NA
2. Renovate Plant		24.8	6	8.56
3. New Plant		28.1	14	2.69
4. Individual Boilers				
	Oil	23.1	6	7.18
	Gas	22.6	4	10.73

Note: The cost of replacing the hydronic loop, estimated at \$341,810, and a new stand-alone water pump, estimated at \$200,000, is included in options 2 to 4 (III.5.2.6).

At the schematic design level, boiler room design was investigated in more detail and the total capital cost for the individual gas-fueled boiler room option revised to an estimate of \$5,973,125 including the electrical system improvements. (IV.6.Executive Summary) However, schematic design did not include boiler stack location and routing through buildings.

Source: *Fernald State School Utilities Master Plan* (May 1995) prepared by Ganteaume & McMullen Inc. for the Division of Capital Planning and Operations and the Department of Mental Retardation