

73-A-1

179 Fore River Parkway

Mercy Hospital

on Spreadsheet

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JUL 23 2012

MERCY HOSPITAL PHASE II RELOCATION PROJECT
FORE RIVER SITE
PORTLAND, MAINE

City of Portland
Planning Division

MeDEP SITE LOCATION OF DEVELOPMENT PERMIT
MAJOR AMENDMENT APPLICATION

Contains:

SLDA Major Amendment Application and
MeDEP Sections 1-7, 10-12, 14-19, 21 and 25
Full Plan Set

Prepared for:

Mercy Hospital
144 State Street
Portland, Maine 04101

Prepared by:

DeLuca-Hoffman Associates, Inc.
778 Main Street, Suite 8
South Portland, Maine 04106
(207) 775-1121
(207) 879-0896 (fax)

JULY 2012

**PUBLIC NOTICE:
NOTICE OF INTENT TO FILE**

Please take notice that Mercy Hospital, 175 Fore River Parkway, Portland Maine 04101, 1-207-879-3000, is intending to file an application pursuant to the provisions of the Natural Resources Protection Act (Title 38 M.R.S.A. §§ 480-A thru 480-BB), and an amendment to the Site Location of Development (Title 38, Chapter 3, §§ 481-490) permit with the Maine Department of Environmental Protection on or about July 23, 2012.

The applications are for additional development of the Fore River Campus including a 3-story addition to the main hospital building, two parking garages, a medical office building and associated infrastructure upgrades at the following location:

Mercy Hospital, 175 Fore River Parkway, Portland Maine

A request for a public hearing or a request that the Board of Environmental Protection assume jurisdiction over this application must be received by the Department of Environmental Protection ("the Department") in writing, no later than 20 days after the application is found by the Department to be complete and is accepted for processing. A public hearing may or may not be held at the discretion of the Commissioner of the Department of Environmental Protection or Board of Environmental Protection. Public comment on the applications will be accepted throughout the processing of the applications.

The applications will be filed for public inspection at the Department of Environmental Protection's office in Portland during normal working hours. A copy of the applications may also be seen at Portland City Hall, Planning Division, 389 Congress Street 4th Floor, Portland, ME 04101

Written public comments may be sent to the Maine Department of Environmental Protection regional office in Portland, where the applications are filed for public inspection:

MDEP, Southern Maine Regional Office, 312 Canco Road, Portland, Maine 04103

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JUL 23 2012

City of Portland
Planning Division

Department of Environmental Protection
Bureau of Land & Water Quality
17 State House Station
Augusta, Maine 04333
Telephone: 207-287-3901

FOR DEP USE

FORM A PAGE 1

04/08

ATS # _____
L- _____
Total Fees: _____
Date: Received _____

SITE LOCATION OF DEVELOPMENT PERMIT APPLICATION 38 M.R.S.A. §§481-490

PLEASE TYPE OR PRINT IN INK ONLY

This application is for: (CHECK THE ONE THAT APPLIES)		<input type="checkbox"/> 20 acre development <input type="checkbox"/> Planning Permit <input type="checkbox"/> Metallic Mining	<input type="checkbox"/> Marine Oil Terminal <input type="checkbox"/> Structure <input type="checkbox"/> Subdivision	<input checked="" type="checkbox"/> Major Amendment <input type="checkbox"/> Minor Amendment
1. Name of Applicant:	Mercy Hospital		6. Name of Agent: (if applicable)	DeLuca-Hoffman Associates, Inc. Attn: Stephen Bushey, P.E.
2. Applicant's Mailing Address:	144 State Street Portland, ME 04101		7. Agent's Mailing Address:	778 Main Street, Suite 8 South Portland, ME 04106
3. Applicant's Daytime Phone #:	(207) 879-3030		8. Agent's Daytime Phone #:	(207) 775-1121
4. Applicant's Fax #: (if available)			9. Agent's Fax #:	(207) 879-0896
5. Applicant's e-mail address: (license will be sent via e-mail)			10. Agent's e-mail address (license will be sent via e-mail)	sbushey@delucahoffman.com

PROJECT INFORMATION

11. Name of Development:	Mercy Hospital				
12. Map and Lot #'s:	Map #: See List	Lot #: See List	13. Deed Reference #'s:	Book #: 18203 / 177783	Page #: 128 / 289
14. Location of Project City/Town:	Portland	15. County:	Cumberland	16. UTM Northing	17. UTM Easting
18. Brief Description of Project including total parcel size:	Mercy Hospital proposes to complete Phase II of the hospital relocation from the State Street Campus to the Fore River Campus. Mercy's plan includes revised development layout that involves placement of fill within the regulated wetland resources.				
19. Type of Direct Watershed: (Check all that apply)	<input type="checkbox"/> Lake not most at risk <input type="checkbox"/> Lake most at risk <input type="checkbox"/> Lake most at risk, severely blooming <input checked="" type="checkbox"/> River, stream or brook <input type="checkbox"/> Urban impaired stream <input type="checkbox"/> Freshwater wetland <input type="checkbox"/> Coastal wetland <input type="checkbox"/> Wellhead or public water				
19. Name of Waterbody Project Site drains to:	Fore River				
21. Amount of Developed Area:	Total acres: 34.9	Existing Developed area: 22.04 acres		New Developed area: 27.22 acres	
22. Amount of Impervious Area:	Total acres: 13.74	Existing Impervious areas: 13.74 acres		New Impervious area: 18.60 acres	
23. Development started prior to obtaining a license?:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
24. Development or any portion of the site subject to enforcement action?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		If yes, name of enforcement staff involved?		
25. Common scheme of development?:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	26. Title, Right or Interest:	<input checked="" type="checkbox"/> own <input type="checkbox"/> lease	<input type="checkbox"/> purchase option <input type="checkbox"/> written agreement	
27. Natural Resources Protection Act permit required?:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes:	<input type="checkbox"/> PBR <input type="checkbox"/> Tier 1 <input type="checkbox"/> Tier 2	<input checked="" type="checkbox"/> Full Permit	
28. Existing DEP Permit number (if applicable):	L-20775-19-A-N, L-20775-TG-B-N thru L-20775-19-J-M and L-20775-TG-I-M				
29. Names of DEP staff person(s) present at the pre-application meeting:	Christine Woodruff, Ben Viola, Marybeth Richardson, John Hopeck				
30. Does agent have an interest in project? If yes, what is the interest?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				

CERTIFICATIONS AND SIGNATURES LOCATED ON PAGE 2

IMPORTANT: IF THE SIGNATURE BELOW IS NOT THE APPLICANT'S SIGNATURE, ATTACH LETTER OF AGENT AUTHORIZATION SIGNED BY THE APPLICANT.

By signing below the applicant (or authorized agent), certifies that he or she has read and understood the following :

CERTIFICATIONS / SIGNATURES

"I certify under penalty of law that I have personally examined the information submitted in this document and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the information is true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment. I authorize the Department to enter the property that is the subject of this application, at reasonable hours, including buildings, structures or conveyances on the property, to determine the accuracy of any information provided herein.

Signed: _____

Title AGENTDate: July 20, 2012

Notice of Intent to Comply
with Maine Construction
General Permit

With this Site Law application form and my signature, I am filing notice of my intent to carry out work which meets the requirements of the Maine Construction General Permit (MCGP). I have read and will comply with all of the MCGP standards.

If this form is not being signed by the landowner or lessee of the property, attach documentation showing authorization to sign.

Signed _____

Date: July 20, 2012

NOTE: You must file a MCGP Notice of Termination (Form K) within 20 days of completing permanent stabilization of the project site.

CERTIFICATION

The person responsible for preparing this application and/or attaching pertinent site and design information hereto, by signing below, certifies that the application for development approval is complete and accurate to the best of his/her knowledge.

Signature: _____

Re/Cert/Lic No.: _____

Name (print): STEPHEN BUSHEYEngineer #7429

Geologist _____

Soil Scientist _____

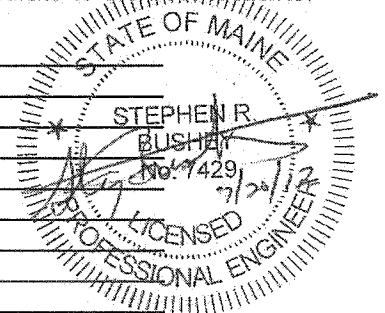
Land Surveyor _____

Site Evaluator _____

Active Member of the Maine Bar _____

Professional Landscape Architect _____

Other _____

Date: 7/20/2012

"I hereby authorize the DEP to send me an electronically signed decision on the license I am applying for with this application by emailing the decision to the address located on the front page of this application (see #5 for the applicant and #10 for the agent). *Do not sign if you elect to "opt out" or receive the decision via regular mail.*

Signed (Applicant) _____

Date: _____

and/or

Signed (Agent) _____

Date: July 20, 2012



July 20, 2012

Maine Department of Environmental Protection
Christine Woodruff, Project Manager
Canco Rd.
Portland, Maine 04103

Dear Ms. Woodruff:

Please accept this letter as authorization for John Tewhey to act as the agent for Mercy Hospital in its submissions and interactions regarding wetlands and site location permitting for the Phase II development of our Fore River Campus.

I want to thank you and your associates for your help in moving this process forward. I appreciate your professionalism and advice. Please feel free to contact me or John Tewhey (207-839-4261) with any questions.

Very truly yours,

William Connolly
Real Estate Specialist, Mercy Hospital
207-653-4721

CC: John Tewhey
Marcia Bowen
Steve Bushy
Ellen Belknap



SUBMISSIONS CHECKLIST

If a provision is not applicable, put "NA"

Section 1. Development description

- 1.0 A. Narrative
- 1.2 1. Objectives and details
2. Existing facilities (with dates of construction)
- B. Topographic map
- Fig. 2 1. Location of development boundaries
- Fig. 2 2. Quadrangle name
- C. Construction plan
- 1.4 1. Outline of construction sequence (major aspects)
2. Dates
- D. Drawings
- See Plan Set 1. Development facilities
- a. Location, function and ground area
- b. Length/cross-sections for roads
2. Site work (nature and extent)
3. Existing facilities (location, function ground area and floor area)
4. Topography
- a. Pre- and post-development (contours 2 ft or less)
- b. Previous construction, facilities and lot lines

Att. A/B **Section 2. Title, right or interest (copy of document)**

Section 3. Financial capacity

- Att. A A. Estimated costs
- B. Financing
1. Letter of commitment to fund
2. Self-financing
- a. Annual report
- b. Bank statement
3. Other
- a. Cash equity commitment
- b. Financial plan
- Att. B c. Letter
4. Affordable housing information

Section 4. Technical ability (description)

- 4.0 A. Prior experience (statement)
- 4.1 B. Personnel (documents)

Section 5. Noise

- A. Developments producing a minor noise impact (statement)
1. Residential developments
2. Certain non-residential subdivisions
- 5.0 3. Schools and hospitals
4. Other developments
- a. Type, source and location of noise
- b. Uses, zoning and plans
- c. Protected locations
- d. Minor nature of impact

- _____ e. Demonstration
- _____ B. Developments producing a major noise impact (full noise study)
- _____ 1. Baseline
- _____ a. Uses, zoning and plans
- _____ b. Protected locations
- _____ c. Quiet area
- _____ 2. Noise generated by the development
- _____ a. Type, source and location of noise
- _____ b. Sound levels
- _____ c. Control measures
- _____ d. Comparison with regulatory limits
- _____ e. Comparison with local limits

6.0 **Section 6. Visual quality and scenic character**(narrative, description, visual impact analysis)

7.0 **Section 7. Wildlife and fisheries** (narrative)

N/A **Section 8. Historic sites** (narrative)

N/A

_____ **Section 9. Unusual natural areas** (narrative)

Section 10. Buffers

10.0 A. Site plan and narrative

Section 11. Soils

- Fig. B A. Soil survey map and report
- N/A 1. Soil investigation narrative
- N/A 2. Soil survey map
- Att. A B. Soil survey intensity level by development type
- 1. Class A (High Intensity) Soil Survey
- 2. Class B (High Intensity) Soil Survey
- 3. Class C (Medium High-Intensity) Soil Survey
- 4. Class D (Medium Intensity) Soil Survey
- C. Geotechnical Investigation
- D. Hydric soils mapping

Section 12. Stormwater management

- Sec. 12 A. Narrative
- Sec. 12 1. Development location
- Sec. 12 2. Surface water on or abutting the site
- Sec. 12 3. Downstream ponds and lakes
- Sec. 12 4. General topography
- Sec. 12 5. Flooding
- Sec. 12 6. Alterations to natural drainage ways
- Sec. 12 7. Alterations to land cover
- Sec. 12 8. Modeling assumptions
- 9. Basic standard
- Sec. 12 10. Flooding standard
- Sec. 12 11. General standard
- Sec. 12 12. Parcel size
- 13. Developed area
- 14. Disturbed area
- 15. Impervious area
- Sec. 1 B. Maps
- Sec. 1 1. U.S.G.S. map with site boundaries
- Sec. 1 2. S.C.S. soils map with site boundaries

C-9.0 & 9.1	C. Drainage Plans (a pre-development plan and a post-development plan)
C-4.1 & 4.2	1. Contours
<u>3.0</u>	2. Plan elements
C-3.1 & 3.2	3. Land cover types and boundaries
C-9.0	4. Soil group boundaries
C-9.0 & 9.1	5. Stormwater quantity subwatershed boundaries
C-4.0	6. Stormwater quality subwatershed boundaries
C-9.1	7. Watershed analysis points
C-9.0 & 9.1	8. Hydrologic flow lines (w/flow types and flow lengths labeled)
Sec. 12	9. Runoff storage areas
C-3.1 & 3.2	10. Roads and drives
C-3.1 & 3.2	11. Buildings, parking lots, and other facilities
C-4.4 & 4.5	12. Drainage system layout for storm drains, catch basins, and culverts
C-4.1 & 4.2	13. Natural and man-made open drainage channels
C-4.1 & 4.2	14. Wetlands
C-4.1 & 4.2	15. Flooded areas
C-2.1	16. Benchmark
C-4.4 & 4.5	17. Stormwater detention, retention, and infiltration facilities
C-4.4 & 4.5	18. Stormwater treatment facilities
N/A	19. Drainage easements
C-9.0 & 9.1	20. Identify reaches, ponds, and subwatersheds matching stormwater model
N/A	21. Buffers
Sec. 12	D. Runoff analysis (pre-development and post development)
Sec. 12	1. Curve number computations
Sec. 12	2. Time of concentration calculations
Sec. 12	3. Travel time calculations
Sec. 12	4. Peak discharge calculations
Sec. 12	5. Reservoir routing calculations
Sec. 12	E. Flooding Standard
Sec. 12	1. Variance submissions (if applicable)
Sec. 12	a. Submissions for discharge to the ocean, great pond, or major river
Sec. 12	i. Map
Sec. 12	ii. Drainage plan
Sec. 12	iii. Drainage system design
Sec. 12	iv. Outfall design
N/A	v. Easements
Sec. 12	b. Insignificant increase
Sec. 12	i. Downstream impacts
Sec. 12	c. Submissions for discharge to a public stormwater system
Sec. 12	i. Letter of permission
Sec. 12	ii. Proof of capacity
Sec. 12	ii. Outfall analysis and design (pictures)
Sec. 12	2. Sizing of storm drains and culverts
Sec. 12	3. Stormwater ponds and basins
Sec. 12	a. Impoundment sizing calculations
Sec. 12	b. Inlet calculations
Sec. 12	c. Outlet calculations
Sec. 12	d. Emergency spillway calculations
N/A	e. Subsurface investigation report
C-7.0 & 7.5	f. Embankment specifications
C-7.0 & 7.5	g. Embankment seepage controls
C-7.0 & 7.5	h. Outlet seepage controls
C-7.0 & 7.5	i. Detail sheet
C-7.0 & 7.5	j. Basin cross sections
C-7.0 & 7.5	k. Basin plan sheet
N/A	4. Infiltration systems
N/A	a. Well locations map

<u>Sec. 1</u>	b. Sand and gravel aquifer map
<u>Prev. Submit</u>	c. Subsurface investigation report with test pit or boring logs
<u>N/A</u>	d. Permeability analysis
<u>N/A</u>	e. Infiltration structure design
<u>N/A</u>	f. Pollutant generation and transport analysis
<u>Sec. 12</u>	g. Monitoring and operations plan
<u> </u>	i. Locations of storage points of potential contaminants
<u> </u>	ii. Locations of observation wells and infiltration monitoring plan
<u> </u>	iii. Groundwater quality monitoring plan
<u>N/A</u>	5. Drainage easement declarations.
<u>Sec. 12</u>	F. Stormwater quality treatment plan peak discharge calculations
<u>C-5.0 & 5.1</u>	1. Basic stabilization plan
<u>C-5.0 & 5.1</u>	a. Ditches, swales, and other open channel stabilization
<u>C-5.0 & 5.1</u>	b. Culvert and storm-drain outfall stabilization
<u>C-5.0 & 5.1</u>	c. Earthen slope and embankment stabilization
<u>C-5.0 & 5.1</u>	d. Disturbed area stabilization
<u>C-5.0 & 5.1</u>	e. Gravel roads and drives stabilization
<u>Sec. 12</u>	2. General Standard
<u>Sec. 12</u>	a. Calculations for sizing BMP
<u>Sec. 12</u>	b. Impervious area calculation
<u>Sec. 12</u>	c. Developed area calculation
<u>Sec. 12</u>	d. Summary spreadsheet of calculations
<u>N/A</u>	3. Phosphorus control plan
<u>N/A</u>	a. Calculations for the site's allowable phosphorus export
<u>N/A</u>	b. Calculations for determining the developed site's phosphorus export
<u>N/A</u>	c. Calculations for determining any phosphorus compensation fees
<u>N/A</u>	4. Offset Credits
<u>N/A</u>	a. Urban impaired stream
<u>N/A</u>	Offset credit calculation
<u>N/A</u>	b. Phosphorus credit determination
<u>N/A</u>	i. Location map
<u>N/A</u>	ii. Scaled plan
<u>N/A</u>	iii. Title and right
<u>N/A</u>	iv. Demolition plan
<u>N/A</u>	v. Vegetation plan
<u>N/A</u>	vi. Offset credit calculation
<u>N/A</u>	vii. Calculation for the new allowable export
<u>Sec. 4.4 & 4.5</u>	5. Runoff treatment measures
<u>Sec. 4.4 & 4.5</u>	a. structural measures
<u>Sec. 4.4 & 4.5</u>	i. Design drawings and specifications
<u>Sec. 4.4 & 4.5</u>	ii. Design calculations
<u>Sec. 12</u>	iii. Maintenance plan
<u>N/A</u>	iv. TSS removal or phosphorus treatment factor determinations
<u>C-5.0 & 5.1</u>	v. Stabilization plan
<u>N/A</u>	b. Vegetated buffers
<u>N/A</u>	i. Soil survey
<u>N/A</u>	ii. Buffer plan
<u>N/A</u>	iii. Turnout and level spreader designs
<u>N/A</u>	iv. Deed restrictions
<u>N/A</u>	6. Control plan for thermal impacts to coldwater fisheries
<u>C-4.4 & 4.5</u>	7. Control plan for other pollutants
<u>Sec. 12</u>	8. Engineering inspection of stormwater management facilities
<u>Sec. 12</u>	
<u>Sec. 12</u>	G. Maintenance of common facilities or property
<u>Sec. 12</u>	1. Components of the maintenance plan
<u> </u>	A. Maintenance of facilities by owner or operator

C-1.0	1. Site owner or operator (name legally responsible party)
C-1.0	2. Contact person responsible for maintenance
N/A	3. Transfer mechanism
Sec. 12	4. List of facilities to be maintained
Sec. 12	5. List of inspection and maintenance tasks for each facility
Sec. 12	6. Identifications of any deed covenants, easements, or restrictions
N/A	7. Sample maintenance log
N/A	8. Copies of any third-party maintenance contracts
N/A	B. Maintenance of facilities by homeowner's association
N/A	1. Incorporation documents for the association
N/A	2. Membership criteria
N/A	3. Association officer responsible for maintenance
N/A	4. Establishment of fee assessment for maintenance work
N/A	5. Establishment of lien system
N/A	6. Reference to department order(s) in association charter
N/A	7. Transfer mechanism from developer to association
N/A	8. List of facilities to be maintained
N/A	9. Identification of any deed covenants, easements, or restrictions
N/A	10. Renewal of covenants and leases
N/A	11. List of inspection and maintenance tasks for each facility
N/A	12. Sample maintenance log
N/A	13. Copies of any third-party maintenance contracts
N/A	C. Maintenance of facilities by municipality or municipal district
N/A	1. Identification of the municipal department or utility district
N/A	2. Contact person responsible for maintenance
N/A	3. Evidence of acceptance of maintenance responsibility
N/A	4. Transfer mechanism from developer
N/A	5. List of facilities to be maintained
N/A	6. List of inspection and maintenance tasks for each facility
N/A	7. Identifications of any deed covenants, easements, or restrictions
N/A	8. Sample maintenance log
Sec. 12	2. General inspection and maintenance requirements
Sec. 12	a. Drainage easements
Sec. 12	b. Ditches, culverts, and catch-basin systems
Sec. 12	c. Roadways and parking surfaces
Sec. 12	d. Stormwater detention and retention facilities
Sec. 12	1. Embankment inspection and maintenance
Sec. 12	2. Outlet inspection and clean-out
Sec. 12	3. Spillway maintenance
Sec. 12	4. Sediment removal and disposal
Sec. 12	e. Stormwater infiltration facilities
Sec. 12	1. Sediment protection plan
Sec. 12	2. Infiltration rehabilitation plan
Sec. 12	3. Sediment removal and disposal
Sec. 12	4. Groundwater monitoring plan
Sec. 12	f. Proprietary treatment devices
N/A	g. Buffers
Sec. 12	h. Other practices and measures

Section 13. Urban Impaired Stream Submissions

N/A	1. Off-site credits
_____	2. Compensation fees (Urban Impaired Stream/Phosphorus)
_____	3. Development impacts

Section 14. Basic Standards

Sec. 14	A. Narrative
_____	1. Soil types

- 2. Existing erosion problems
- 3. Critical areas
- 4. Protected natural resources
- 5. Erosion control measures
- 6. Site stabilization
- B. Implementation schedule
- C. Erosion and sediment control plan
 - 1. Pre-development and post-development contours
 - 2. Plan scale and elements
 - 3. Land cover types and boundaries
 - 4. Existing erosion problems
 - 5. Critical areas
 - 6. Protected natural resources
 - 7. Locations (general)
 - 8. Locations of controls
 - 9. Disturbed areas
 - 10. Stabilized construction entrance
- D. Details and specifications (for both temporary and permanent measures)
- E. Design calculations
- F. Stabilization plan
 - 1. Temporary seeding
 - 2. Permanent seeding
 - 3. Sodding
 - 4. Temporary mulching
 - 5. Permanent mulching
- G. Winter construction plan
 - 1. Dormant seeding
 - 2. Winter mulching
- H. Third-party inspections
 - 1. Inspector's name, address, and telephone number
 - 2. Inspector's qualifications
 - 3. Inspection schedule
 - 4. Contractor contact
 - 5. Reporting protocol

Section 15. Groundwater

- 15.0 A. Narrative
 - 1. Location and maps
 - 2. Quantity
 - 3. Sources
 - 4. Measures to prevent degradation
- 15.3 B. Groundwater protection plan
- See VRAP C. Monitoring plan
 - 1. Monitoring points
 - 2. Monitoring frequency
 - 3. Background conditions
 - 4. Monitoring parameters
 - 5. Personnel qualifications
 - 6. Proof of training
 - 7. Equipment and methods
 - 8. Quality assurance/quality control
 - 9. Reporting requirements
 - 10. Remedial action plan
- N/A D. Monitoring well installation report
 - 1. Well location map
 - 2. Elevation data
 - 3. Well installation data

4. Well construction details
5. Borehole logs
6. Summary of depth measurements
7. Characteristics of subsurface strata
8. Well installation contract
9. Schematic cross-sections
10. Monitoring point summary table
11. Protective casing
12. On-site well identification

Section 16. Water supply

16.0

N/A

A. Water supply method

1. Individual wells (evidence of sufficient/healthful supply)
 - a. Support of findings by well drillers
 - b. Support of findings by geologist
2. Common well(s) (reports)
 - a. Hydrogeology report
 - b. Engineering report
 - c. Well installation report
 - d. Long-term safe yield and zone of influence determination
 - e. Public water supply
 - i. Proposed well or wells
 - ii. Existing well or wells
 - iii. Water quality analysis
3. Well construction in shallow-to-bedrock areas
4. Additional information
5. Off-site utility company or public agency
6. Other sources

N/A

B. Subsurface wastewater disposal systems (locations of systems and wells)

16.1

C. Total usage (statement re: total anticipated water usage)

Section 17. Wastewater disposal

N/A

A. On-site subsurface wastewater disposal systems (investigation results)

1. Site plan
2. Soil conditions summary table
3. Logs of subsurface explorations
4. Additional test pits, borings or probes
 - a. Soil conditions A
 - b. Soils with Profiles 8 and 9 parent material
 - c. Soil conditions D
 - d. Disposal field length 60 feet or greater
5. 3-bedroom design
6. Larger disposal systems
 - a. System design details
 - b. Plan view
 - c. Cross sections
 - d. Test pit data
 - e. Mounding analysis

N/A

B. Nitrate-nitrogen impact assessment

1. When required
 - a. Exempted
 - i. Conventional systems meeting certain setbacks
 - ii. Denitrification systems
 - b. Special conditions and other exemptions
2. Assumptions
 - a. Initial concentration

- _____ b. Background concentration
- _____ c. Contribution from development
- _____ d. Mixing and dilution
- _____ e. Severe-drought scenario
- _____ f. Wastewater flow to subsurface wastewater disposal fields
- _____ 3. Assessment report minimum requirements
 - _____ a. Narrative and calculations
 - _____ b. Site plan
 - _____ i. Well locations
 - _____ ii. 10 mg/l and 8 mg/l isocons
 - _____ iii. Groundwater contours and groundwater flow divides
 - _____ c. References
- _____ 4. Denitrification systems
 - _____ a. Design plans and specifications
 - _____ b. Installation information
 - _____ c. Monitoring plan
 - _____ d. Maintenance
 - _____ e. Backup system
- Pending D. Municipal facility or utility company letter
- N/A E. Storage or treatment lagoons

18.0 **Section 18. Solid waste** (list: type, quantity, method of collection and location)

- 18.2 A. Commercial solid waste facility (final disposal location)
- 18.2 B. Off-site disposal of construction/demolition debris (final disposal location)
- 18.2 C. On-site disposal of woodwaste/land clearing debris

- N/A 1. Applicability of rules (evidence re: applicability of rules)
- N/A 2. Burning of wood wastes
 - _____ a. Delineation on site plan
 - _____ b. Plans for handling unburned woodwaste and woodash
 - _____ c. Evidence of capacity to accept waste (approved facility)
 - _____ d. Usage of materials
 - _____ e. Data on mixing ratios and application rates

18.3 D. Special or Hazardous Waste

Section 19. Flooding

- 19.0 A. Explanation of flooding impact
- _____ B. Site plan showing 100-year flood elevation
- _____ C. Hydrology analysis
- Fig. 7 D. FEMA flood zone map with site boundaries

Section 20. Blasting

- N/A A. Site Plan or map
- _____ B. Report
 - _____ 1. Assessment
 - _____ 2. Blasting plan

Section 21. Air emissions (narrative and summary)

- 21.0 A. Point and non-point sources identified
- _____ B. Emission components (point sources)

Section 22. Odors

- N/A A. Identification of nature/source
- _____ B. Estimate of areas affected
- _____ C. Methods of control)

N/A **Section 23. Water vapor** (narrative)

N/A **Section 24. Sunlight** (statement and drawing, if required)

Section 25. Notices

25.0 A. Evidence that notice sent

Att. A B. List of abutters for purposes of notice

Supplemental requirements for Wind Energy Developments only:

Section 26. Shadow flicker

_____ A. A copy of the Windpro Analysis and associated narrative

Section 27. Public Safety

_____ A. Design safety certifications or other documents attesting to the safety of the wind turbine equipment.

_____ B. Evidence pertaining to overspeed controls

_____ C. Site plan documenting safety setbacks zones for each wind turbine

_____ B. Other documents as necessary to demonstrate safety considerations

Section 28. Tangible Benefits

_____ A. Narrative demonstration of tangible benefits

Section 29. Decommissioning

_____ A. Description of implementation trigger for decommissioning

_____ B. Description of extent of decommissioning

_____ C. Itemization of total cost to complete decommissioning

_____ D. Demonstration of financial assurance for completeness of decommissioning plan

Section 30. Generating Facility-visual Quality and Scenic Character

_____ A. (narrative, description, visual impact analysis)

SECTION 1

DEVELOPMENT DESCRIPTION

1.0 Project Overview – Mercy Hospital Phase 2 Relocation

Background and Purpose of the Move to the Fore River Campus

In the early 2000s, Mercy Hospital's strategic plan identified important objectives that could not be achieved at the 3.5-acre State Street site, given its age, size, location and Portland's Historic District constraints. Four priority objectives of the strategic plan are listed below. They represent the purpose for which the Fore River project was conceived and implemented.

- **Mercy must assure "state of the art" technological infrastructure** consistent with industry norms and standards of care;
- **Mercy must assure short-term and long-term excellence** in program plans and facilities to support them;
- **Mercy must assure strong physician relationships** enhanced by improved facilities; and
- **Mercy must solidify itself as a health care employer of choice** by providing safe, comfortable, and technologically advanced facilities.

When it became apparent that the State Street facility could not meet important strategic goals, Mercy engaged a technical team to work with the Hospital's management and Board to find a new home. The team developed six criteria for evaluating prospective sites:

- A 50-acre parcel was the goal for siting a new facility with 25 acres being the minimum;
- Easy accessibility from interstate highways and major roadways;
- Easy accessibility to public transportation;
- Convenient to doctor's offices, many of which are located on the Portland peninsula;
- Proximity to Maine Medical Center to avoid duplication of highly specialized equipment; and
- A site where Mercy would be welcomed by the neighborhood and the community at large.

Selection of the Fore River Site

Finding a location that satisfied all criteria was difficult. Three dozen potential locations were identified and reviewed. Of those, only the Fore River site met all six criteria while also minimizing natural resource impacts. The City of Portland Planning and Economic Development Department endorsed the Fore River site, as did the Maine Department of Environmental Protection (MeDEP) as evidenced by the granting of Permit Approvals L-20775-A-A-N & L-20775-TG-B-N and subsequent amendments.

The Fore River site was formerly owned by Merrill Industries and the Portland Terminal Co. and contained multiple sets of railroad tracks that were used to store railcars. The combined 85.5-acre parcel consisted of 43.5 acres of tidal mudflats and 42 acres of undeveloped land above the mudflats. Four wetland areas totaling over four acres were present in the upland area. Three small linear wetland areas were located within former drainage ditches along old railroad track paths. The fourth and largest wetland was a 3.6-acre former gravel pit that had been excavated to provide gravel for the original Veterans Memorial Bridge and for railroad operations.

Mercy retained a team of hospital planning architects and consultants to develop an initial Master Plan for the Fore River parcel. Numerous development layouts were refined over time as Mercy's understanding of the site's natural resources became known. During the initial planning phase in 2001/2002, the most desirable site layout was identified; however, it would have resulted in over three acres of wetland filling. In order to minimize natural resource impacts, the selected design layout in 2002 reduced the proposed wetland impacts to 0.92 acres, which involved the filling of the three former rail line drainage ditches.

Phase 1 design plans were developed from 2004 through 2006, and in September 2006 the Phase 1 construction commenced. The Phase 1 program maintained resource impacts to the originally permitted 0.92 acres, thus avoiding any significant impacts to the former gravel pit wetland located in the middle of the site.

Status of the Two-Phase Move to the Fore River Campus

Mercy chose to abandon their State Street site and move to the Fore River campus in order to meet important strategic obligations and maintain appropriate standards of care that were in jeopardy if the Hospital were to remain at State Street. A two-phase move was planned, with the intent of fully completing the relocation in time for Mercy's 100-year anniversary in 2018. The first phase of the move to the Fore River campus was completed in 2008 with the construction of the Phase 1 hospital facility and an adjoining medical office building (MOB). Ancillary facilities including surface parking for 783 vehicles, utilities, snow storage and a maintenance building were also constructed. The Phase 2 planning effort has also continued since that time.

In the five-year period that the hospital has been maintaining both the State Street campus and the Fore River campus, Mercy has become acutely aware of the operational and financial problems of maintaining two interdependent campuses. Mercy has ramped up the Phase 2 planning process with the intent of developing applications and seeking the appropriate permits in 2012. The initial planning and preliminary design of the Phase 2 campus has revealed new and unexpected challenges. Phase 2 opportunities previously considered during the 2004-2006 design phase are now considered problematic and constrained due to changing programs and space needs associated with current and anticipated healthcare delivery.

As it stands today, Mercy finds the Phase I hospital at the Fore River campus to be highly constrained in terms of its expansion options. The Phase 2 hospital was always intended to be to the east of Phase 1, and that has not changed. However, Mercy has undergone substantial growth over the past decade and continues to need to expand its role as a community hospital. The current Phase 2 hospital build-out is projected to

incorporate 200,000 to 250,000 square feet of hospital space along with approximately 72,000 square feet for an Ambulatory Care Center (ACC) to be directly connected to the hospital. These projections represent an increase in programming and space needs over what was contemplated in 2006.

The useable portion of the 42-acre Fore River campus has shrunk over time. The Fore River Parkway and the final grading of the Phase 1 property have constricted expansion opportunities toward the river on the west. Construction of the new Veterans Memorial Bridge has further constrained the south end of the site. All major utility entries, hospital gases and emergency generators are optimally located immediately south of the Phase 1 hospital, so as to service the intended Phase 2 expansion, but they restrict development in the southwest portion of the site. DeLuca-Hoffman Associates, Inc. has determined that there is approximately less than 20 acres of developable land remaining at the Mercy Fore River site, as shown on Figure 1 following this section.

The Mercy staff, working with architects specializing in hospital planning, has now discovered that there is insufficient space to the north of the Phase 1 hospital to accommodate the current needs and, especially, future expansion beyond the planned Phase 2 hospital. The presence of the 3.5 acre wetland adjacent to the existing hospital poses a significant constraint and, therefore, an enormous challenge for the Phase 2 expansion. Building Phase 2 of the Hospital to the south of the wetland is not an option. Whether there is separation of facilities by a mile or by 200 yards, the operational, safety and logistical problems are the similar. These issues are summarized below:

- **There are safety issues** associated with medical staff, patients and visitors walking or otherwise being transported through parking lots and across access and egress points on the campus. Safety is also a concern when patients looking for the emergency room come to the wrong hospital location.
- **There are serious health care risks** for patients being wheel-chaired or bussed between hospital facilities for testing, evaluation, etc. When time is of the essence, the need to transport a patient between buildings can be life-threatening.
- **There are important issues of attraction and retention of staff** in a competitive market when facilities are less than top-notch and physician insurability is vulnerable to non-routine patient logistic practices associated with moving patients between buildings.
- **The inefficiency and inconvenience of a dual-facility campus costs Mercy \$9.5M per year** to maintain and results in on-going yearly financial loss. Similar losses would be sustained in a divided Fore River campus because of busing requirements and duplication of operations such as imaging, laboratories, food services, cafeteria, security, plant engineering, and environmental services.

The Present Purpose and Need

Mercy's project purpose is to construct a Phase 2 hospital build-out with 250,000 square feet of hospital space and approximately 72,000 square feet for an Ambulatory Care Center (ACC) to be directly connected to the existing Phase 1 Fore River Hospital, while maximizing site safety and allowing for a future Phase 3 expansion that would be in close proximity to the ACC. Future medical offices and structured parking also are part of the Phase 2 planning and each plays a vital role in Mercy's long term viability. The

need to complete the move to the Fore River campus is now front and center on Mercy's agenda, and the Hospital finds itself in an untenable situation. The Hospital has struggled to maintain appropriate standards of care in a temporary two-site facility. This has resulted in issues with the patient and staff safety; patient, visitor and staff frustration; physician dissatisfaction; and substantial financial losses. Dual facilities and divided services result in less than best-practice medical delivery. A team of experienced hospital architects and engineers have assessed the combination of physical constraints and present and future hospital growth requirements at the Fore River campus. They have concluded that a fully integrated and connected campus – the desire of all parties – is impossible without impacting the three-acre wetland. Mercy has considered the available alternatives to create a campus that will allow appropriate standards of care and has found that filling the wetland has become a necessity for the current and future viability of the hospital.

1.1 Development Proposal

Mercy Health System of Maine is proposing to develop their Phase 2 hospital campus on the Fore River development site over the next 2-6 year period. The current development master plan includes the following uses:

- a. The Phase 2 hospital expansion wherein all State Street hospital functions are relocated to the Fore River campus. This will include an additional 322,000 SF of Hospital program area over a 116,980 SF building footprint;
- b. A 72,000 SF Acute Care Center (ACC) will be established within the 322,000 SF Hospital program area;
- c. A medical office building of 60,000 SF within a 15,000 SF footprint;
- d. A medical office building of 108,000 SF within a 40,000 SF footprint;
- e. Accessory uses, including but not limited to, parking facilities and structures (for 1,800-2,000 parking spaces), utility services, stormwater management systems, and site amenities. The parking garages include a 51,800 SF structure containing 750 parking spaces and 33,800 SF structure containing 450 spaces;
- f. Continued use of public open space along the waterfront at the north and south ends of the campus; and
- g. Continued use of the south end of the campus for snow storage and/or remote parking.

All of the above facilities will be developed primarily to support the main use of the site as a hospital campus, although it is anticipated that some use of support facilities by others in the neighboring community may occur.

Future development on the site is anticipated to include some of the aforementioned possible uses.

Other ancillary development features will include parking facilities, utility service relocations, advanced stormwater management systems, and site amenities. Parking for the campus will include both surface and structural parking facilities. The parking needs for the project will likely exceed 1,800 spaces to meet local zoning requirements and facility needs.

The Phase 2 development is expected to include multiple buildings, some owned by the applicant and some potentially owned by others. The new structures may be a mix of single and multi-level buildings developed in a campus-like setting. The anticipated building footprint(s) will exceed 229,560 SF. The buildings may be freestanding or linked, depending upon the phasing and ultimate development program proposed. The buildings will be constructed on conventional spread footing foundations or end bearing piles.

The Maine Department of Transportation has previously used a portion of the property for the construction of the Fore River Parkway (FRP) and most recently the new Veteran's Memorial Bridge (VMB). The MDOT has previously completed natural resources permitting associated with the FRP and VMB separately from the proposed Hospital development.

Two separate access drives will continue to provide access to the Hospital campus off the FRP. These access locations remain fixed due to geometric and sight line constraints along the Fore River Parkway. These fixed locations also contribute to the planning and layout challenges. Access off County Way is limited to emergency vehicles only, as it requires crossing of Pan Am Railway's tracks.

The Hospital campus will continue to be served by public water, sewer, natural gas, and nearby communication, cable, and electric utilities. Onsite water service consists of a 12" water main. A 42" sanitary sewer interceptor borders the site along its easterly border. The Hospital will continue to manage its wastewater flow stream in a similar fashion to the existing facilities at both Fore River and State Street. Communications, cable, and electric utilities are located on the project site. Some relocation of Phase 1 utilities is likely during Phase 2 construction.

The Phase 2 project's proposed stormwater management systems will provide water quality treatment measures to treat the new structure area developed as part of the Phase 2 expansion. The intent is to meet the current MeDEP Chapter 500 Standards including treatment of at least 95% of new structure area and 80% of the Phase 2 developed area. Stormwater quantity control is not required since the site will be discharging to tidal waters.

Extensive landscaping including perimeter tree plantings will continue to be provided for buffering and aesthetic benefits. The site design includes substantial open space necessary to satisfy local requirements associated with a Contract Zone Agreement negotiated between Mercy Hospital and the City of Portland.

1.2 Existing Conditions

The Mercy Campus currently contains the 137,832 SF Phase 1 Hospital and an approximately 80,000 SF medical office building both of which are located north of the former gravel pit wetland located in the middle of the site. Site access is from two

primary driveways. The northerly, unsignalized driveway allows left and right turn entering off the Fore River Parkway, but only right turn exiting onto the Parkway. The southerly signalized driveway allows entering and exiting movements in each direction. The south end of the site currently contains a surface parking lot for 324 vehicles. A small maintenance building remains at the site's south end also. A snow storage area at the far south end of the site will remain.

The site's parking is spread out over five surface parking lots. The northerly lots contain over 400 spaces used by the medical office building staff and visitors as well as by the Phase 1 Hospital patients, visitors and some staff. The southerly parking lot is used by Phase 1 Hospital staff as well as for remote parking for State Street hospital staff. Mercy currently runs a shuttle bus between the parking lot and the State Street facility. Drainage systems within these parking lots capture and convey stormwater runoff to the Fore River. Additional description of the site's stormwater management systems is contained in Section 12 of the application.

Mercy maintains the entire site and those areas not covered by building or parking are well landscaped and managed with manicured lawn and planting beds. A generous amount of trees and shrubs compliment the site's appearance.

1.3 Natural Resources

Normandeau Associates has completed an onsite investigation to delineate wetlands and to identify resources that may be subject to regulatory review as part of the proposed amended development process. A copy of their wetlands report is contained in the NRPA application. The wetlands were delineated according to the 1987 Corps of Engineers Wetlands Delineation Manual (Technical Report Y-87-1) as clarified in Performance Standard and Supplemental Definitions for use with the 1987 Corps Manual (August 1, 1995). This multi-parameter approach uses the characteristics of vegetation, soils and hydrology in determining wetland boundaries.

The largest area identified as a wetland lies within the former gravel pit area centrally located within the site. The entire gravel pit area is approximately 3.8 acres, of which approximately 3.49 acres have been delineated as wetland. The wetland's predominant features are a shallow pond created by the excavation of the pit to near or below the groundwater table. The water levels in the pit are controlled by a 15" outfall pipe and the seasonal groundwater levels in the area. The bottom of the pit is at approximately elevation 8, whereas original historic elevations varied between elevations 20 to 30 feet. Most resource maps including the USDA-SCS Medium Intensity soils map for Cumberland County and the USGS topographic map identify the area as a gravel pit. These maps (copies of which are included following this section) confirm that the pit and the resultant pond are manmade features.

The pit wetland area was improved during the Phase 1 construction. These improvements include a substantial cleanup of solid waste including tires, white goods, garbage and related debris that had been deposited or collected in the pit area. The work also included a reclamation effort involving surface stabilization of the former pit side slopes and ground surfaces above standing water. Terra-seeding was used to place a mix of mulch and vegetative seeding in order to establish permanent vegetation on the pit's perimeter slopes. This effort has been highly successful in stopping erosion into the pit wetland.

1.4 **Construction Schedule**

The Phase 2 project is currently under design with a targeted construction start date for 2013/2014 following a successful Certificate of Need Finding from the State of Maine. Project completion is forecast by 2018.

The project will be phased beginning with the placement of fill in the borrow pit to create temporary parking facilities. The temporary facilities will allow subsequent construction of the parking garage followed by the main Phase 2 Hospital expansion. The Hospital expansion effort involves a coordinated effort that maintains ongoing hospital functions and service throughout the Phase 2 duration.

1.6 **Figures, Plates, Photos, and Drawings**

Figures showing the proposed Mercy Hospital site are appended to this section and include:

Figure	Title
1	DeLorme Location Map
2	USGS Topographic Map
3	Property Tax Map
4	Zoning Map (Contract zone agreement applies)
5	Aerial Photography
6	Abutting Land Use Map
7	FEMA Flood Map
8	USDA SCS Soils Map
9	MGS Sand and Gravel Aquifer Map
10	Surficial Geology Map
11	NWI Map – Not Available
12	Fresh-Water Wetlands Map – Not Published

Colored plates follow the figures and include:

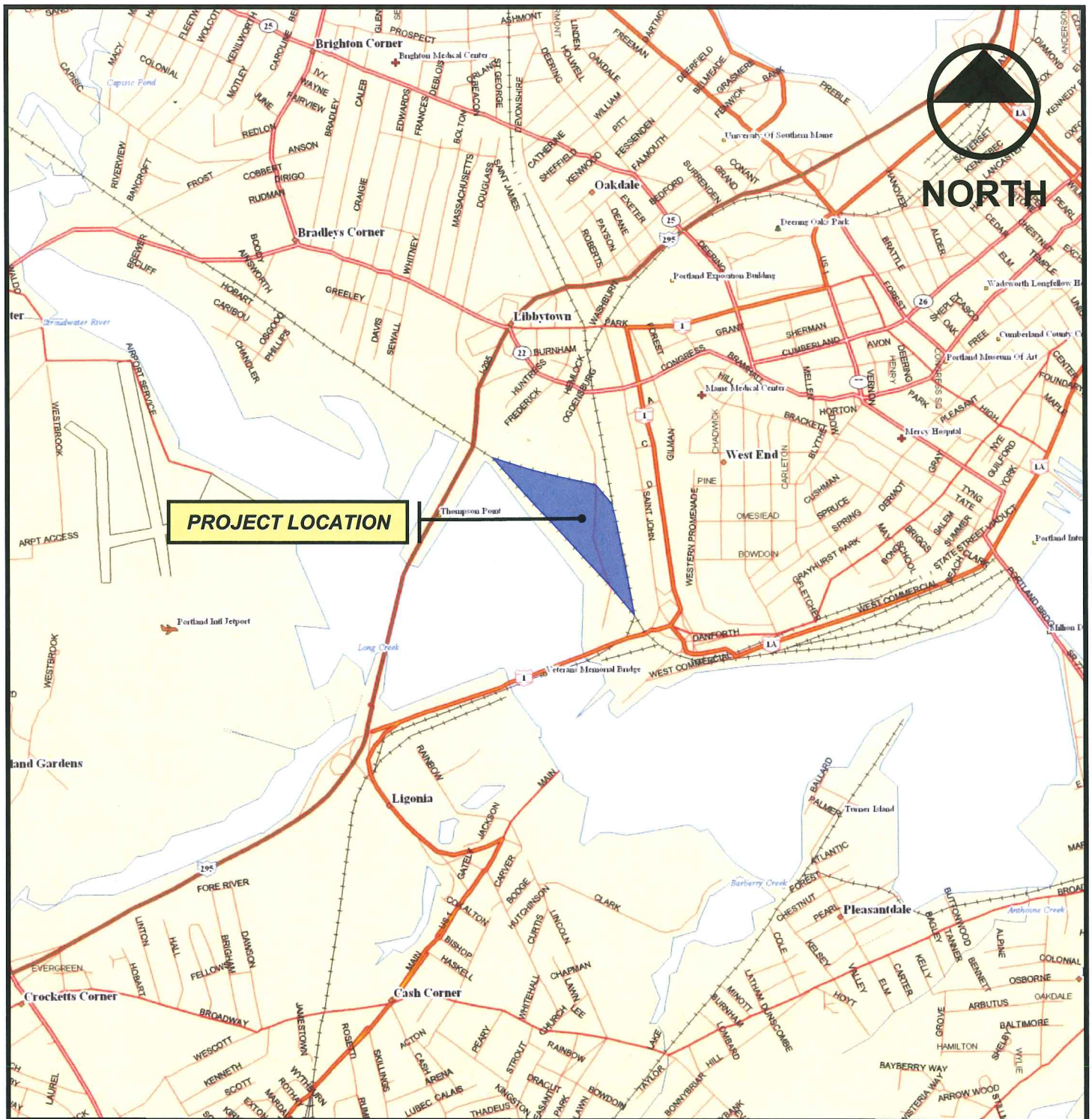
Plate Number	Description
1	Existing Conditions
2	Overall Layout Plan
3	Grading Plan
4	Utility Plan

Photographs provided at the end of this section are identified in the accompanying figure.

Drawings provided in support of the MeDEP application include:

Sheet Number	Description
C-1.0	Cover Sheet
C-1.1	General Notes and Legend
C-2.0A	Boundary Survey – 1 of 2
C-2.0B	Boundary Survey – 2 of 2

Sheet Number	Description
C-2.1	Overall Existing Conditions Plan
C-2.2	Demolition and Removals Plan
C-3.0	Overall Site Plan
C-3.1	Site Layout Plan (North)
C-3.2	Site Layout Plan (South)
C-4.0	Overall Grading and Drainage Plan
C-4.1	Grading Plan (North)
C-4.2	Grading Plan (South)
C-4.3	Site Layout and Grading Plan of Elevated Parking Deck Level 1
C-4.4	Stormwater Management Plan (North)
C-4.5	Stormwater Management Plan (South)
C-5.0	Erosion and Sediment Control Plan (North)
C-5.1	Erosion and Sediment Control Plan (South)
C-5.2	Interim Phase 2A Plan
C-6.0	Overall Utility Plan
C-6.1	Utility Plan (North)
C-6.2	Utility Plan (South)
C-7.0	Stormwater Details Subsurface Sand Filter
C-7.1	Stormwater Details StormTech® Chamber Storage Details
C-7.2	Stormwater Details Underdrained Grassed Soil Filter
C-7.3	Stormwater Details Underdrained Bioretention Cell
C-7.4	Stormwater Details Filterra® Units
C-7.5	Stormwater Details StormFilter® Treatment Units
C-8.0	Erosion and Sediment Control Details
C-8.1	Erosion and Sediment Control Details
C-8.2	Erosion and Sediment Control Details
C-9.0	Current Conditions Watershed Map
C-9.1	Post-Development Watershed Map
C-10.0	Site Sections



DeLORME LOCATION MAP
Mercy Health System of Maine – Portland, Maine
 SOURCE: DeLORME MAPEXPERT; DATED: 1993

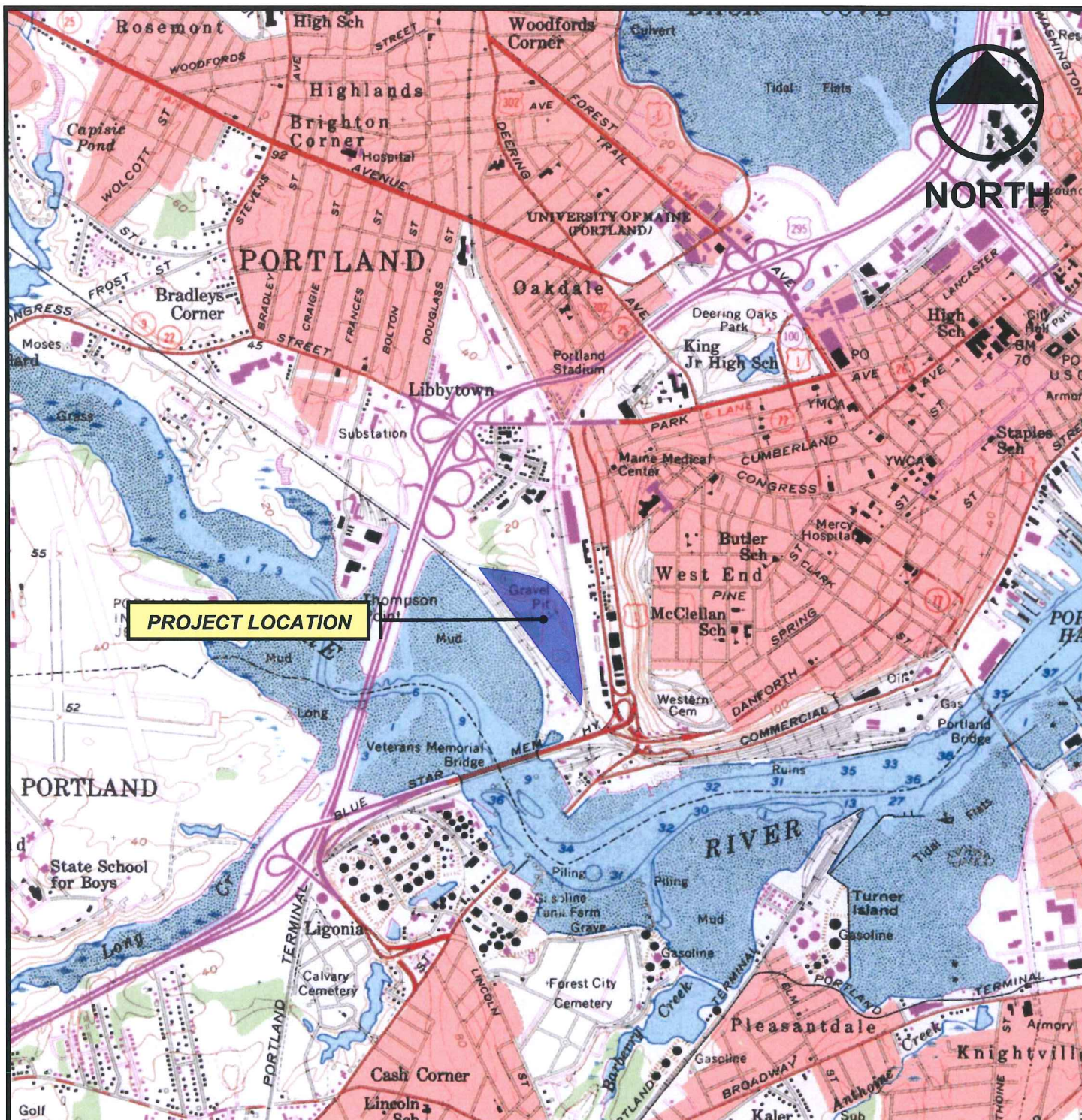


DeLUCA-HOFFMAN ASSOCIATES, INC.
CONSULTING ENGINEERS
 778 MAIN STREET, SUITE 8
 SOUTH PORTLAND, MAINE 04106
 TEL. 207-775-1121
 FAX 207-879-0896

DESIGNED	SRB	DATE	MARCH 2001
DRAWN	JDL	SCALE	1" = 2000'+-
CHECKED	SRB	JOB NO.	2149

FIGURE

1



USGS TOPOGRAPHIC MAP

Mercy Health System of Maine – Portland, Maine

SOURCE: TOPOSCOUT; Coastal Maine CD-ROM, USGS Portland West Quadrangle, 7.5 Minute Series (Topographic)

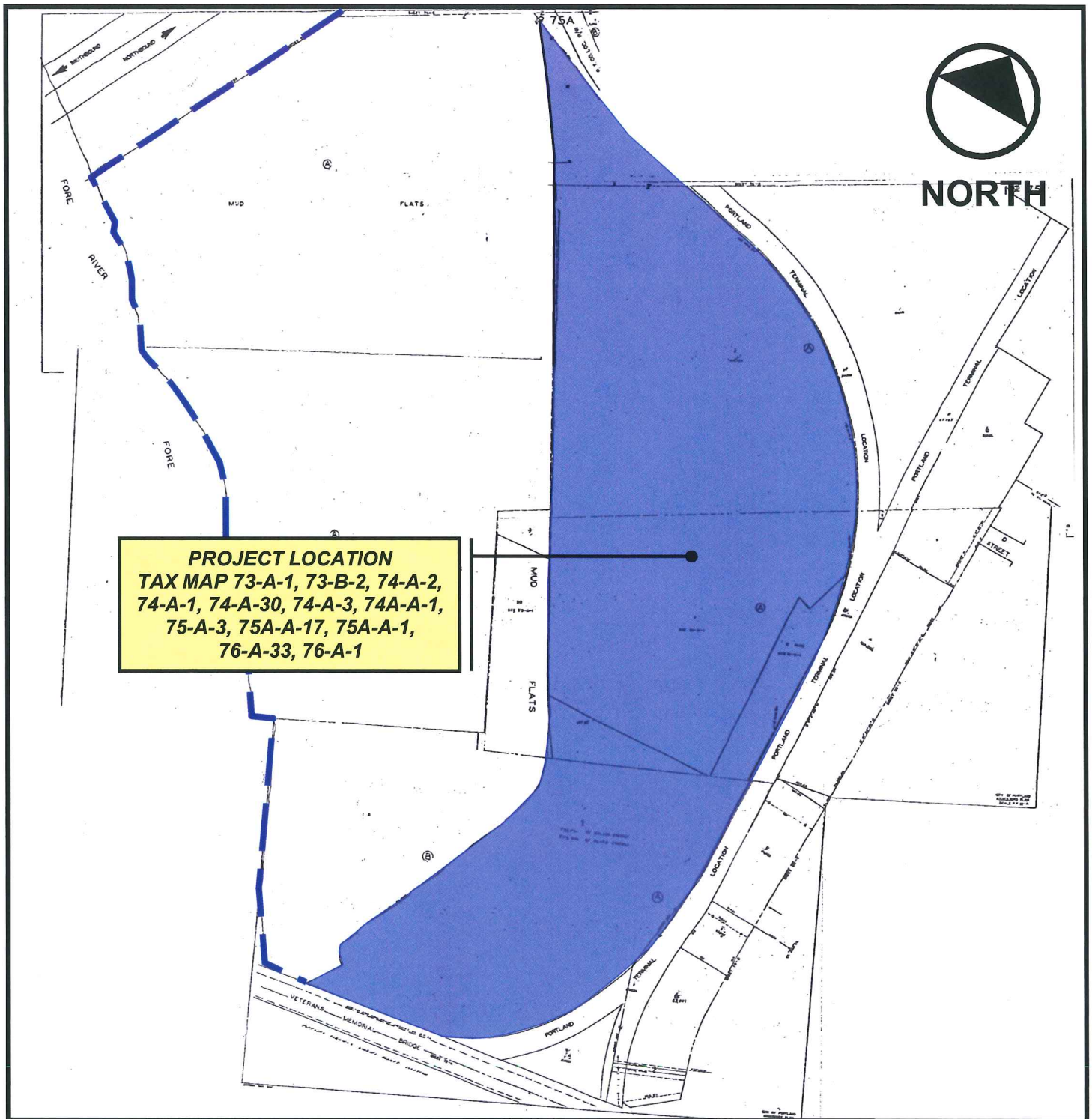


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DESIGNED	SRB	DATE	MARCH 2001
DRAWN	JDL	SCALE	1" = 2000'+-
CHECKED	SRB	JOB NO.	2149

FIGURE

2



PROPERTY TAX MAP

Mercy Health System of Maine – Portland, Maine

SOURCE: CITY OF PORTLAND ASSESSORS PLAN, MAP NUMBERS: 73, 74, 74A, 75 & 75A

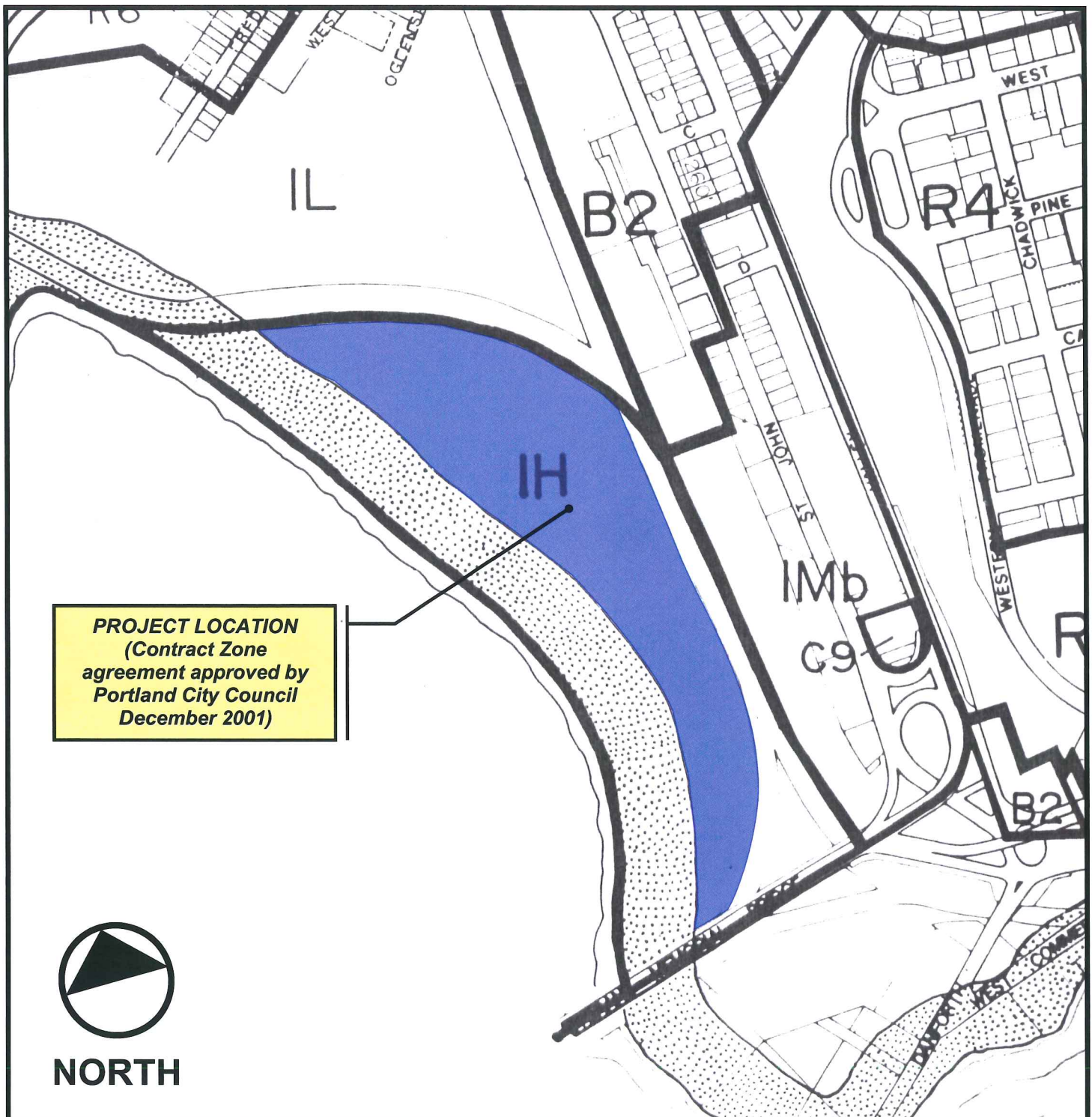


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DESIGNED	SRB	DATE	MARCH 2001
DRAWN	JDL	SCALE	N.T.S.
CHECKED	SRB	JOB NO.	2149

FIGURE

3



ZONING MAP **Mercy Health System of Maine – Portland, Maine** SOURCE: GPCOG, Cartographic Division; DATED: 1991

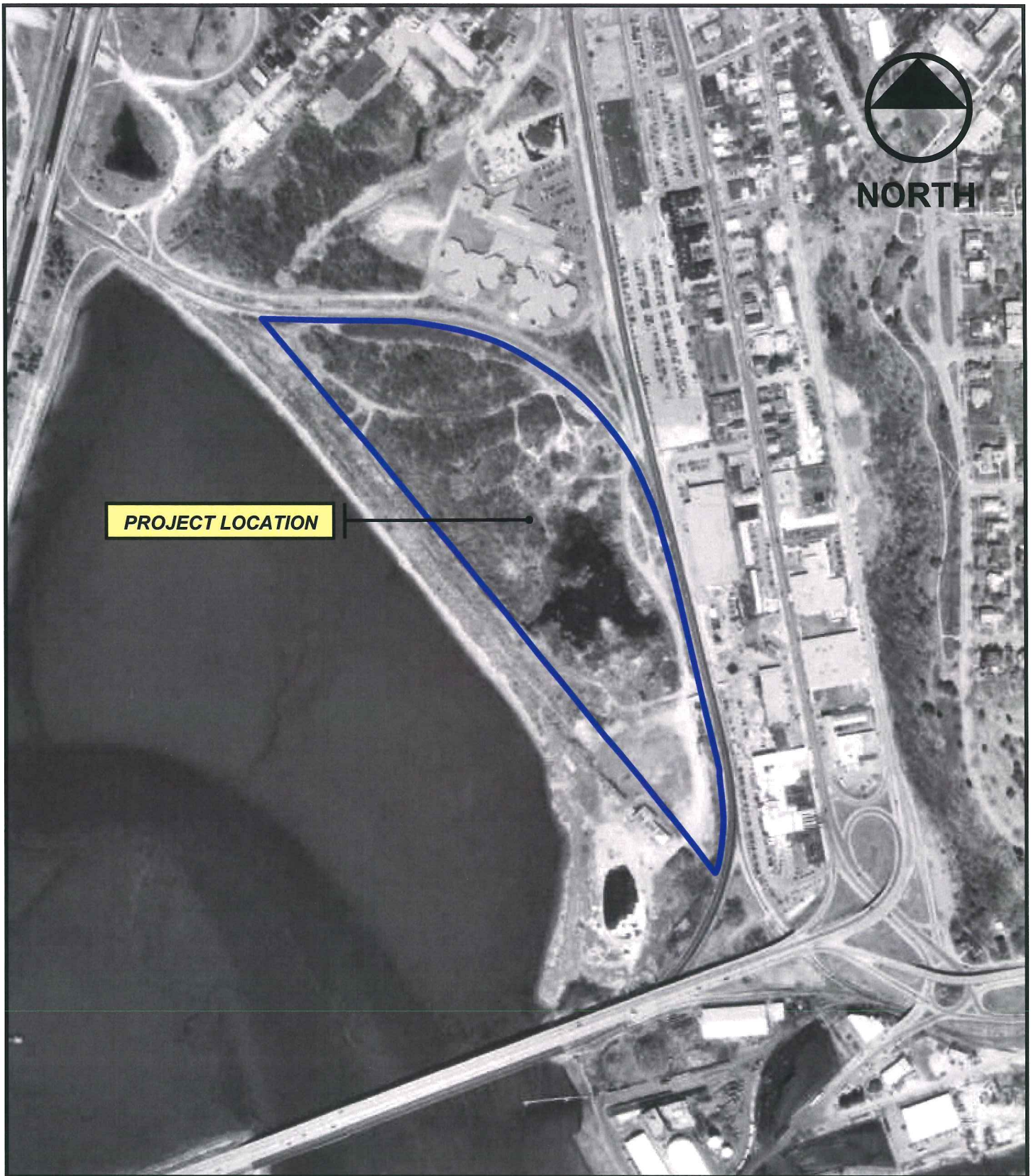


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DESIGNED	SRB	DATE	JUNE 2001
DRAWN	JDL	SCALE	N.T.S.
CHECKED	SRB	JOB NO.	2149

FIGURE

4



DH



AERIAL PHOTOGRAPH

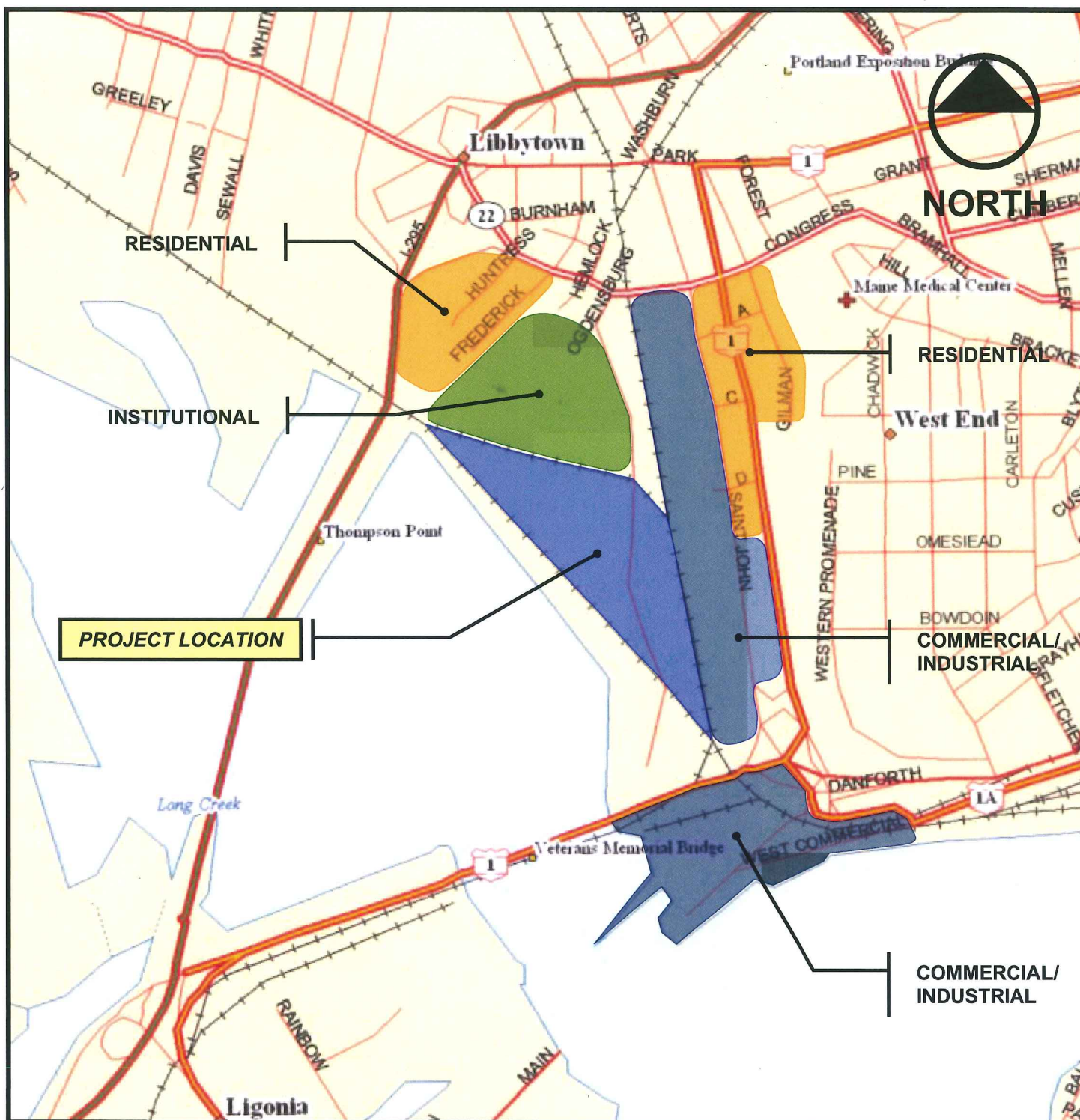
Mercy Health System of Maine – Portland, Maine

SOURCE: GPCOG; Greater Portland Council of Governments;

DATED: 4-25-95; SCALE: 1" = 500'±

FIGURE

5



DeLORME ABUTTING LAND USE MAP
Mercy Health System of Maine – Portland, Maine

SOURCE: DeLORME MAPEXPERT; **DATED:** 1993

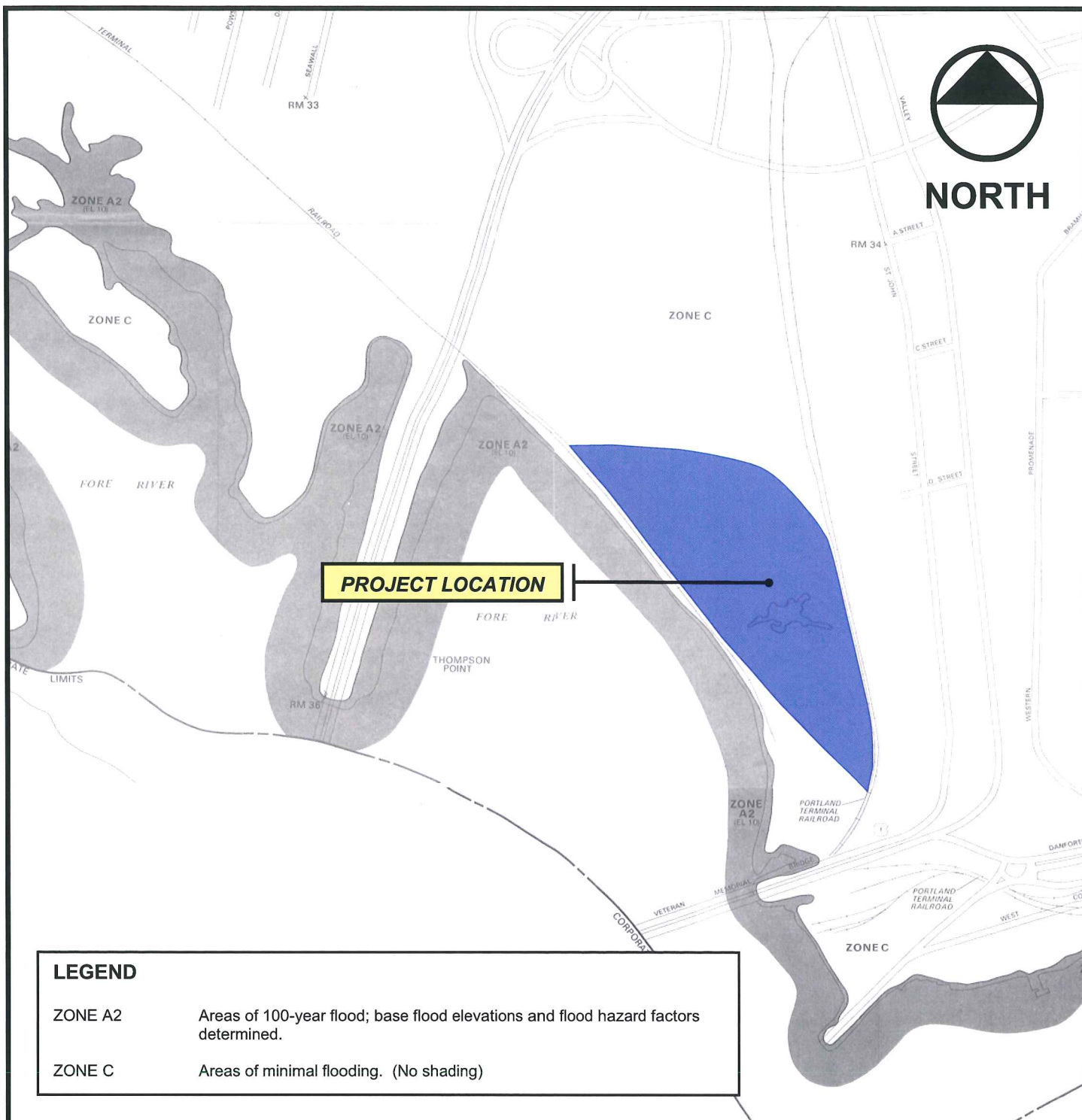


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DESIGNED	SRB		DATE	MARCH 2001
DRAWN	JDL		SCALE	1" = 1000'+-
CHECKED	SRB		JOB NO.	2149

FIGURE

6



FLOOD MAP

Mercy Health System of Maine – Portland, Maine

SOURCE: FIRM; FLOOD INSURANCE RATE MAP, CITY OF PORTLAND, MAINE CUMBERLAND COUNTY;
COMMUNITY-PANEL NUMBERS: 230051 0013 B AND 230051 0016 B; **EFFECTIVE DATE:** JULY 17, 1986

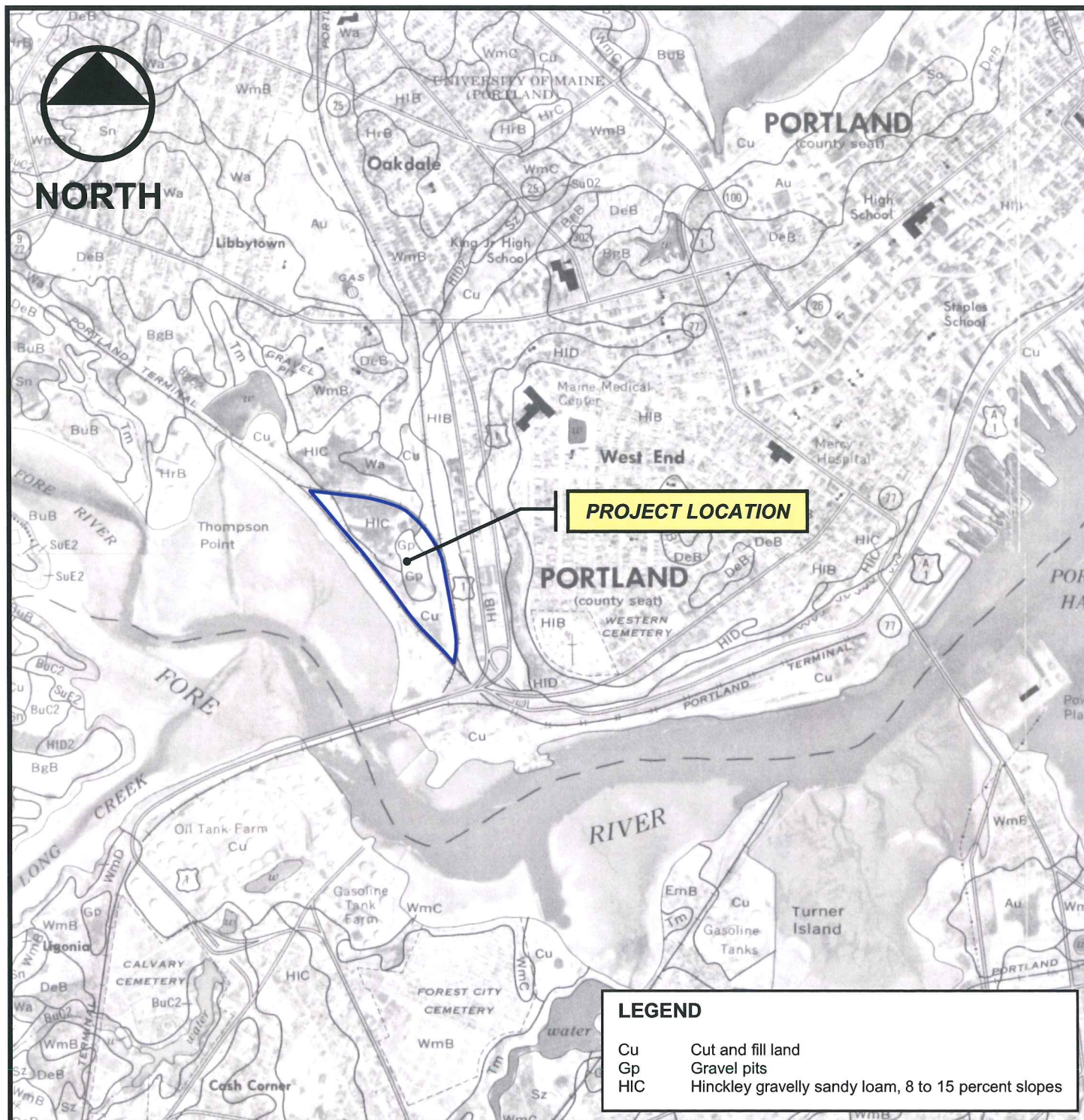


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DESIGNED	SRB	DATE	OCT. 2001
DRAWN	JDL	SCALE	1" = 800'+-
CHECKED	SRB	JOB NO.	2149

FIGURE

7



USDA SOILS MAP
Mercy Health System of Maine – Portland, Maine
SOURCE: SOIL SURVEY OF CUMBERLAND COUNTY, MAINE; SHEET NUMBERS: 82 & 86

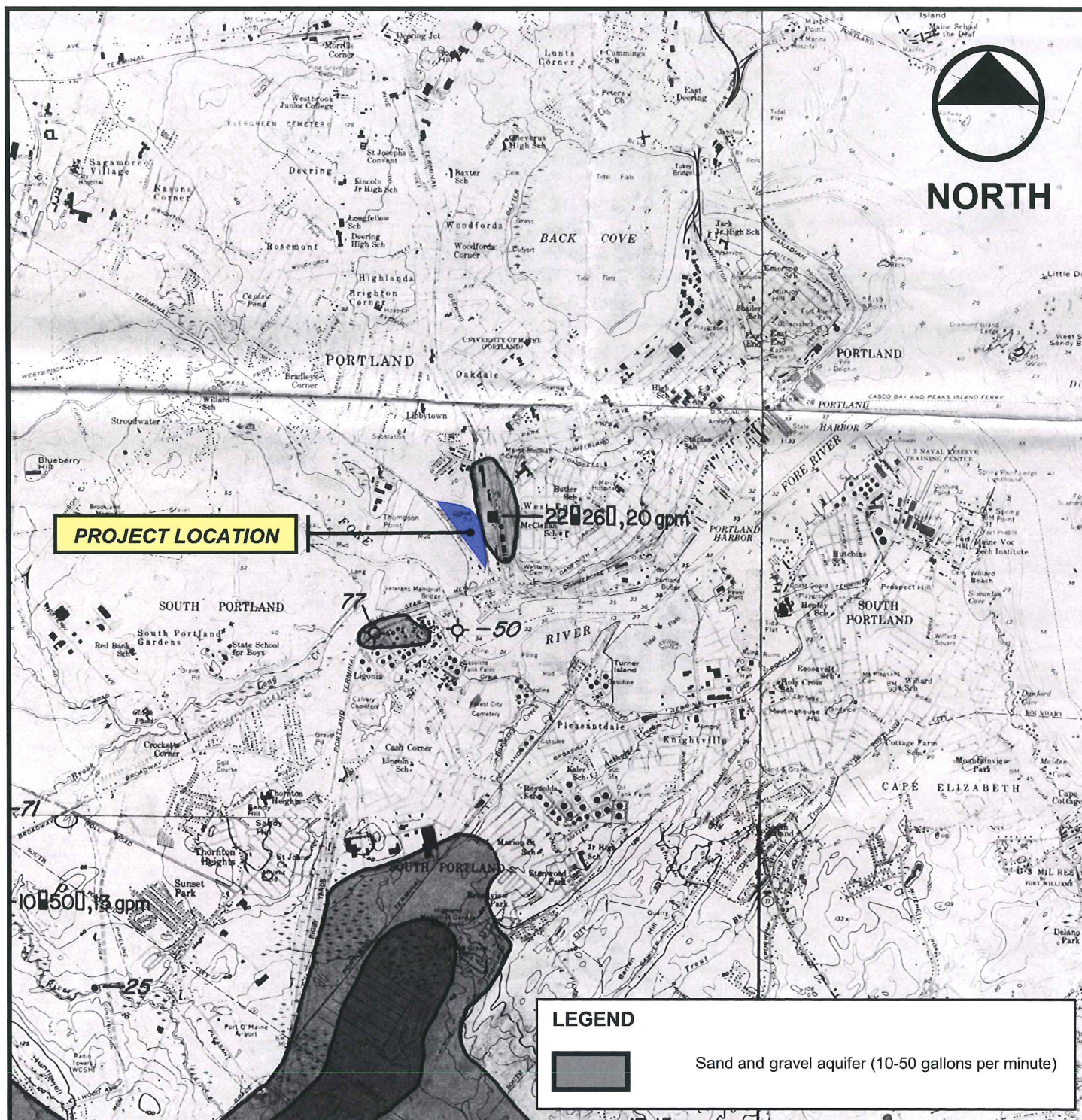


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DESIGNED	SRB	DATE	MARCH 2001
DRAWN	JDL	SCALE	1" = 1667'+-
CHECKED	SRB	JOB NO.	2149

FIGURE

8



MGS SAND AND GRAVEL AQUIFER MAP

Mercy Health System of Maine – Portland, Maine

SOURCE: SAND AND GRAVEL AQUIFERS, MAP 5, CUMBERLAND AND YORK COUNTIES, MAINE; DATED: 1979

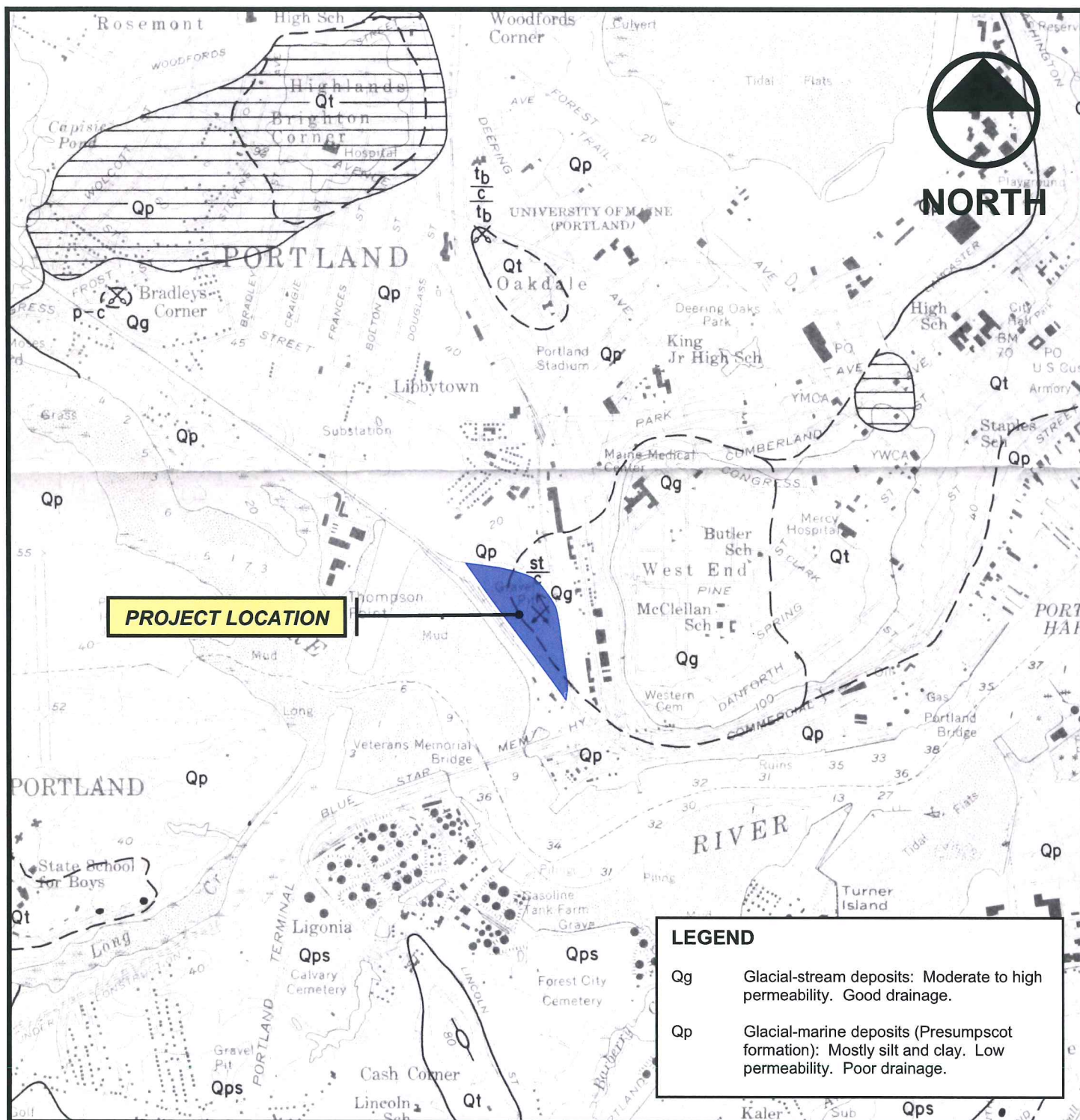


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DESIGNED	SRB	DATE	MARCH 2001
DRAWN	JDL	SCALE	1" = 4167'+-
CHECKED	SRB	JOB NO.	2149

FIGURE

9



MGS SURFICIAL GEOLOGY

Mercy Health System of Maine – Portland, Maine

SOURCE: RECONNAISSANCE SURFICIAL GEOLOGY OF THE PORTLAND WEST QUADRANGLE, MAINE;
OPEN-FILE NO. 76-47; DATED: 1976



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DESIGNED SRB DATE MARCH 2001

DRAWN JDL SCALE 1" = 2000'+-

CHECKED SRB JOB NO. 2149

FIGURE

10

SECTION 2

TITLE, RIGHT, AND INTEREST

2.0 Overview

Mercy Hospital owns the property as evidenced in the accompanying deeds. Mercy hospital currently is entered into a lease agreement with Health Care REIT, Inc. as they own the medical office building. Mercy has also recently transferred approximately 1.48 acres of land to the Maine Department of Transportation for the construction of the Fore River Parkway and the Veterans Memorial Bridge.

2.1 Deeds/Boundary Survey/Options

The purchase deeds held by Mercy Hospital are attached.

2.2 Plan Reference

ALTA/ACSM Land Title Survey Prepared for Health Care REIT, Inc.

2.3 Attachments

Attachment A Deed – Portland Terminal Co. to Mercy Hospital

Attachment B Deed – Merrill Industries to Mercy Hospital

ATTACHMENT A

Deed:

Portland Terminal Co. to Mercy Hospital

RELEASE DEED

PORTLAND TERMINAL COMPANY, a corporation duly organized and existing under the laws of the State of Maine, with offices at Iron Horse Park, North Billerica, Middlesex County, Massachusetts 01862 (the "Grantor"), for consideration paid to it by **MERCY HOSPITAL**, a Maine non-profit corporation, having a mailing address of 144 State Street, Portland, Maine 04101-3795 (the "Grantee"), hereby grants to the Grantee all the Grantor's right, title and interest, without any warranties or covenants of title whatsoever, in a certain parcel of land, and the buildings, bridges, structures, crossings, fixtures and improvements thereon, if any, situated in Portland, Cumberland County and State of Maine (the "Premises") described as follows:

See Exhibit "A" Attached Hereto and

Made a Part Hereof by Reference

This conveyance is subject to the following reservations, conditions, covenants and agreements:

1. This conveyance is made without granting any right of way, either by necessity or otherwise, over any remaining land or location of the Grantor, except as provided in Exhibit A.
2. Intentionally Omitted.
3. Intentionally Omitted.
4. Intentionally Omitted.
5. By the acceptance of this deed and as part consideration therefor, the Grantee hereby assumes any and all agreements, covenants, obligations and liabilities of the Grantor in respect to any underground facilities, drainage culverts, walls, crossings and/or other structures of any nature and description located in whole or in part within the Premises.
6. By the acceptance of this deed and as part consideration therefor, the Grantee agrees to irrevocably waive, give up and renounce any and all claims or causes of action against

the Grantor in respect of claims, suits and/or enforcement actions (including any administrative or judicial proceedings and any remedial, removal or response actions) ever asserted, threatened, instituted or requested by any person and/or governmental agency on account of: (a) any release of oil or hazardous materials or substances of any description on, upon or into the Premises in contravention of any ordinance, law or statute (including, but not limited to, the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (42 U.S.C. § 9601, et seq., as amended)); and (b) any and all damage to real or personal property, natural resources and/or harm or injury to persons alleged to have resulted from such release of oil or hazardous materials or substances.

7. By the acceptance of this deed and as part consideration therefor, the Grantee hereby agrees to build and forever maintain fences (together with any necessary gates), suitable to the Principal Engineering Office of the Grantor, along the boundaries of the Premises which are common to remaining land or location of the Grantor (the "Fences"), if Fences are ever required in the sole and reasonable opinion of said Principal Engineering Officer.
8. This conveyance is subject to the following restriction for the benefit of other land or location of the Grantor, to wit: that from the date of delivery of this deed, the Grantor shall not be liable to the Grantee or any lessee or user of the Premises (or any part thereof) for any damage to any buildings or property upon them caused by fire, whether communicated directly or indirectly by or from locomotive engines of any description upon the railroad operated by the Grantor, or otherwise. The aforementioned restriction shall not apply to wanton, willful or intentional acts of the Grantor.
9. By acceptance of this deed and as part consideration therefor, the Grantee hereby agrees to make no use of the Premises which, in the sole and reasonable opinion of the Principal Engineering Officer of the Grantor, materially adversely affects, materially increases or decreases drainage to, from, upon or in any remaining land or location of the Grantor. The Grantee agrees to indemnify and save the Grantor harmless from and against any and all loss, cost, damage or expense including, but not limited to, the cost of defending all claims and/or suits for property damage, personal injury or death arising out of or in any way attributable to any breach of the foregoing covenant.
10. The Grantor excepts from this conveyance any and all overhead, surface or underground signal and communication line facilities of the Grantor located within the limits of the Premises and this conveyance is subject to the Grantor's use of any such facilities in their present locations and entry upon the Premises from time to time to maintain, repair, replace, renew, relay or remove such facilities.
11. Whenever used in this deed, the term "Grantor" shall not only refer to the Portland Terminal Company, but also its successors, assigns and affiliates and the term "Grantee" shall not only refer to the above named Grantee, but also the Grantee's successors, assigns and grantees, as the case may be.

12. The several exceptions, reservations, conditions, covenants and agreements contained in this deed shall be deemed to run with the land and be binding upon the Grantee forever. In addition to the acceptance and recording of this deed, the Grantee hereby signifies assent to the said several exceptions, reservations, conditions, covenants and agreements, by joining its execution.

IN WITNESS WHEREOF, the said Portland Terminal Company, has caused this Release Deed to be executed in its name and its corporate seal to be hereto affixed by David A. Fink, its Chief Executive Officer, thereunto duly authorized this 26th day of June, 2002.

**GRANTOR: PORTLAND TERMINAL
COMPANY, a Maine corporation**

By David A. Fink
David A. Fink
Its Chief Executive Officer

SEAL

COMMONWEALTH OF MASSACHUSETTS

COUNTY OF MIDDLESEX, ss.

On June 26, 2002, personally appeared the above-named David A. Fink, Chief Executive Officer of said Portland Terminal Company in his said capacity, and acknowledged the foregoing to be his free act and deed and the free act and deed of said Corporation.


Before me,

Pamela J. Primeau
Notary Public
Printed Name: Pamela J. Primeau
My Commission Expires March 28, 2003

SEAL

The Grantee hereby accepts and agrees to become bound by the several reservations, conditions, covenants and agreements contained in this deed.

GRANTEE: MERCY HOSPITAL, a Maine non-profit corporation


Witness

By: HOWARD R. BECKLEY

Name: H.R. Beckley

Title: President

STATE OF MAINE
CUMBERLAND, ss.

June 25, 2002

Then personally appeared Howard R. Beckley the PRESIDENT of Mercy Hospital and acknowledged the foregoing Deed of Easement to be his/her free act and deed in his/her said capacity and the free act and deed of the said Mercy Hospital, before me.

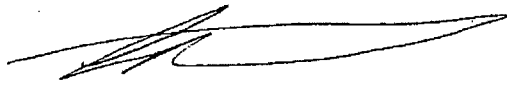

Notary Public: Attorney At Law
My Commission Expires:
Ande A. Smith, Esq.

EXHIBIT A
to
RELEASE DEED

GIVEN BY PORTLAND TERMINAL COMPANY TO MERCY HOSPITAL

LEGAL DESCRIPTION OF THE PREMISES

That certain parcel of land described as follows is released to Grantee:

A certain lot or parcel of land with buildings thereon situated on the northerly side of the Blue Star Memorial Highway (Route #1) at the Veteran's Memorial Bridge on the Fore River in the City of Portland, County of Cumberland and State of Maine as shown on a plan entitled "Land in Portland, ME. Portland Terminal Company to Mercy Hospital", Sale: 1: = 100', dated June 29, 2001, as amended to date, by Owen Haskell, Inc., which plan is being recorded herewith (the "Conveyancing Plan"), which lot or parcel of land is bounded and described as follows:

Commencing at a rod marking a point 50.00' westerly of and at right angles to the center line of the main track marking a P.C. Station of 23 + 11.35 as shown on right of way and track map Portland Terminal Company dated June 30, 1916 revised March 1938 filed in the Portland Terminal Company in V1-D over 1-A; Said rod being approximately 675' northerly of the northerly right of way line of said Route #1;

Thence northerly along land of Portland Terminal Company and being 50.00' westerly of the centerline of said main track, N 10° 46' 19" W a distance of 482.85' to a rod opposite station 18 + 28.50;

Thence continuing along land of Portland Terminal Company and being 50.00' westerly of the centerline of said main track N 10° 57' 07" W a distance of 290.08' to a rod opposite station 15 + 38.42;

Thence continuing along land of Portland Terminal Company N 9° 29' 00" W a distance of 197.09' to a rod marking the westerly right of way line for the existing spur track and being 33.00' westerly and opposite P.C. Station 2 + 00.64' as shown on said railroad plan;

Thence continuing along land of Portland Terminal Company and being along said right of way line of said spur track along a curve to the left whose radius is 922.37', an arc distance of 185.63' to a rod on the westerly edge of a paved drive, said rod being found on a chord of N 22° 33' 26" W a distance of 185.32' and said rod being the Point of Beginning;

Thence continuing along land of Portland Terminal Company and following the westerly edge of said paved drive S 9° 2' 42" W a distance 110.67' to a rod';

Thence continuing along land of Portland Terminal Company on the following courses:

N 78° 59' 25" W a distance of 42.80' to a rod;

S 10° 55' 38" E a distance of 580.68' to a rod, said rod being 160.00' westerly of and at right angles to the centerline of the main track opposite said Station 18 + 28.50';

S 78° 59' 25" W a distance of 446.63 feet to a tie point;

Continuing S 78° 59' 25" W a distance of 133' ± to the easterly bank of the Fore River and continuing to the approximate low water line a total distance of 1165' ±;

Thence northerly, northwesterly, westerly, northeasterly and southwesterly following the approximate low water line a distance of 2550' ± to the easterly right of way line of Route 295;

Thence N 17° 19' 15" E along said right of way line 760' ±;

Thence N 50° 25' 55" E along said right of way line 176.00 feet;

Thence easterly along said right of way line and along a curve to the left whose radius is 375.00', an arc distance of 7.14' to a point and the southwesterly right of way line for the existing spur track and land of Portland Terminal Company, said point being found on a chord of S 84° 55' 24" E a distance of 7.14';

Thence S 54° 28' 52" E along land of Portland Terminal Company 116.36';

Thence southeasterly along said land and a curve to the left whose radius is 988.44' an arc distance of 283.21 to a tie point, said tie point being located the following courses and distance from the aforementioned tie point:

N 36° 35' 47" W 23.62';

N 36° 20' 10" W 1202.64';

N 41° 38' 20" W 452.20 and said tie point being found on a chord of

S 62° 42' 17" E a distance of 282.24';

Thence continuing southeasterly and easterly along said land and a curve to the left whose radius is 988.37' an arc distance of 247.17' to a point said point being found on a chord of S 78° 04' 38" E a distance of 246.53';

Thence S 85° 15' 29" E along said land 439.84';

Thence continuing southeasterly along said land and a curve whose radius is 922.37', an arc distance of 1102.20' to the Point of Beginning, said point being found on a chord of S 51° 01' 30" E, 1037.78'.

Above courses are grid north.

Meaning and intending to release that certain parcel of land identified as the "Portland Terminal Parcel" on the Conveyancing Plan.

TOGETHER WITH all of Grantor's rights and interests in and to the easements and rights of way reserved by Grantor in its deed to Merrill Terminal, Inc. ("Merrill") dated July 27, 1998 and recorded in the Cumberland County Registry of Deeds at Book 14022 Page 302 (the "Merrill Deed"). Such easements are described as follows:

(a) A permanent non-exclusive easement and right of way over the "Reserved Right of Way", being a fifty (50') foot right of way or so much land as required to establish a public way in accordance with all governmental specifications and requirements, over, upon, across, under and through the portion of the land conveyed to Merrill in the Merrill Deed (the "Merrill Parcel") to the boundary of the Merrill Parcel, more particularly identified as the "APPROXIMATE LOCATION OF 50' WIDE 'RESERVED RIGHT OF WAY' AND UTILITY EASEMENT" (the "Reserved Right of Way") on an unrecorded survey plan of the Merrill Parcel entitled "Standard Boundary Survey, Route 1 Blue Star Memorial Highway: Portland Terminal Company to Merrill Industries, Inc." prepared for Merrill Industries, Inc. by Owen Haskell, Inc. and dated May 19, 1998, Job No. 97109P, (hereinafter referred to as the "Merrill Plan"), for all purposes of access of any description necessary and convenient, including, but not limited to, pass and repass on foot and with vehicles, machinery, utilities and drainage of every nature and description.

(b) A permanent non-exclusive easement over, under, across, upon and through the Reserved Right of Way, as shown on the aforementioned Merrill Plan, for utility purposes, including for the purpose of accessing, constructing, installing, operating, maintaining, modifying, repairing, replacing, relocating and removing pipes, conduits and other utility facilities and equipment. Said easement shall be located in a manner as not to interfere unreasonably with Merrill's use of the Merrill Parcel.

(c) The right to access and/or tap into any existing or future utilities located within the Reserved Right of Way as shown on the Merrill Plan; subject, however, to the right reserved by Grantor to access and/or tap into electrical distribution facilities located on the Merrill Parcel for purposes of obtaining electrical power suitable for the use and operation of its railroad signaling and communications equipment or for any other railroad purpose.

Grantor agrees that, if the Grantee herein should acquire some or all of the Merrill Parcel, then upon the occurrence of such acquisition or acquisitions, Grantor shall allow for the

relocation of its interconnection to said electrical distribution facilities at Grantee's cost and in such a fashion as to not unreasonably or unsafely interfere with Grantor's railroad operations.

TOGETHER WITH the same easements and rights of way granted to Merrill in the Merrill Deed over, upon, across, under and through the "50' WIDE 'GRANTED RIGHT OF WAY' AND UTILITY EASEMENT" depicted on the Merrill Plan (the "Granted Right of Way"), to the extent such Granted Right of Way is located on other land owned by Grantor and not on the land conveyed herein. Such easements and rights of way are described as follows:

(a) the permanent non-exclusive easement and right of way over the adjacent land of Grantor, being a permanent non-exclusive fifty (50') foot easement and right of way, or so much land as required to establish a public way in accordance with all governmental specifications and requirements, over, upon, across, under and through the retained land of Grantor, which is shown and included in the "50' WIDE 'GRANTED RIGHT OF WAY' AND UTILITY EASEMENT" on the Merrill Plan, for all purposes of access of any description necessary and convenient, including, but not limited to, pass and repass on foot and with vehicles, machinery, utilities and drainage of every nature and description;

(b) the permanent non-exclusive easement over, under, across, upon and through said "50' WIDE 'GRANTED RIGHT OF WAY' AND UTILITY EASEMENT", over Grantor's retained land, for utility purposes, including for the purpose of accessing, constructing, installing, operating, maintaining, modifying, repairing, replacing, relocating and removing pipes, conduits and other utility facilities and equipment, together with the right to access and/or tap into any existing or future utilities located within the said "50' WIDE 'GRANTED RIGHT OF WAY' AND UTILITY EASEMENT",.

The Grantor may relocate such portion of the said Granted Right of Way that is located on other land owned by Grantor and not on the land conveyed herein, provided that Grantor (1) gives reasonable notice of the intended relocation, (2) pays all costs of relocating any improvements or facilities located within the right of way, (3) carries out such relocation in a manner that does not materially interfere with the uninterrupted passage on foot and with vehicles and machinery or with the uninterrupted provision of utility services through such right of way, and (4) records a plan or plans showing the relocated boundaries of such right of way.

TOGETHER WITH, the non-exclusive right, in common with others, including without limitation, Grantor and its successors and assigns, for access and egress and the right to install utilities over, in, and under that certain right-of-way in common with Cumberland County, Maine pursuant to the reservation of rights and easements set forth in the deed from Grantor to the Inhabitants of the County of Cumberland, State of Maine dated

BK 17783 PG 291

November 9, 1990 and recorded in the Cumberland County Registry of Deeds at Book 9382, Page 61.

[W0030863.7][W0030863.5]

A-5

RECEIVED
RECORDED REGISTRY OF DEEDS

2002 JUN 27 PM 1:12

CUMBERLAND COUNTY

John B O'Brien

ATTACHMENT B

Deed:

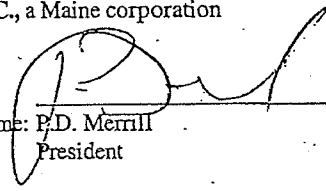
Merrill Industries to Mercy Hospital

QUITCLAIM DEED WITH COVENANT

MERRILL INDUSTRIES, INC., a corporation duly organized and existing under the laws of the State of Maine, with offices in Portland, Maine (hereinafter "Merrill" or the "Grantor"), for consideration paid to it, grants to MERCY HOSPITAL, a Maine non-profit corporation, having a mailing address of 144 State Street, Portland, Maine 04101-3795 (the "Grantee"), with Quitclaim Covenant, the land, buildings, and the fixtures in the City of Portland, Cumberland County, Maine, described more particularly in EXHIBIT A, attached hereto and made part hereof by reference.

IN WITNESS WHEREOF, the said Merrill Industries, Inc., has caused this Quitclaim Deed to be executed in its name and its corporate seal to be hereto affixed by P.D. Merrill, its President, thereunto duly authorized this 9th day of October, 2002.

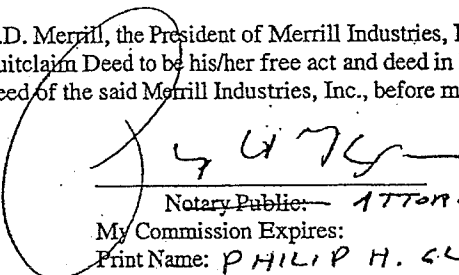
GRANTOR: MERRILL INDUSTRIES, INC., a Maine corporation

By: 
Name: P.D. Merrill
Its: President

STATE OF MAINE
CUMBERLAND, ss.

October 9, 2002

Then personally appeared P.D. Merrill, the President of Merrill Industries, Inc. and acknowledged the foregoing Quitclaim Deed to be his/her free act and deed in his/her said capacity and the free act and deed of the said Merrill Industries, Inc., before me,


Notary Public: ATTORNEY AT LAW
My Commission Expires:
Print Name: PHILIP H. GLEASON

MAINE REAL ESTATE TAX PAID

SECTION 3

FINANCIAL CAPACITY

3.0 Estimated Costs

Mercy Hospital and their consultants have completed a financial analysis confirming the financial viability and business plan for the project. The financial analysis includes preliminary budgeting for the Phase 2 development programs; namely the remaining Hospital relocation from State Street and the Ambulatory Care Center. Based on the 2011 Strategic Repositioning Plan, Mercy is seeking to move forward with the Phase 2 plan and is therefore seeking approvals to eliminate the 3.49 acre wetland, centrally located on the site. These Phase 2 proposals and associated financial support from Catholic Health East (CHE) are pending receipt of all permits and a Certificate of Need approval from the State of Maine Department of Human Services.

Opinions of quantities and costs for the civil site work portion of the project were prepared by DeLuca-Hoffman Associates, Inc. The opinions of quantities and cost for the civil site work are also attached to this section as Attachment A.

3.1 Financing

The construction of the Mercy Hospital Phase 2 Relocation to include the Parking Garage, Ambulatory Care Center and Hospital will be funded through a combination of support from CHE, cash, funds from a capital campaign and debt (bonds). Mercy's bond rating is AAA; therefore, the ability to obtain private bond-related financing is high. Donor participation is also expected to be high. CHE has expressed their support for the project in the accompanying May 23, 2012 letter to Mercy.

Based on the availability of these financial resources, it is the applicant's opinion that the requirements of 38 M.R.S.A. Section 494(1), Chapter 373(1) and the permit application are met for the following reasons:

1. The CHE corporate balance sheet identifies substantial investment assets that may be used for financing or collateral.
2. The Applicant through its support from CHE maintains a strong bond rating and is able to obtain substantial debt financing if necessary.

At no times will the pollution control aspects of the project be at risk for non-completion.

Documentation of Mercy's capacity to undertake the project is evidenced by the May 23, 2012 letters from CHE to Mercy which is contained in Attachment B to this section.

3.2 Attachments

- Attachment A Opinion of Costs and Quantities for the Civil Site Work as prepared by DeLuca-Hoffman Associates, Inc.
- Attachment B May 23, 2012 letter from Catholic Health East to Mercy.

ATTACHMENT A

**Updated Opinion of Costs and Quantities for the Civil Site
Work as Prepared by DeLuca-Hoffman Associates, Inc.**

Mercy Hospital-Phase 2

Preliminary Engineer's Opinion of Probable Site Construction Cost

I. EARTHWORK AND EROSION CONTROL

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Clear, Grub & Site Preparation	ACRE	\$2,500.00	5.00	\$12,500.00
2	Demolition	LS	\$20,000.00	1.00	\$20,000.00
3	VRAP	CY	\$30.00	5000.00	\$150,000.00
4	Common Excavation (General Site)	CY	\$8.00	16000.00	\$128,000.00
5	Granular Borrow (General Site)	CY	\$16.00	80000.00	\$1,280,000.00
6	Stabilized Construction Entrance	EACH	\$2,500.00	1.00	\$2,500.00
7	Riprap	SY	\$25.00	200.00	\$5,000.00
8	Siltation Fence (Around Pond)	LF	\$3.50	2000.00	\$7,000.00
9	Reinforced Turf	SY	\$5.00	0.00	\$0.00
10	Organic soil stabilization over steep slopes	unit	\$500.00	0.00	\$0.00
11	Loam & Seed (temporary and permanent)	UNIT	\$400.00	200.00	\$80,000.00
Subtotal					\$1,685,000

II. PAVEMENT, CURB AND SIDEWALKS

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Parking Area / Access Drive					
1	Subbase Gravel, MDOT Type D	CY	\$18.00	12000	\$216,000.00
2	Base Gravel, MDOT Type A	CY	\$25.00	3000	\$75,000.00
3	Bituminous Concrete Binder, MDOT 19.0 mm	TON	\$95.00	3400	\$323,000.00
4	Bituminous Concrete Surface, MDOT 9.5 mm	TON	\$110.00	2100	\$231,000.00
5	Granite Curb (Straight) Option 2	LF	\$28.00	3500	\$98,000.00
6	Concrete Sidewalks	SY	\$100.00	1500	\$150,000.00
7	Signage	EACH	\$150.00	20	\$3,000.00
8	Geotextile Fabric	SY	\$3.50	20000	\$70,000.00
Striping					
9	Parking Stalls	ALLOW	\$ 20,000.00	1	\$ 20,000.00
Subtotal					\$1,186,000

III. UTILITIES

Sanitary Sewer

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	6" Sanitary Sewer	LF	\$ 45.00	280	\$12,600.00
2	8" Sanitary Sewer	LF	\$60.00	650.00	\$39,000.00
3	4' Diam Sewer MH (Every 250' of Pipe, Plus Sample MH)	EACH	\$2,500.00	8.00	\$20,000.00
4	10000 Gallon Grease Trap (With Cafeteria)	LS	\$10,000.00	0.00	\$0.00
5	Pre-Treatment Facility	LS	\$150,000.00	1.00	\$150,000.00
Subtotal					\$209,000

Water

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	8" Water Main	LF	\$60.00	500.00	\$30,000.00
2	6" water main	LF	\$40.00	155.00	\$6,200.00
3	Fire Hydrant Assembly w/valve	EACH	\$2,500.00	4.00	\$10,000.00
4	8" x 8" Tapping Sleeve and Valve	EACH	\$2,500.00	3.00	\$7,500.00
5	Pipe Jacking	LF	\$400.00	0.00	\$0.00
Subtotal					\$53,700

Mercy Hospital-Phase 2

Preliminary Engineer's Opinion of Probable Site Construction Cost

Gas

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	4" Gas Main	LF	\$40.00	315.00	\$12,600.00
2	Gas Valves	EACH	\$1,800.00	2.00	\$3,600.00
3	Pipe Jacking	LF	\$300.00	0.00	\$0.00
Subtotal					\$16,200

Storm Drainage

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	12" Dia. Storm Drain	LF	\$45.00	1000.00	\$45,000.00
2	18" Dia. Storm Drain	LF	\$56.00	500.00	\$28,000.00
3	24" Dia. Storm Drain	LF	\$68.00	500.00	\$34,000.00
4	36" Dia. Storm Drain	LF	\$72.00	500.00	\$36,000.00
5	4' Diam Catch Basins	EACH	\$2,200.00	20.00	\$44,000.00
6	Catch Basin Sediment Trap	EACH	\$150.00	20.00	\$3,000.00
7	Storm Drain Manhole	EACH	\$2,500.00	10.00	\$25,000.00
8	Water Quality treatment Systems	AC	\$100,000.00	5.00	\$500,000.00
Subtotal					\$715,000

IV. MISC. SITE IMPROVEMENTS

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Site Lighting	EACH	\$ 3,500.00	20	\$ 70,000.00
2	Dumpster Area Enclosures	EACH	\$ 2,500.00	0	\$ -
3	Landscaping(minimal level only)	ALLOW	\$ 100,000.00	1	\$ 100,000.00
4	Cleanup of Misc. Debris	ALLOW	\$ 10,000.00	1	\$ 10,000.00
5	Retaining Wall	LF	\$ 40.00	1500	\$ 60,000.00
7	Concrete Pads	SY	\$ 25.00	1500	\$ 37,500.00
8	Site Amenities	ALLOW	\$ 20,000.00	1	\$ 20,000.00
9	Relocate 20000 gal. AST	ALLOW	\$ 20,000.00	1	\$ 20,000.00
10	Relocate Primary Power including generator	LS	\$ 150,000.00	1	\$ 150,000.00
11	Relocate and new Secondary Power	ALLOW	\$ 150,000.00	1	\$ 150,000.00
Subtotal					\$ 617,500

V. OFFSITE TRAFFIC IMPROVEMENTS

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Allowance for offsites on Connector	ALLOW	\$450,000	0	\$ -
Subtotal					\$ -
Project Estimate Subtotal					\$ 4,482,400
20% Misc and Contingency					\$ 896,480
Project Estimate Total					\$ 5,378,880

Notes:

1 It is understood that DeLuca-Hoffman Associates, Inc. (DHA) has no control over the cost of labor, equipment or materials, market conditions or the Contractor's method of pricing, and that the Engineer's Opinion of Probable Construction Costs are made on the basis of DHA's professional judgement and experience. DHA makes no warranty, express or implied, that the bids or negotiated cost of the Work will not vary from the Engineer's Opinion of Probable Construction Costs.

2 This Engineer's Opinion on Probable Site Construction Costs is based on Conceptual Master plans dated July 2012 in 2012 dollars.

3 The onsite pavement and granular material quantities for access drive areas and parking areas are based upon the following sections:

Description	Thickness
Hot Bituminous Asphalt Surface	1.5"
Hot Bituminous Asphalt Binder	2.5"
Base Course Gravel MDOT Type A	4"
Subbase Course Gravel MDOT Type D	15"

4 The cost opinion was developed without the aid of geotechnical information for the Phase 2 site area.
The thickness of pavement materials used in this cost opinion have not benefitted from this knowledge. The figures for the quantities of these items are at best, approximate estimates. The earthwork quantities are based upon the preliminary grading.

5 Opinion of costs does not include any cost for the following items:

- a) Utility service surcharge for connections
- b) Building, underslab utilities, building foundation or special gravel materials to be placed under the building slab or foundation
- c) Land Acquisition, permitting, wetland mitigation, legal fees and engineering fees

ATTACHMENT B

May 23, 2012 Letter from Catholic Health East to Mercy



CATHOLIC HEALTH EAST

PETER L. DEANGELIS, JR.
EXECUTIVE VICE PRESIDENT & COO

3805 West Chester Pike, Suite 100
Newtown Square, PA 19078
www.chc.org
610.355.2095
610.271.9600 fax
pdeangelis@che.org

May 23, 2012

Robert Nutter, Chief Operating Officer
Mercy Hospital
144 State Street
Portland, ME 04101

RE: Catholic Health East (CHE) Support for Mercy Hospital Phase II Fore River Campus

Dear Bob:

Consistent with Mercy's approved strategic plan including Campus Consolidation to the Fore River property in Portland, CHE has reviewed the updated preliminary master plan. We consider the new design, which utilizes the area to the south of the Phase I hospital, a vast improvement on the original consolidated campus concept, which enhances the opportunity for future growth of your facility.

We understand that Mercy and your consultants are currently developing applications to the Federal, State and local regulatory agencies which include a provision for eliminating the 3-acre wetland that is located in the central portion of the Fore River campus. We defer to your consultant's determination that the elimination of that wetland is necessary to accomplish all material requirements of this project. Please keep us informed of the progress of the applications, in that the processing and final approval of the financing package for your Phase II project will necessarily be contingent upon the approval of the multiple applications that will move your project forward.

We anticipate several factors to work to our mutual advantage as we prepare the financing structure for Phase II: (1) CHE anticipates maintaining our strong bond rating; (2) interest rates continue to be historically low; (3) construction costs continue to be moderately depressed; (4) a rebounding economy in the northeast should help your capital campaign; and (5) there is likely to be availability of private equity that would find portions of your project to be attractive investments.

Our support of your Phase II project is contingent upon the final determination of the elimination of the wetland, among other factors. Due to the extraordinary expenses associated with the development of the architectural and engineering requirements to file the Certificate of Need (CON) application, we cannot support the development of two concurrent scenarios.

CHE fully realizes that the development of your Phase II campus, as identified in your 2011 Strategic Repositioning plan, is a critical factor to eliminating the negative financial impact caused by the duplication associated with operating multiple acute campuses in Greater Portland. We will assist Mercy as you update the financial feasibility of the project, submit the necessary permit and CON applications, and strive to complete the Phase II Fore River campus well in advance of your 100th anniversary in 2018.

Very truly yours,


Peter DeAngelis, Jr.
Executive Vice President & COO

Cc: Jenny Barnett
Michael Hemsley, Esq.
Judy Persichilli

Together We Are So Much More

SECTION 4
TECHNICAL ABILITY

4.0 Overview

DeLuca-Hoffman Associates, Inc is handling the site design and permitting for the Mercy Hospital Phase II Relocation project.

Below please find a listing of subconsultants who have participated in the project to date:

Firm	Address	Services	Contact
Haley & Aldrich	75 Washington Avenue Suite 203 Portland, ME 04101-2617 (207) 482-4600	Geotechnical Engineering	Wayne Chadbourne
Normandeau Associates	8 Fundy Road Falmouth, ME 04105 (207) 797-7717	Wetland Consultant	Marcia Bowen
Hoffman Engineering, Inc.	640 Ten Rod Road N. Kingston, RI 02852 (401) 294-9032	Environmental Engineer	Robert Hoffman
Owen Haskell, Inc.	390 US Route 1, Unit 10 Falmouth, Maine 04105 (207) 774-0424	Surveyor	John Swan
SMRT, Inc.	144 Fore Street PO Box 618 Portland, ME 04104 (207) 772-3846	Architecture	Ellen Belknap
Tewhey Associates	P.O. Box 238 Gorham, ME 04038-0238 (207) 839-4261	Project Manager	John Tewhey

Mercy Hospital has a full contingent of staff to manage and operate the facilities after construction.

4.1 Experience of Project Team

The team of consultants retained by Mercy Hospital has expertise and experience in the design of large facilities which require a Site Location of Development Permit, wherein DeLuca-Hoffman Associates, Inc. has prepared the original and all subsequent permit applications. No further evidence is required.

4.2 Ability of the Applicant

Mercy Hospital's experience is apparent in the ongoing operation and maintenance of their existing hospital at 144 State Street in Portland, Maine as well as their ongoing maintenance of facilities at the Fore River Campus. Special O&M provisions for the drainage facilities are provided in Section 12 of this application.

SECTION 5

NOISE

5.0 Summary

The proposed Mercy Hospital Phase II Relocation Project is primarily the expansion of an existing hospital campus that will include medical office buildings, ambulatory care unit, hospital expansion and parking garage facilities. A hospital is classified as a "development producing a minor noise impact" under the MeDEP regulations. As such, a full noise study is not required.

The noise generated by the site development will be primarily associated with vehicles, emergency vehicles (ambulances) entering the site, rooftop equipment and service vehicles. There may be a small increase in the cumulative noise from peak hour traffic along the major street routes such as Route 1 (Veterans Bridge) and the Fore River Parkway. However, it is our opinion that the existing and project-related traffic noises have the same character and same maximum sound levels.

Existing nearby are several noise generators including overhead aircraft traffic associated with the Portland International Jetport, trains along the Pan Am lines including the Amtrak train service, and finally the Sprague Marine Terminal. These generators are all considered more significant than any site-related noise activity.

SECTION 6

VISUAL QUALITY

6.0 Existing Conditions

The Mercy Hospital Fore River Campus development site is located within a 35-acre area along the Fore River and the Portland Peninsula's far west end. The development site was previously an industrial setting for railroad and waterfront uses. In 2006, the Mercy campus began construction that largely changed the entire site area, including new buildings, substantial parking and landscape enhancements throughout. The former borrow pit, turned wetland, was also enhanced with surface restoration and general cleanup.

In general, the Phase 1 building program created two large buildings on the campus north end, along with landscaped parking areas. The campus south end includes mostly surface parking and a small maintenance building. Public open space areas cover the site's shorefront zones at the north and south ends of the site. The northerly open space consists of tree plantings and a public trail area. The southerly open space has been recently modified as part of the Veteran Memorial Bridge Construction.

The site is primarily visible from the I-295 northbound lanes and the Veterans Memorial Bridge. The site can also be viewed from Portland's Western Promenade. Views to the site's central area containing the former gravel pit wetland are limited, due to grade and the Phase 1 development.

The view from the I-295 northbound lane is open across the Fore River and the mud flats. This view is generally from a motorist traveling at reasonable speed along the highway. The view from Route 1/Veterans Memorial Bridge is generally open from the new bridge.

6.1 Adjacent and Nearby Land Uses

The site generally extends from just east of the I-295 Exit 5 Interchange ramps easterly along the Fore River to the Veterans Memorial Bridge. The site is bounded to the north and east by an active railroad line operated by PanAm Railways. Farther to the northeast, St. John Street is primarily commercial development. Existing commercial establishments along St. John Street include Barber Foods, Century Tire, Redlon and Johnson, and the Union Station Plaza.

Sprague Industries operates a marine terminal to the southeast of the Veterans Bridge and the development site.

The site's westerly side borders the Fore River and a large area of mudflats.

The viewshed surrounding the site is characterized by industrial development. These include rail tracks, heavy marine use, oil tank farms, the Jetport, and the Western Promenade skyline that includes Maine Medical Center and its multi-story parking garage.

The viewshed is not characterized by any particular consistency of building design, color or screening.

6.2 Proposed Project

The visual aspects of the proposed Phase 2 project will ultimately be administered by the City of Portland. Specifically, the following development guidelines are likely to be recognized and required by the City.

- a. *Design relationship to site:* The Phase 2 development proposal shall demonstrate a reasonably unified design of the site in a campus-like setting, including the architecture, the layout of the future buildings, pedestrian and vehicular circulation plan, open space, drainage, and the topography, soil conditions, vegetation, and other natural features of the site. Integration of open spaces shall be achieved by incorporation of outdoor amenities for the benefit of users of the site, such as jogging and walking trails, gardens, and benches. The proposed layout of buildings and uses shall demonstrate compatibility between the buildings and other site features within the site.
- b. *Landscaping:* The Phase 2 development proposal shall include a landscape program. All land areas not covered by structures, parking areas, or circulation facilities shall be landscaped and maintained in a manner consistent with current conditions. In order to soften the visual impact of large expanses of pavement in parking lots, vegetation shall be planted or retained in islands or planting strips where required. The site is currently considered well landscaped and it is Mercy's intent to continue to enhance these features.
- c. *Pedestrian Orientation:* The Phase 2 campus development proposals shall include an integrated pedestrian circulation system, including internal sidewalks, to take advantage of the topography and natural features of the site and providing for safe pedestrian access to all buildings and parking areas with the ability to conveniently access all developed portions of the site without additional driving. The pedestrian circulation system shall continue a link with the shoreline trail feature of the site.
- d. *Vehicular Access and Circulation:* The primary access conditions will remain unchanged from existing.
- e. *Architectural design:* All buildings shall be designed or approved by a registered architect in the State of Maine. The scale, texture, colors, and massing of the buildings shall be coordinated. The full range of high-quality, permanent, and traditional or contemporary building materials and technology may be incorporated in a manner so that the development as a whole embodies distinguishing attributes that achieve the developer's desired degree of excellence and are in conformance with the architectural guidelines provided in any private development restrictions. Particular emphasis shall be placed on the appearance of building facades from public streets and highways including the Fore River Parkway, from driveway and parking areas, and from other nearby buildings.

- f. *Signs:* Signage shall be focused internally to the site or to the Fore River Parkway and shall not be oriented or scaled to address Route 1 or Interstate 295, with the exception of the hospital and major office buildings. Signs shall be designed in proportion and character with the building facades.

The proposed Medical Office building, Ambulatory Care Center and Phase 2 Hospital will be constructed in the middle of the site in order to allow the necessary surface and structured parking areas on each end of the site, thus minimizing walking distances and accessibility issues for patients, visitors, staff, physicians and emergency services. The structures will be multi-story buildings. Current concepts have the hospital as a five-story structure, although the contract zone agreement with the City of Portland will allow building heights of 90'.

The visual magnitude of the proposed project is considered moderate when considered against the surrounding area. Views from the highways are considered low magnitude due to the overriding attention needed by drivers to maintain control in high speed, high volume traffic movement. Obviously, views from the new Fore River Parkway will be a higher magnitude, due to its close proximity to the project site.

The visual magnitude from the Western Promenade is considered moderate, particularly when considering the larger long-distance viewscape available from the Promenade. A viewer's perspective is dominated by the larger views to the west, rather than the immediate views by the Fore River.

6.3 Mitigation Measures

The proposed project is compatible with the existing visual character of the area. The Phase 2 development will be designed in a manner to continue the scenic and recreational attributes of the Fore River shoreline.

Visual impacts will be addressed by several measures. First, the Phase 2 development site is lower by at least 10 feet than the buildings along St. John Street. When constructed, it is anticipated that the Phase 2 Hospital campus will be screened from St. John Street by the existing development along that corridor.

The proposed buildings are expected to be of modern design that will include many architectural features and amenities. The campus buildings will be of higher architectural character than most of the existing structures in the area.

Finally, the Fore River Parkway roadway has been constructed such that its vertical alignment as it crosses the railroad tracks to the north and south is substantially raised. A fill embankment for the road as it crosses the track on the north side shields the Phase 1 parking lot from view from the river and I-295. A similar fill embankment for the connection to the Veterans Memorial Bridge side also shields portions of the existing parking lot on the south side of the site. The parkway is also raised above existing grade along the middle section as it crosses the site, thus providing additional buffering.

The project includes significant landscaping treatments within the open spaces along the connector and surrounding the site. The mix of tree types currently in place will, over time, effectively shield the development site and enhance its visual appeal.

In conclusion, the most important visual impact by the development will be from the I-295 northbound lane crossing the Fore River. This view is mitigated by the Fore River Parkway and also the design of the buildings. The building will be of far superior character than many structures in the area, i.e., metal structures.

SECTION 7

WILDLIFE AND FISHERIES

7.0 Overview

As part of the permitting process for the initial construction of the Mercy Hospital facility on the Fore River Campus, the Maine Department of Inland Fisheries and Wildlife (MDIFW) and the US Fish and Wildlife Service (USFWS) were contacted to determine the type and extent of protected fish and wildlife resources present at the site. The MDIFW responded that they are no state-designated wildlife habitats associated with the site, and the USFWS responded that no federally-protected species are known to be present except for occasional transient bald eagles. Of the wetlands identified on site, the only one with any value as a wildlife habitat is the former borrow/gravel pit. This 3.49-acre wetland is composed of an open water pond about 2.7 acres in size, and a scrub/shrub/forested wetland border. Other on-site wetlands are swales/ditches and offer little to no wildlife value.

One of the wetland's principal valuable functions is wildlife habitat. As an isolated wetland in an urban setting, the wetland provides habitat to urban wildlife. MDWIF personnel visited the site as part of the initial permitting process and noted that wildlife use of the pond area was relatively high. Subsequently, the wetland was enhanced as part of the mitigation for wetland impacts incurred during the initial construction. Trash was removed from the pond, and the bordering steep slopes were stabilized and vegetated. Water levels were increased by raising the wetland outlet to the Fore River as recommended by the Maine Department of Inland Fisheries and Wildlife (Bozenhard 2002). Annual monitoring of the site since 2006 has documented use by waterfowl (mallards, black ducks), wading birds (green heron, great blue heron), a variety of passerine species (e.g., red-winged blackbird, mocking bird, common yellow throat, song sparrow), gulls, and painted turtles. Fish have also been observed in the pond, and mammal sign (e.g., grey fox) observed in and around the woody vegetation that buffers the pond (SEC, Inc 2011, Direct Observation 2011, 2012).

However, even with the enhancements provided as part of the initial construction project, the wetland does not provide Significant Wildlife Habitat as defined in the Maine Natural Resources Protection Act. Significant Shore Bird Habitat is located relatively close by in the Long Creek area of the Fore River, adjacent to the Portland International Jetport; in addition, important shorebird feeding areas are located along the Fore River near the Campus (see Figure 1). The habitat mix in the wetland on the Fore River campus does not include the critically-important mudflat habitat, and therefore does not provide suitable habitat for shorebirds. The mix of habitats that is present does provide a combination of feeding and resting opportunities for waterfowl and wading birds, but does not meet the criterion to be Significant. Though large considering its urban setting, the wetland area and its adjoining uplands are relatively small in terms of providing a self-contained habitat unit and are surrounded by roads. The forage base for both groups is likely limited, due to the wetland's small size and isolation from other similar wetland. The potential to provide nesting habitat for waterfowl and wading birds is likely also limited by the foraging opportunities, despite the presence of high quality nesting cover.

SECTION 10

BUFFERS

10.0 Overview

The Mercy Hospital Phase 2 relocation area consists of approximately 5 acres of land located to the east of the Phase 1 Hospital and Medical Office Building. This former gravel pit area has been maintained in a vegetated condition due to its wildlife habitat and wetland resources. Mercy now proposes to fill this area for the completion of a Phase 2 building expansion.

The development site borders the Fore River and approximately 45 acres of mud flats. The remaining perimeters of the development site are defined by existing and active railroad tracks and the Fore River Parkway which bisects the site's upland area. Land to the east is heavily developed along St. John Street. The Sprague Marine Terminal is located to the south side of the site. The Cumberland County Correctional facility is located to the north of the site.

The important project buffers will continue to be along the Fore River waterfront. No changes to these conditions are proposed for the Phase 2 activities.

10.1 General Landscape Plan

The existing site contains substantial area that has been previously altered. The primary buffering objective was previously around the existing wetland pond in the middle of the site. With the elimination of the pond, buffering within the site core is less critical. The emphasis on buffering shifts to the waterfront, where no significant changes are proposed as part of the Phase 2 expansion.

Mercy Hospital will continue to be responsible for all grounds maintenance and the upkeep and retention of all buffers in accordance with the Contract Zoning Agreement with the City Of Portland.

SECTION 11

SOILS

11.0 Overview

The Class C Medium Intensity Soil Survey from USDA SCS appears as Figure 8 at the end of Section 1, the Development Description for this project. Additionally, Haley & Aldrich prepared a Geotechnical Engineering Report dated January 18, 2006 for the initial Phase I activities. This report has been based on extensive geotechnical investigations conducted on the proposed development site. Historical data contained within a study entitled "Geological and Hydrogeological Investigations, Portland Cargo Associates Proposed Industrial Park" by Robert G. Gerber, Inc. dated January 27, 1986 was previously provided in the original 2002 SLDA submissions for the site. The site is characterized by two zones of soils, each with distinctive properties that will impact site development. The southern half of the site is underlain by granular surficial soils and stiff silty clay. The northern half of the site, that is the area including and north of the former gravel pit, is underlain by a thick layer of soft silty clay. An updated site review for wetlands or streams was conducted by Normandeau Associates, Inc. The Haley & Aldrich Geotechnical Report is attached to this section, while the Normandeau Associates report(s) are contained in the NRPA Application materials.

The applicant requests a waiver of the requirement for a Class B (High Intensity) Soil Survey since an extensive amount of geotechnical investigation has been completed on the site previously. Furthermore no onsite subsurface wastewater disposal is proposed on the site and stormwater runoff quantity control is not warranted on the site since the drainage will be discharged to the tidal waters of the Fore River.

The following narratives contain data that discusses the soils limitations and engineering properties located to the site development.

Finally, the wetlands delineation has been completed and is provided in support of the hydric soils mapping for this application.

11.1 General Limitations and Methods Used to Overcome the Limitations

The geotechnical and soils limitations of the site will be addressed by the following practices:

- Planning of the project layout
- Engineering solutions
- Integration of foundation drainage with the formal drainage system
- Use of conventional spread footing foundation techniques in areas of granular soils
- Use of pile foundations supported on bedrock in areas of underlying soft clay

Construction of the project will result in the disturbance of approximately 25 acres of the site.

The earthwork requirements for the overall project include:

- Grubbing
- Excavation
- Borrow and Fill Placement
- Gravel Placement
- Loam
- Borrow

The following engineering solutions will be used to address the geotechnical limitations:

- Limitations of Slope: The steepest slopes exist along the cut slopes of the former gravel pit. The slope limitations will be overcome by fill placement which is intended to bring most of the Phase 2 development area to level grade. Several existing retaining walls will be removed or abandoned in place as new fill placement extends out over the Phase 2 development footprint.
- Bedrock Constraints: The site is believed to be primarily above underlying rock and rock depths are anticipated to be greater than 30 feet in areas proposed for development. Blasting is not anticipated to be required for this project. Section 20 of the application is not applicable based on the understanding that blasting will not be required for the Phase 2 expansion.
- Wetness and Potential Frost Action: A properly designed pavement section and the use of building underdrains will overcome these limitations and structural slabs will be used at the building entrances. The onsite soils are considered moderately frost susceptible. The proposed pavement section is intended to strike a balance between removal of all frost-susceptible soils, cost, and a reasonable pavement performance. Removal of all frost-susceptible material would be cost prohibitive to the project. The Phase 2 activities are anticipated to include pavement and structural designs that are similar to Phase 1.

Positive drainage away from areas of construction will be provided during and after construction, limiting the amount of exposed area and proper compaction of onsite soils and borrow materials are also construction requirements of the project.

Smooth blade excavation equipment will be specified to excavate the final lift to subgrade elevation in areas where soft clay is encountered. These areas are primarily in the northerly portion of the site. Clay subgrade areas will be protected from construction equipment and long-term exposure to precipitation and frozen conditions will be avoided.

- Settlement: The geotechnical analysis for the project considered settlement of the proposed buildings and requirements for foundations. The southern half of the site contains granular soils, which may be able to support conventional spread footings. Soft silty clays that are susceptible to consolidation underlie the northern half of the site. Relatively high loads associated with multi-storied buildings may necessitate the use of end bearing piles for foundation support at these locations.

- Materials for Pavement Subbase and Base Aggregates: Aggregate materials for base and subbase gravels will be primarily imported from off-site sources.
- Wetlands: Fill placement within the former gravel pit wetland may involve activity in wet conditions. In order to minimize complications it may be necessary to temporarily dewater the pond. Alternatively, the use of geofabrics and course fill such as crushed stone may also be used; at least for those fill layers in/below groundwater.
- Other Limitations: The preliminary geotechnical report addresses other site limitations and provides recommendations to overcome these limitations. The final site geotechnical report will be a baseline document from which the project specifications and final structural designs will be prepared.

11.2 Attachments

Attachment A Geotechnical Report by Haley & Aldrich dated January 18, 2006

ATTACHMENT A

**Geotechnical Report by Haley & Aldrich
Dated January 18, 2006**

APPENDIX B

Existing Conditions Photographs



PHOTO 1



PHOTO 2

DH



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Existing Site Photographs
Mercy Hospital Phase 2 Relocation Project
Photos Taken 03-21-12 by Bo Kennedy, P.E.

APPENDIX A

Graphic Figures Representing Site Location of Development Stormwater Strategy

12.16 Permit Requirements

MeDEP review and approval for a Major Amendment to the Site Location of Development Permit is required. City of Portland review and permitting of the Stormwater Management Plan will be completed with the review of the Site Plan Application submitted to the City of Portland Planning Authority at a subsequent time.

12.17 Drainage Network Pipe Sizing

The drainage network has been preliminarily sized based on the flows computed using the HydroCAD modeling software. Final pipe sizing will be prepared during a subsequent design development phase. The pipe sizes are noted on the drawings.

12.18 Appendices

- A – Graphic Figures Representing the Site Location of Development Stormwater Strategy
- B – Existing Conditions Photographs
- C – Water Quality Summary Chart and Computations
- D – Current Watershed Computations
- E – Postdevelopment Watershed Computations
- F – Discharge Pipe Capacity Computations
- G – Orifice Drawdown Computations
- H – Interim Guidelines for Stormwater Management StormFilter® System as an approved alternative BMP to the General Standard BMP
- I – Maintenance of Common Facilities or Property

The channel protection zone of the filter is controlled by a 1.7-inch orifice in the outlet control structure. This orifice slows the release rate such that the pond is drained within the 24 to 48 hours (per MeDEP criteria). The computed drawdown time for the water quality volume is 25.8 hours.

Discharge from larger storm events is controlled over a broad crested weir set in an outlet control structure above the channel protection volume.

Pretreatment for flow entering from all inlet pipes to the filter will be provided via the installation of an ADS Stormwater Quality Unit by Advanced Drainage Systems, Inc. and the StormTech™ Isolator Row. Additionally, the proposed catch basins will have sumps and oil absorbent pillow inserts for all catch basins tributary to the water quality filter.

Therefore, water quality goals for the underdrained subsurface sand filter meet the General stormwater standards of the November 2005 Chapter 500 Rules of MeDEP (Rev. October 2010).

12.12.2.5 Underdrained Grassed Soil Filter:

The underdrained Grassed Soil filter(s) have been designed to treat portions of the area tributary to discharge D.

To meet Chapter 500, Channel Protection Volume provided must be equal to or greater than the following:

1" x impervious area plus 0.4" x landscaped area (Computations for both filters are provided in Attachment C.

The channel protection volume for filter D-a and D-b provided at a depth of 18" are 12,875 cf and 7,626 CF respectively.

Based on the revisions made to Chapter 7 of the MeDEP Best Stormwater Practices in April 2007, the surface area of the water quality filter must be no less than the sum of 5% of the impervious area and 2% of the landscaped area draining to the filter. This is shown as follows:

Surface Area Required:

Filter D-a	= 7,674 s.f.
Filter D-b	= 4,400 s.f.

Surface Area Provided:

Filter D-a	= 7,676 s.f.
Filter D-b	= 4,428 s.f.

The minimum size criterion has been met; however, the designer recognizes that the filters exceed the maximum recommended filter area of 3,000 s.f. The design uses multiple inlet locations and a level lip spreader where space allows in order to spread the flow evenly across the filter bed. The applicant requests a waiver from the maximum size criteria.

The discharge must pass through a soil filter; the maximum outlet pipe shall be 8".

The channel protection zone of the filter is controlled by a 1.7-inch orifice in the outlet control structure. This orifice slows the release rate such that the pond is drained within the 24 to 48 hours (per MeDEP criteria). The computed drawdown time for the water quality volume is 25.8 hours.

Discharge from larger storm events is controlled over a broad crested weir set in an outlet control structure above the channel protection volume.

Pretreatment for flow entering the D-a filter will be provided via a sediment forebay. Pretreatment for flow entering the D-b filter will be provide via a Fabco Storm Sack Filter Bag inserted into the upstream catch basins. Additionally, the proposed catch basins will have sumps for all catch basins tributary to the water quality filter.

Therefore, water quality goals for Underdrained Grassed Soil Filters meet the intent of the General stormwater standards of the November 2005 Chapter 500 Rules of MeDEP (Rev. October 2010).

12.13 Chapter 500 Treatment Percent Compliance

The proposed impervious area within the project boundary (between the Fore River parkway and the rail road) totals 18.18 acres of which 4.12 ac is net new impervious area as shown on Figure A-1 in Attachment A. The existing site is covered under an approved Site Location of Development permit and this phase of work is subject to the current MeDEP Chapter 500 regulations pertaining to a redevelopment project. This project will redevelop 13.44 acres of the site of which 10.43 ac is impervious area and 3.01 ac is pervious and shown graphically on Figure A-2 in Attachment A.

Of the 10.43 acre of impervious area, the proposed stormwater management plan provides treatment for 9.86 acres or 95 percent. The disturbed area as part of this redevelopment is approximately 13.44 acres. Of the 13.44 acres the proposed stormwater management plan provides treatment for 12.94 acres or 96 percent. The stormwater management areas are summarized on Figure A-3 in Attachment A. Hence, the strategies proposed herein meets the minimum requirements stated in the General Standards.

12.14 Erosion Control

An Erosion Control Narrative, Plan, and Details have been prepared for the project and accompany this submission in Section 14. This erosion and sediment control coupled with the storm management Operations and Maintenance manual meets the Basic standards as required in MeDEP Chapter 500.

12.15 Operations and Maintenance

An Operations & Maintenance Manual has been prepared and accompanies this application in Attachment I.

The discharge must pass through the StormFilter tanks at a rate less than 1.4 gallons per minute per 12" high cartridge. The discharge from the 11 tanks are piped to a common header and controlled with an internal orifice plate sized to meet the permitted cumulative flow rate of 0.27 gpm/ft² of media surface area or 15.4 gpm.

Discharge from larger storm events are controlled with an internal overflow pipe in a precast concrete manhole set above the water quality volume. The overflow piping network is sized to handle runoff from a 100-year storm event. Therefore, water quality goals for the StormFilter® Proprietary System meet the General Stormwater Standards of the November 2005 Chapter 500 Rules of MeDEP (rev. October 2010).

12.12.2.3 Underdrained Bioretention Cell (Rain Garden):

The underdrained Bioretention Cell also known as a Rain Garden has been designed to treat portions of the area tributary to discharge B.

To meet Chapter 500, Channel Protection Volume provided must be equal to or greater than the following:

1" x impervious area plus 0.4" x landscaped area

Tributary Impervious Area = 0.09 ac.

Tributary Pervious Area = 0.42 ac.

1" x 0.09 ac =	327 cf
0.4" x 0.42 =	604 cf
Total	931 cf

The channel protection volume for the rain garden provided at a depth of 6" is 1,145 cf.

Based on the revisions made to Chapter 7 of the MeDEP Best Stormwater Practices in April 2007, the surface area of the water quality filter must be no less than the sum of 7% of the impervious area and 3% of the landscaped area draining to the filter. This is shown as follows:

Surface Area Required:

7% of impervious area	= 0.07 x 0.09 ac.	= 275 s.f.
3% of landscaped area	= 0.03 x 0.42 ac.	= 544 s.f.
	Total	= 819 s.f.

Surface Area Provided:

2000 s.f.

This criteria has been met.

The discharge must pass through a soil filter; the maximum outlet pipe shall be 8".

The channel protection zone of the filter is controlled by a 0.5-inch orifice in the outlet control structure. This orifice slows the release rate such that the pond is drained within the 24 to 48 hours (per MeDEP criteria). The computed drawdown time for the water quality volume is 31.7 hours.

Discharge from larger storm events is released in a series of small yard inlets with beehive grates set 6" above the filter or at the channel protection volume.

Pretreatment for flow entering the filter will be provided via overland sheet flow across a grassed buffer strip.

Therefore, water quality goals for the bioretention cell meet the General stormwater standards of the November 2005 Chapter 500 Rules of MeDEP (Rev. October 2010).

12.12.2.4 Underdrained Subsurface Sand Filter:

The underdrained subsurface sand filter has been designed to treat a portion of the area tributary to Discharge C.

To meet Chapter 500, Channel Protection Volume provided must be equal to or greater than the following:

1" x impervious area plus 0.4" x landscaped area

Tributary Impervious Area = 3.64 ac.

Tributary Pervious Area = 0.14 ac.

1" x 3.64 ac =	13,215 cf
0.4" x 0.14 =	205 cf
Total	13,420 cf

The channel protection volume provided at a depth of 22.92" is 13,476 cf.

Based on the revisions made to Chapter 7 of the MeDEP Best Stormwater Practices in April 2007, the surface area of the water quality filter must be no less than the sum of 5% of the impervious area and 2% of the landscaped area draining to the filter. This is shown as follows:

Surface Area Required:

5% of impervious area	= 0.05 x 3.64 ac.	= 7,928 s.f.
2% of landscaped area	= 0.02 x 0.14 ac.	= 124 s.f.
	Total	= 8,052 s.f.

Surface Area Provided:

9,900 s.f.

This criteria has been met.

The discharge must pass through a soil filter; the maximum outlet pipe shall be 8".

- Underdrained Water Quality Filters (Underdrained Grassed Soil Filter(s) and Bioretention Cell) , and

A water quality summary chart of the project is appended with this application in Appendix C and on the Overall Grading and Drainage Plan C-4.0. The basis of design of the four treatment methods are as follows:

12.12.2.1 Filterra® Tree Box Filter and StormTech™ Isolator Row:

Filterra:

The Filterra® system has been designed to treat portions of the area tributary to discharge A.

- To meet Chapter 500, the tree box filter size is based on the tributary area in accordance with the following table found in the Stormwater Management for Maine Volume III – BMP Technical Design Manual.

TABLE 10	
Filterra® Model Number	Area in Acres
4x6 or 6x4	0.32
4x8 or 8x4	0.42
6x6	0.47
6x8 or 8x6	0.64
6x10 or 10x6	0.79
6x12or 12x6	0.95
7x13 or 13x7	1.20

Discharge Area A uses three grated inlet Filterra® boxes to treat 1.23 acres of tributary area as shown in the table below:

TABLE 11		
Filterra® Treatment Area ID	Tributary Area (ac)	Filterra® Model Number Selected
A-a	0.25	4X6
A-b	0.47	6X6
A-c	0.51	6X8

StormTech™ Isolator Row:

As part of the MeDEP Chapter 500 criteria for use as a standalone treatment device the Filterra® must be followed by a StormTech™ Isolator Row sized to treat the flow from a 1 year-24 hour storm event. The Isolator Rows have been sized based on the SC-740 chamber which has been approved for 0.2 cfs /chamber.

The plan proposes the following Isolator Row Layout:

TABLE 12			
Filterra® Treatment Area ID	1-yr Storm Event Flow (CFS)	SC-740 Isolator Row Chambers Required (EA)	Chambers Provided (EA)
A-a	0.46	2.3	3
A-b	0.90	4.5	5
A-c	0.90	4.5	5

The Filterra® sizing criterion has been met.

Therefore, water quality goals for the Filterra and Isolator Row Treatment systems meet the General Stormwater standards of the November 2005 Chapter 500 Rules of MeDEP (rev. October 2010).

12.12.2.2 StormFilter® Treatment Units by CONTECH:

The StormFilter® treatment unit has been designed to treat a portion of the area tributary to Discharge B.

The StormFilter® is a relatively new MeDEP approved device and the interim guidelines are appended in Appendix H. The attached guidelines use an 18" high cartridge as an example; however Contech makes several size cartridges to meet the needs of different sites. Our office has proposed the 12" high cartridges because of its lower operating head requirements. To meet Chapter 500, the Channel Protection Volume provided must be equal to or greater than the following:

$1''/12 \times \text{impervious area} + 0.4''/12 \times \text{landscaped area} = \text{Water Quality Volume (cubic feet)}$

Computations of the water quality volume for Zone B-a are appended in Appendix C.

The water quality volume is provided in a subsurface Brentwood StormTank storage system at a depth of 21.6 inches

Based on the revisions made to Chapter 7 of the MeDEP Best Stormwater Practices the StormFilter® treatment units shall be sized to treat the entire water quality volume in 24 to 72 hours at a discharge rate of approximately 0.27 gpm/ft^2 of media surface area. The system must have at least one 12" high StormFilter® cartridge per 202 cubic feet of water quality volume. The StormFilter® media cartridge is required to be 50% fine zeolite and 50% fine alumina to meet the pre-approved requirements set by the MeDEP.

Zone B-a requires eleven 12" high cartridges working in parallel to meet this criterion. The full computations are appended in Appendix C. The 11 cartridges will be housed in an 8'-0" diameter precast manhole retrofit with internal piping (connecting the cartridges) and a large storm bypass.

- POI 2 - The post development peak flow rate is less than current conditions and will operate within the original design perimeters.
- POI 3 - The post development peak flow rate exceeds the current conditions and the full flow capacity of the outlet pipe. The design incorporates an overflow pipe to the POI 4 (storm drain D) system to alleviate some of the surcharge to the system. The design flow exceeding the full flow capacity will surcharge the storm drain system and is accounted for in the model.
- POI 4 - The post development peak flow rate exceeds the current conditions but does not exceed the full flow capacity of the outlet pipe. The model and design incorporates an overflow pipe from the POI 3 (storm drain C) system. The computations attached to this report and summarized in the table below show that the project will not adversely impact the storm drain system under the Fore River Parkway. The outlet pipe for POI 4 has the capacity to handle the design flow.

TABLE 9					
Comparison of Peak Flows and Full Flow Capacity of Discharge Pipes At POI 3 and 4					
POI	Post Development With Detention				Full Flow Capacity (CFS) (Manning's Equation)
	Peak Flow (CFS)				
Storm Event Frequency	2 yr	10 yr	25 yr	100 yr	
3	4.69	13.13	14.08	15.44	8.74
4	6.64	26.70	40.91	59.43	75.78

Table 9 shows that storm drain system tributary to POI 3 will surcharge and operate under elevated head conditions and under the worse case conditions the catch basin inlets may have minor ponding and potentially overland flow to the next downstream inlet.

12.11 Stormwater Management Objectives

The goal of the Stormwater Management Plan is to design, operate, and maintain the development to avoid downstream erosion or significant water quality impairment.

This goal will be achieved by:

- Designing the project to meet the Portland Stormwater Management Standards adopted 7/19/10 and Basic and General Storm Water Standards of MeDEP (revised October 2010).
- Designing water quality measures to provide long-term removal of non-point contaminants.
- Implementing a plan to control erosion, sedimentation, or fugitive dust emissions during construction.
- Maintenance of the Stormwater Management System in accordance with the Stormwater O&M Manual (provided as a separate document).

The plan has been designed in accordance with the City of Portland Stormwater Rules.

12.12 Stormwater Quality Management Summary

12.12.1 Approach

To meet the General Standards, our office has reviewed the implementation of the 4 approved treatment strategies listed below. Our findings are as follows:

- **Wetpond** – Wetponds were considered for part of the project's stormwater management strategy; however, the owner has elected to use water quality filters in lieu of wet ponds to reduce the amount of open water present on the site.
- **Filter** – Filters cover a broad range of techniques including pre-approved proprietary stormwater treatment devices. The stormwater management strategy presented herein focuses on filters to meet the General Standard requirements.
- **Infiltration** – Our office has reviewed historical documents about the site and the USDA medium intensity soil survey. The medium intensity soil survey maps the site as predominantly Hinckley gravelly sandy loam and Cut and Fill lands. These soils are commonly found to be somewhat excessively drained to moderately well drained. The limiting factor to effective infiltration is the restrictive layer (i.e. bedrock, depth to groundwater, and infiltration rates of receiving soils). Despite the favorable drainage category as classified by the USDA soils mapping, the presence of a restrictive layer (high groundwater table) and existing contaminated soils contained as part of the VRAP program will make infiltration unfavorable to incorporate into this site. Geotechnical and environmental explorations show that groundwater table is present around elevation 9.0' to 10.0'. Due to the proximity to the groundwater table, our office is proposing the use of an impermeable liner around all of the subsurface storage areas.
- **Buffers** – Buffers were not considered as part of the site's stormwater management due to insufficient space. As an example, a minimum forested or meadow buffer width needs to be 75 ft, 100 ft or 150 ft with a slope of 0% - 8%, none of which is attainable on the site. Additionally, buffers are required to be encumbered by a conservation easement and deed restrictions.

12.12.2 Implementation

Our office has designed a plan which proposes the use of four types of water quality treatment filters as described in Chapter 7.0 Filtration BMPs of the MeDEP Volume III BMPs Technical Design Manual to meet the minimum treatment standards as required by the General Standards. The plan shown on Sheets C-4.0, C-4.4 and C-4.5 incorporates a variety of BMPs to best utilize the site characteristics in each treatment zone. Each treatment zone is labeled with a letter corresponding to the discharge pipe identification. These plan sheets are enclosed in the full plan set.

The stormwater layout incorporates the following four treatment measures:

- Filterra® Bioretention Cell (tree box),
- StormFilter® cartridges by CONTECH,
- Underdrained Subsurface Sand filter, and

TABLE 5			
FULL FLOW CAPACITY OF DISCHARGE PIPES			
Point of Interest	Size of Discharge Pipe (Inches)	Slope of Pipe (ft/ft)	Full Flow Capacity (CFS) (Manning's Equation)
1	36	0.0114	77.15
2	15	0.005	4.95
3	18	0.0059	8.74
4	36	0.011	75.78

The computed pipe capacities show that under free draining tail water conditions (i.e. Low Tide) Point of Interests 1 and 4 have enough capacity for a 100 yr storm event. POI 3 has enough capacity for a 25 yr storm event and would surcharge the up stream storm drain network and detention pond during the 100 yr storm event. POI 2 has the capacity to discharge the 2 yr storm event but surcharges the onsite storm drain network during larger events. Although not observed it is possible that minor surface ponding occurs during the condition with high tide and larger storm events at the lower portion of the Point of Interest 2 storm drain system.

12.10 Postdevelopment Analysis

The postdevelopment model analyzes the same four discharge locations. The comparison of Area (A) x Curve Number (CN) tributary to each Point of Interest is shown here:

TABLE 6		
PROPOSED WATERSHED HYDROLOGIC INFORMATION		
POI	Current Conditions	Post Development
	Area x CN	Area x CN
1	697	646
2	333	314
3	645	514
4	572	880

The Time of Concentration (Tc) paths from current conditions to post development conditions do not significantly change with the exception of the loss of plug-flow detention time from the wetland pond. Three of the four aggregate A x CN values decrease from current conditions to postdevelopment conditions and therefore would expect the peak flows to mimic this result. This indicates that the discharges at POI 1 and POI 2 would not see flows increase in the post development model. Even though the A x CN value has decreased at POI 3 the loss of detention volume in the post development conditions will likely increase the flows tributary to POI 3. The A x CN value increases at POI 4 and therefore the model should reflect an increase in peak flow.

The comparison of peak flows computed by the hydrologic model **without** detention in the post development analysis at the POI's are as summarized follows:

TABLE 7								
Comparison of Peak Flows at Point's of Interest								
POI	Current Conditions				Post Development w/o Detention			
	Peak Flow (CFS)				Peak Flow (CFS)			
Storm Event Frequency	2 yr	10 yr	25 yr	100 yr	2 yr	10 yr	25 yr	100 yr
1	14.12	28.05	34.78	44.94	13.07	25.97	32.21	41.63
2	3.81	10.18	13.55	18.83	3.99	10.09	13.26	18.21
3	6.03	8.09	8.87	9.93	11.74	13.61	14.50	16.45
4	14.35	25.3	30.43	38.08	24.31	48.45	59.76	76.01

The comparison of peak flows demonstrate that some level of detention is warranted in watersheds 3 and 4 to reduce the peak flows closer to those of the current conditions to assume that capacity is available within the existing drainage systems.

Flow restricting broad crested weirs has been incorporated into the outlet control structures of the storm water quality filters. The weirs restrict outflow above the elevation at which the water quality volume is met. The flow has been restricted as much as possible with out exceeding the emergency spill way elevation during the 100 yr storm.

The comparison of peak flows computed by the hydrologic model with detention features in the post development analysis at the POI's are as summarized follows:

TABLE 8								
Comparison of Peak Flows at Point's of Interest								
POI	Current Conditions				Post Development With Detention			
	Peak Flow (CFS)				Peak Flow (CFS)			
Storm Event Frequency	2 yr	10 yr	25 yr	100 yr	2 yr	10 yr	25 yr	100 yr
1	14.12	28.05	34.78	44.94	13.07	25.97	32.21	41.63
2	3.81	10.18	13.55	18.83	3.99	10.09	13.26	18.21
3	6.03	8.09	8.87	9.93	4.69	13.13	14.08	15.44
4	14.35	25.3	30.43	38.08	26.40	40.91	59.43	55.44

The peak flow rates at POI 3 and 4 have been reduced by quantifying detention storage within the onsite systems. The conclusion for each Point of Interest is as follows:

- POI 1 - The post development peak flow rate is less then current conditions and will operate with-in the original design perimeters.

12.4 References

- Urban Hydrology for Small Watersheds from the USDA SCS Technical Release SS, dated 1986
- Erosion and Sediment Maine Erosion and Sediment Control BMPs”, published by the MeDEP in 2003 <http://www.maine.gov/dep/blwg/docstand/escbmps/index.htm>
- City of Portland –Code of ordinances, Section 32 Rev. 9-17-09
- Portland Stormwater Management –Section 5 Adopted 7-19-10.
- Stormwater Management for Maine Volume III – BMP Technical Design Manual
- Chapter 500 DEP Rules, revision October 2010.

12.5 Modeling Software

- HydroCAD Stormwater Modeling System, version 8.5, Applied Microcomputer Systems – used for modeling underground storage facilities.
- Microsoft Excel 2007, Microsoft Corporation – used for spreadsheet computations.

12.6 Design Storms

TABLE 3	
Rainfall Amount (inches)	
1-Year Storm	2.5
2-Year Storm	3.0
10-Year Storm	4.7
25-Year Storm	5.5
100-Year Storm	6.7

Hydrologic Parameters: Cumberland County SE Type III Distribution: Antecedent Moisture Condition 2, SCS 24 Hour Distribution as per MeDEP Stormwater Best Management Practices (page 25).

12.7 Presentation of Analysis

The stormwater analysis presented in this report has been completed to show the plan meets the requirements of the City of Portland, Section 5 and adopted MeDEP Chapter 500 Stormwater Rules with the exceptions noted herein. The analyses are documented with supporting HydroCAD models and excel spreadsheet computations appended to this narrative.

12.8 Modeling Assumptions

- Inlets modeled as ponds with cylindrical storage based on invert to rim depth and structure diameter. It is assumed that all stormwater can enter at inlets.

- Analysis was run with pipe lengths (modeled as culvert outlets). Pipe sizes were generated using the manning's equation for full flowing pipes and confirmed to be adequately sized by the HydroCAD modeling.
- Analysis was run assuming that detention was not required to reduce the peak flow rate or to meet the flooding standards. However, full flow capacity of existing pipes crossing under the Fore River Parkway was taken into consideration.

12.9 Current Conditions Analysis

Runoff from the site is collected in catch basin inlets and conveyed in storm drain piping to the tidal mud flats. The existing drainage system for the phase I portion of the hospital campus is comprised of four main discharges which were constructed when the Fore River Parkway was built by the MDOT in 2004. The discharge pipes and outlets are relatively new and in good condition; therefore, will remain in service for this project. The four culverts discharge to the mouth of the Fore River where it is subject to tidal waters. As permitted in Section E Part 2.a of the MeDEP Chapter 500 Stormwater Rules, the applicant is requesting a waiver from the Flooding Standards under the provision that the proposed project discharges to the ocean. This waiver eliminates the need to evaluate predevelopment peak flows for the purpose of meeting the Flooding Standards; however, an analysis of current conditions was prepared to provide a basis of design flows for comparison with post development flows tributary to the existing storm drain crossings under the Fore River Parkway.

The current conditions will serve as the basis of analysis for the HydroCAD hydrologic model presented below. The four discharges known as A thru D will be the Points of Interest (POI) 1 thru 4 respectively. The Current Conditions Watershed Map C-9.0 is enclosed as part of the plan set

The peak flows at the POI's are as follows:

TABLE 4				
CURRENT CONDITION FLOWS (PEAK DISCHARGE RATES) AT POI's				
Point of Interest	2 Yr Storm Event (CFS)	10 Yr Storm Event (CFS)	25 Yr Storm Event (CFS)	100 Yr Storm Event (CFS)
1	14.12	28.05	34.78	44.94
2	3.81	10.18	13.55	18.83
3	6.03	8.09	8.87	9.93
4	14.35	25.3	30.43	38.08

Flows tributary to Point of Interest 3 are restricted by the capacity of the 15" outlet pipe from the existing wetland pond which currently functions as a detention pond.

Culvert pipes for Point of Interest 1 (Discharge A) through Point of Interest 4 (Discharge D) are described below and have been computed to have a full flow capacity as follows:

The existing drainage is divided into four areas; all four areas are tributary to a relatively new storm drainage network comprised of precast catch basin inlets and HDPE storm drainage piping. The four discharges to the Fore River are known herein as A thru D from the North to the South respectively. The northerly system 'A' collects runoff from the medical office building and associated parking lot and crosses the Fore River Parkway in a 36" culvert and discharges to a vegetated treatment swale. The adjacent system 'B' collects runoff from the hospital building and service area and crosses the Fore River Parkway in a 15" culvert and discharges to the Fore River. System 'C' collects runoff from the perimeter access road and wetland area where it detains storm event surges in the wetland pond prior to crossing the Fore River Parkway in an 18" culvert and discharging to the Fore River. The southerly system 'D' collects runoff from the parking lot and maintenance yard; crosses the Fore River Parkway in a 36" culvert and discharges to a vegetated treatment swale under the new Veteran's Memorial Bridge.

Figures appended to the original permit report provided the USDA medium intensity soils, sand and gravel aquifers, and surficial geology for the site. These figures are available upon request.

12.2 Proposed Project

The proposed project is described below and shown on Drawing C-3.0 of the accompanying plan set. The redevelopment area disturbs approximately 13.44 acres and increases the overall impervious area by 4.12 acres from the current condition.

Mercy Hospital is proposing to develop the Phase II hospital campus on the Fore River development site over the next two to six year period. The current development master plan may include the following uses:

- a. The Phase II hospital expansion wherein all State Street hospital functions are relocated to the Fore River campus. This will include up to an additional 250,000 SF of Hospital program area;
- b. A 72,000 SF Acute Care Center (ACC) will be established;
- c. One or more medical office complexes and professional offices of up to 168,000 SF;
- d. Accessory uses, including but not limited to, parking facilities and structures (for 1,800-2,000 parking spaces), utility services, storm water management systems, and site amenities;
- e. Continued use of public open space along the waterfront at the north and south ends of the campus; and
- f. Continued use of the south end of the campus for snow storage and/or remote parking.

All of the above facilities will be developed primarily to support the main use of the site as a hospital campus, although it is anticipated that some use of support facilities by others in the neighboring community may occur.

Other ancillary development features will include parking facilities, utility service locations, advanced stormwater management systems, and site amenities. Parking for the campus will include both surface and structural parking facilities. The parking needs for the project will likely exceed 1,800 spaces to meet local zoning requirements and facility needs.

Two separate access drives will continue to provide access to the hospital campus off the FRP. These access locations remain fixed due to geometric and sight line constraints along the Fore River Parkway. These fixed locations also contribute to the planning and layout challenges. Access off County Way is limited to emergency vehicles only, as it requires crossing of Pan Am Railway's tracks.

The project's Phase II stormwater management systems will provide water quality treatment measures to treat the new structure area developed as part of the Phase II expansion. The intent is to meet the current MeDEP Chapter 500 Standards including treatment of at least 95% of new structure area and 80% of the Phase II developed area. Stormwater quantity control is not required since the site will be discharging to tidal waters.

The proposed land use for the site after development will be as follows:

TABLE 2 – PROPOSED LAND USE		
Proposed Land Cover	Area (acre)	Change from Current (acre)
Unmaintained Pervious area	0.00	-5.18
Roof	5.03	+3.61
Lawn/Landscaped Planting Areas	9.04	+0.74
Pavement	9.68	-2.64
Multi-level Parking Structure	3.47	+3.47
Total	27.22	0.00

The Erosion Control Plan contained in Appendix C of this section outlines the erosion control measures which will be required for the project (Basic Stormwater Standards).

12.3 Watershed Delineation Method

The following resources were used for watershed delineation:

- Field Reconnaissance

*Bo Kennedy P.E., Project Engineer, DeLuca-Hoffman Associates, Inc.
Reviewed by Stephen Bushey, P.E., DeLuca-Hoffman Associates, Inc.*

- Site Topographic Survey

*Owen Haskell survey, dated 2001
Phase 1 Construction Drawings, dated 2006*

- Hydrologic Soil Group Information

USDA SCS Medium Intensity Mapping with interpretation of geotechnical information.

SECTION 12

STORMWATER MANAGEMENT REPORT

12.0 Introduction

DeLuca-Hoffman Associates, Inc. has been retained by Mercy Hospital for the preparation of a Major Amendment to the Site Location of Development Permit for the Expanded Master Plan at the Fore River Mercy Hospital Campus in Portland, Maine. The campus plan includes an expanded hospital with an emergency care department and acute care center, additional medical office buildings, multi story parking structures and an elevated parking platform.

Phase I of the Mercy Hospital was previously permitted and constructed from 2005 through 2008. The Phase I permit process was nearly complete when the MeDEP Chapter 500 Stormwater revisions in 2005 were adopted. This resulted in the approval of a plan that did not confirm to the new stormwater quality treatment Best Management Practices. As required by the City of Portland local regulations the Phase I stormwater management design incorporated some water quality treatment measures by utilizing two vegetated swales and four proprietary vortex based hydrodynamic separator devices. Additionally, Phase I was able to preserve the majority of the approximately 3.5 acre wetland pond in the center of the site. The wetland pond is an isolated resource surrounded by parking and access road facilities. The pond currently acts as a detention pond for one of the site's four watersheds and is connected to the Fore River via a storm drain outlet pipe.

The Phase II expansion will redevelop portions of the existing site and expand into the undeveloped wetland pond area. For the purpose of this analysis, the site area is only that area bound by the Fore River Parkway and the existing railroad tracks to the north of the site. The total structure area (building and other impervious surfaces) on this 27.22 acre portion of the project site will increase from 13.74 acres to 18.18 acres. The land cover will shift the large open space in the center of the site from pond to rooftop and pavement surfaces.

The proposed project requires a Major Amendment to the current MeDEP Site Location of Development and NRPA Permits. The stormwater management design presented herein will show that the project meets the current criteria of the MeDEP Chapter 500 General Standards for redevelopment projects.

The site discharges to tidal conditions along the Fore River; therefore the applicant is requesting a waiver from the flooding standards.

The site has four drainage areas which are defined by the area tributary to each of the four existing culverts crossing the Fore River parkway and discharging to the Fore River. Four techniques from the filtration category of the Best Management Practices (BMPs) technical manual are proposed for compliance with the stormwater quality standards required under the General Standards as outlined in the adopted MeDEP Chapter 500 Stormwater Management regulations. These techniques are as follows:

- Underdrained Grassed Soil Filter
- Underdrained Bioretention Cell (Rain Garden)
- Underdrained Subsurface Sand Filter
- Proprietary Filters (Filterra®, and StormFilter®)

These measures are proposed to provide water quality treatment for at least 80% of the proposed redevelopment areas.

12.1 Existing Site Conditions

The project boundary is located within the parcel bounded by the Fore River parkway to the west, the railroad to the north and east and the new Veteran's Bridge to the south. This portion of the lands owned by Mercy Hospital is comprised of 27.22 acres and is currently developed with the following land cover:

TABLE 1	
Current Land Cover	Area (acre)
Unmaintained Pervious Area/Wetland	5.18
Roof	1.42
Lawn	8.30
Pavement	12.32
Multi-Level Parking Structure	0.00
Total	27.22

Topography varies across the site and can be broken down into two areas. The north end of the site is generally 14 feet higher than the south end. The north end is slightly rolling and designed to provide access to the first floor of the existing hospital (FFE 32) and Medical Office Building (FFE 30). The southerly end of the site is relatively flat and designed to access the ground floor/service area of the hospital at finished floor elevation 17.5. The northerly developed portion of the site ranges from elevation 20 to 36. The southerly portion of the site ranges from elevation 10 to elevation 19 with isolated mounds containing ash laden soils up to elevation 26. The tide fluctuates approximately 9.13 ft in the project area with a mean low tide elevation of -4.18 and a mean high tide elevation of 4.95. The highest annual tide elevation for the locus site is elevation 7.4 feet and the 100 yr storm flood elevation is elevation 10.0.

The soils on the site are shown on the USDA medium intensity soils map to be Hinckley gravelly sandy loam, Cut and Fill land and Gravel Pit. The historical gravel pit operations and Phase I construction of the property has modified all of the original surface soils from their original classification to a "Cut and Fill" classification. A mix of native and imported soils was used to construct the parking lots and structural fill for the buildings.

The existing conditions are shown on Drawing C-1.2 and supplemented by photographs appended to the end of this narrative.

The site is located in a mapped 100-year floodplain Zone A2, Elevation 10 (NGVD 1929 Datum) based upon the 1986 FEMA mapping.

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Appendices

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SECTION 12

STORMWATER MANAGEMENT REPORT (GENERAL STANDARDS)

MERCY HOSPITAL PHASE II RELOCATION PROJECT FORE RIVER SITE – PORTLAND, ME

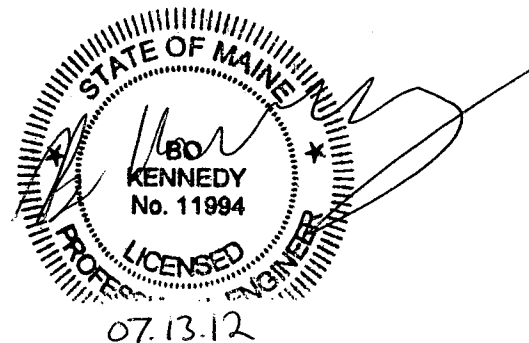
PREPARED FOR:

**MERCY HOSPITAL
144 STATE STREET
PORTLAND, MAINE 04101
(207) 879-3000**

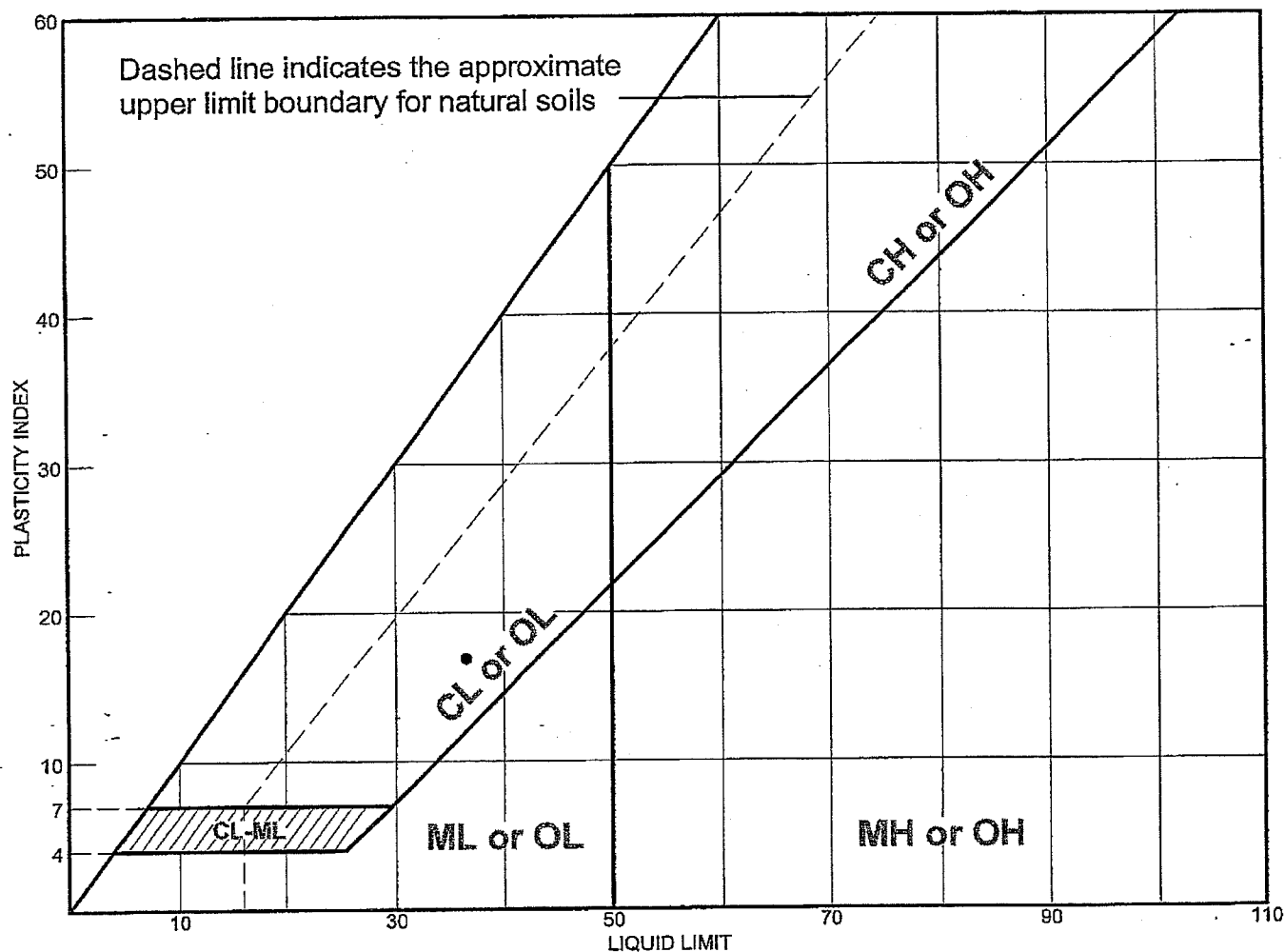
PREPARED BY:

**DELUCA-HOFFMAN ASSOCIATES, INC.
778 MAIN STREET, SUITE 8
SOUTH PORTLAND, MAINE 04106
(207) 775-1121**

JULY 2012



LIQUID AND PLASTIC LIMITS TEST REPORT



MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
Gray Lean clay	36.5	19.6	16.9			CL

Project No. 31807-001 Client: Mercy Hospital

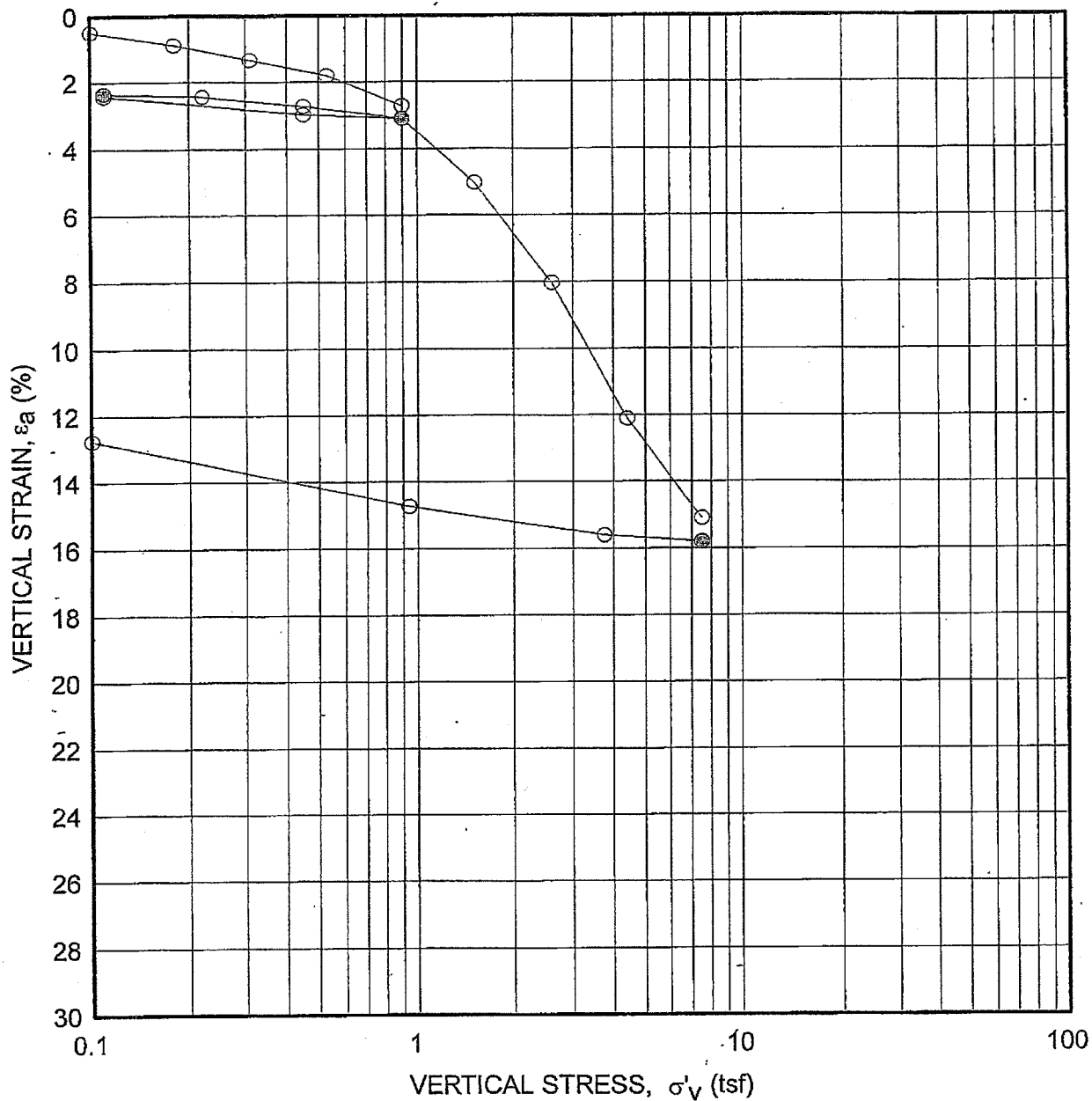
Project: Mercy Hospital - Fore River, Phase 1 Replacement

Portland, Maine

Source: HA-05-4(OW) Sample No.: U01 Elev./Depth: 15.0-17.0

HALEY & ALDRICH, INC.
UNDERGROUND ENGINEERING & ENVIRONMENTAL SOLUTIONS

Remarks:



Boring No.: HA05-4(OW)
 Sample No.: U01
 Depth (ft): 15.3
 Test No.: OED001

Atterberg Limits (%)

W_i: 36.5
 W_p: 19.6
 I_p: 16.9

Sample Description:

Gray Lean clay

	Water Content (%)	Void Ratio, e
Initial :	37.2	1.121
Final :	30.6	0.873

Preconsolidation Pressure (tsf): 1.3
 Compression Ratio, CR: 0.117
 Recompression Ratio, RR: 0.010

29 September 2005 : J:\OED\31807001\OED001\0924OD.WB2



HALEY & ALDRICH, INC.
 Geotechnical Engineers & Environmental Consultants

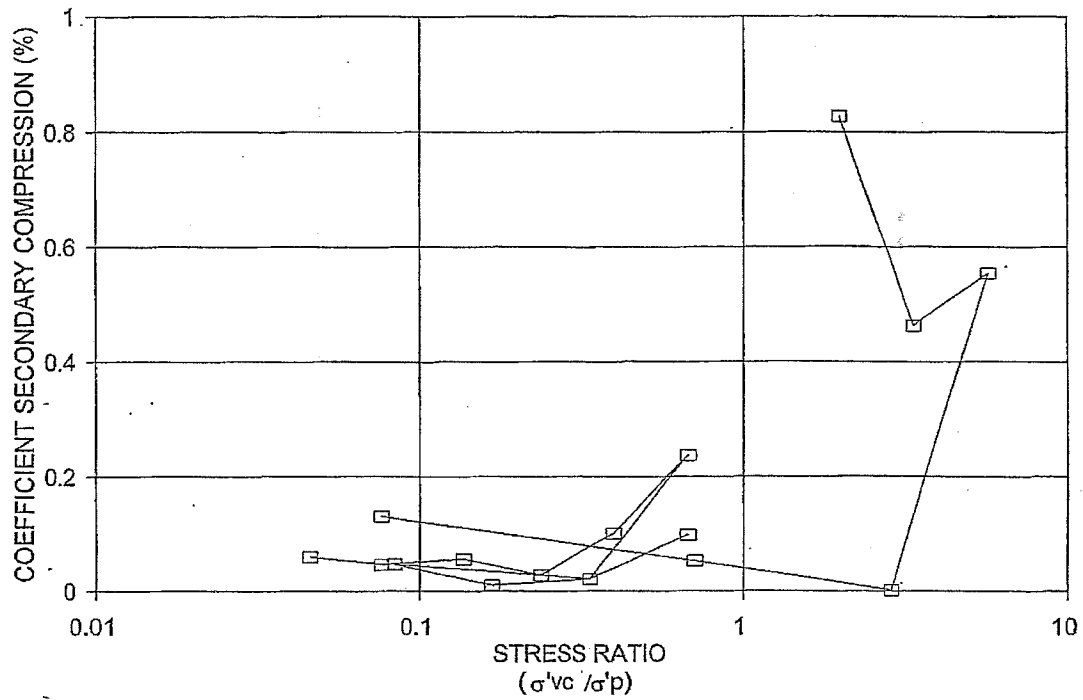
Mercy Hospital - Fore River, Phase 1 Replacement
 Portland, Maine

CONSOLIDATION TEST

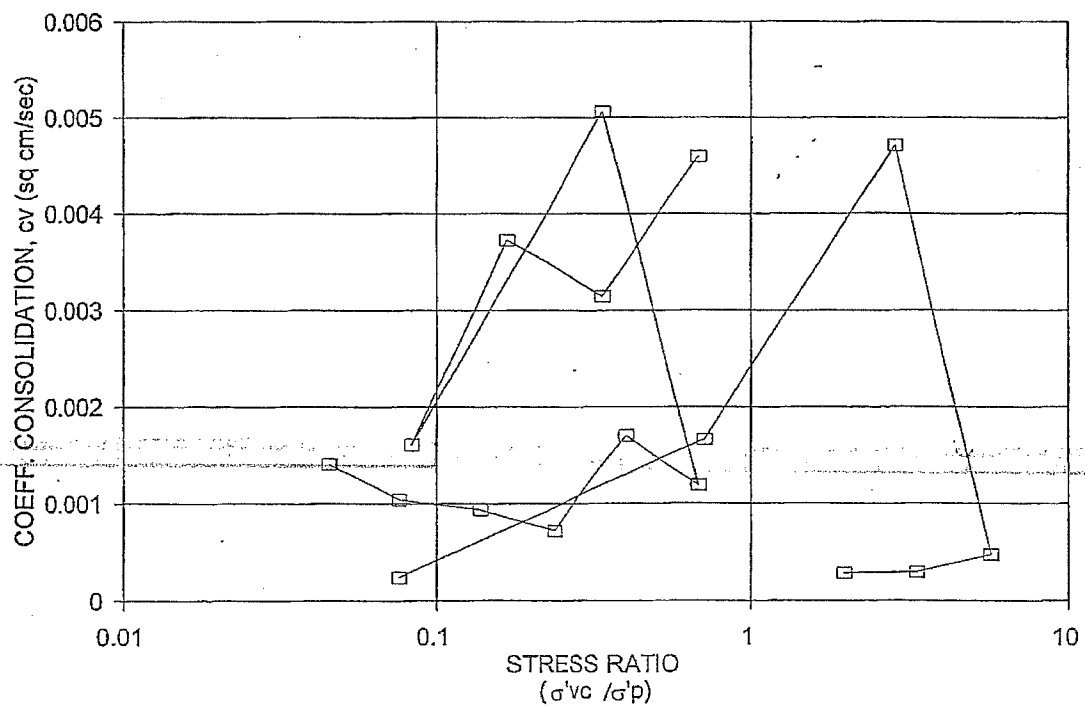
FILE NO. 31807-001

SEPT 2005

File No. 31807-001
OED001; HA05-4(OW); U01



File No. 31807-001
OED001; HA05-4(OW); U01



HALEY & ALDRICH, INC.		CONSOLIDATION TEST SUMMARY				File No. 31807-001 Date SEPT 2005 Test no. OED001 Calculated by F. Farrar Checked by M. Dobday		
Project		Mercy Hospital - Fore River, Phase 1 Replacement Portland, Maine						
Exploration no.	HA05-4(OW)	ATTERBERG LIMITS (%)						
Sample no.	U01	wL =	36.5	IP =	16.9			
Depth (ft)	15.3	wP =	19.6	IL =	1.0			
Sample description		Gray Lean clay						
		INITIAL	FINAL	TEST QUALITY		STRESS STRAIN PARAMETERS		
Water content (%)		37.16	30.63	{ } Excellent				
Degree of saturation (%)		94.5	100.0	{X} Very Good		Preconsolidation pressure, sig'p (tsf) 1.3		
Sample height (cm)		1.858	1.641	{ } Good		Compression Ratio (CR) 0.117		
Sample diameter (cm)		6.354		{ } Fair		Recompression Ratio (RR) 0.010		
Sample area (sq. cm)		31.709		{ } Poor				
Wet sample weight (g)		108.590						
Dry sample weight (g)		79.170						
Total unit weight (pcf)		115.1						
Est. specific gravity		2.850						
Void ratio, e		1.121	0.873					
Solids height (cm)		0.876						
NOTES: 1. CR and RR calculated as the change in strain divided by the change in log stress 2. Specific gravity estimated assuming the final degree of saturation S = 100%								
INC. NO.	VERTICAL STRESS (tsf)	VERTICAL STRAIN (%)		VOID RATIO, e (EOP)	STRESS RATIO (sig'vc/sig'p)	COEFFICIENT OF CONSOLIDATION cv (sq cm/sec)	COEFFICIENT OF SECONDARY COMPRESSION (%)	REMARKS
		END OF PRIMARY	END OF INCREMENT					
1	0.06	0.27	0.29	1.115	0.045	1.41E-03	0.0602	
2	0.10	0.50	0.52	1.110	0.076	1.05E-03	0.0473	
3	0.18	0.89	0.98	1.102	0.136	9.38E-04	0.0564	
4	0.31	1.34	1.44	1.093	0.235	7.22E-04	0.0291	
5	0.53	1.81	2.00	1.083	0.402	1.71E-03	0.1011	
6	0.90	2.72	3.10	1.063	0.682	1.20E-03	0.2382	
7	0.45	2.98	2.93	1.058	0.341	5.07E-03	0.0220	
8	0.11	2.43	2.35	1.069	0.083	1.62E-03	0.0482	
9	0.22	2.44	2.47	1.069	0.167	3.73E-03	0.0109	
10	0.45	2.74	2.78	1.063	0.341	3.15E-03	0.0219	
11	0.90	3.11	3.33	1.055	0.682	4.60E-03	0.0986	
12	1.53		5.03		1.159			
13	2.60	8.03	8.95	0.951	1.970	2.89E-04	0.8272	
14	4.42	12.11	12.78	0.864	3.348	2.96E-04	0.4630	
15	7.51	15.10	15.80	0.801	5.689	4.70E-04	0.5546	
16	3.76	15.60	15.59	0.790	2.848	4.72E-03	0.0021	
17	0.94	14.75	14.64	0.808	0.712	1.67E-03	0.0533	
18	0.10	12.76	12.60	0.850	0.076	2.44E-04	0.1309	
19	Seating		11.67		0.000			

J:\OED\31807001\OED001\0924OD.WB2

Test Method: ASTM D2435 Method B

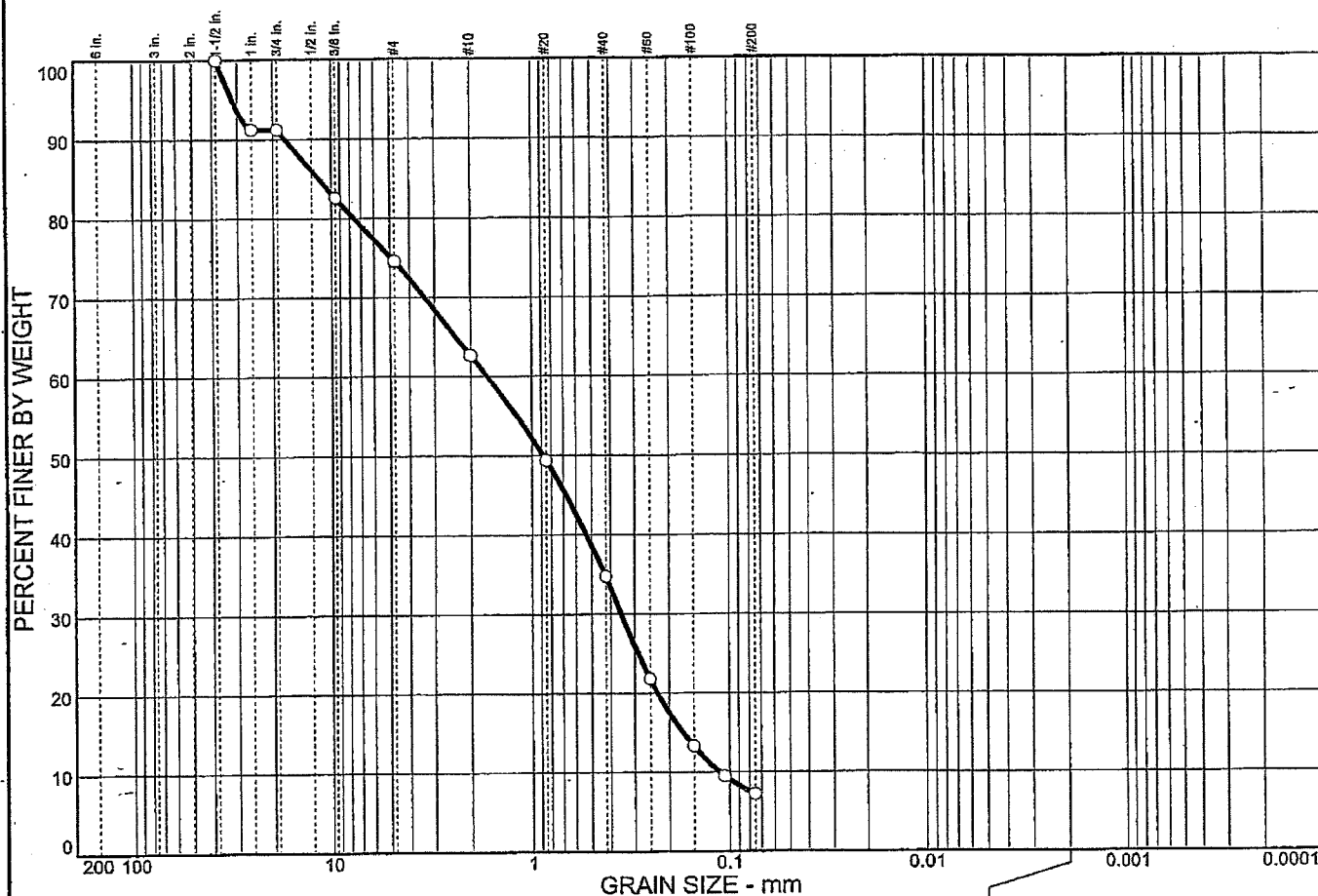
CONSOLIDATION TEST INPUT DATA

Task name 0924OD Is specific gravity definite? N
Exploration no. HA05-4(OW) Does this test have unload/reload? Y
Sample no. U01

Page 2 of 2
File No. 31807-001
Date SEPT 2002
Test no. OED001

INC. No.	VERT. STRESS (tsf)	STRAIN AT:		STRAIN AT:		STRAIN AT d50 (%)	log t50 (min)	Hd (cm.)	SECONDARY COMPRESSION			
		EOP (%)	EOI (%)	1.0 min. log 1 = 0 (%)	0.25 min. log 0.25 = -0.6 (%)				d (%)	log time (min.)	d (%)	log time (min.)
	seating		0.000									
1	0.06	0.265	0.290	0.141	0.105	0.168	0.301	0.9278	0.269	1.20	0.29	1.477
2	0.10	0.497	0.520	0.381	0.356	0.414	0.429	0.9253	0.502	1.48	0.52	1.778
3	0.18	0.889	0.980	0.715	0.680	0.767	0.474	0.9225	0.938	2.26	0.97	2.857
4	0.31	1.336	1.440	1.108	1.063	1.177	0.584	0.9182	1.342	2.08	1.35	2.380
5	0.53	1.809	2.000	1.617	1.553	1.649	0.206	0.9139	1.820	1.20	1.88	1.778
6	0.90	2.720	3.100	2.271	2.152	2.377	0.353	0.9071	2.961	2.38	3.10	2.982
7	0.45	2.978	2.930	3.021	3.066	3.045	-0.279	0.9008	2.943	2.08	2.93	2.477
8	0.11	2.426	2.350	2.741	2.841	2.683	0.220	0.9041	2.376	2.26	2.35	2.778
9	0.22	2.436	2.470	2.395	2.367	2.388	-0.140	0.9068	2.446	1.48	2.45	1.778
10	0.45	2.735	2.780	2.615	2.545	2.606	-0.069	0.9048	2.764	2.08	2.78	2.778
11	0.90	3.109	3.330	2.998	2.897	2.952	-0.236	0.9016	3.160	1.00	3.33	2.732
12	1.53		5.030	3.646	3.491							
13	2.60	8.032	8.950	5.622	5.364	6.569	0.933	0.8683	8.454	2.56	8.95	3.158
14	4.42	12.109	12.780	9.586	9.284	10.545	0.884	0.8312	12.586	3.12	12.73	3.422
15	7.51	15.099	15.800	13.435	13.150	13.982	0.649	0.7995	15.552	2.62	15.80	3.079
16	3.76	15.605	15.590	15.651	15.708	15.685	-0.370	0.7831	15.603	1.48	15.60	2.380
17	0.94	14.746	14.640	15.186	15.371	15.151	0.086	0.7881	14.681	2.26	14.64	3.121
18	0.10	12.762	12.600	14.334	14.494	13.708	0.937	0.8017	12.660	2.73	12.60	3.158
19	0.02		11.670	12.529	12.553							

U.S. STANDARD SIEVE SIZE



GEOTECHNICAL LABORATORY SOIL TEST RESULTS - TUBE SAMPLES

Mercy Hospital
Portland, ME

Test	Description	USCS	Depth (ft)	Test No.	Atterberg Limits (%)					Index Value (tsf)					Stress History				Remarks
					Nat. Water Cont. (%)	Liq. Limit	Plas. Limit	Plas. Index	Ip	Tor- vane	Rem. Shear Vane	Pkt Pen. PP/2	Precons Press (tsf)	CR	RR	Total Unit Wt. (pcf)	Undr. Shear Str. cu (tsf)		
Boring:	HA05-40W																		
Sample:	U01																		
Depth (ft):	15.0 to 17.0																		
Recovery (in.):	23																		
Soil Visual Id	Gray Lean clay	CL	15.0														112.79		
Extrusion charge for tube samples			15.0		37.7														
Extrusion charge for tube samples			15.1		35.8					0.28		0.17							
Extrusion charge for tube samples			15.2		36.5					0.34		0.19							
Consolidation Test			15.3	OED001	37.2								1.3	0.117		115.10			
Atterberg limits			15.5		34.7	36.5	19.6	16.9					Very	0.010					
Extrusion charge for tube samples			15.5		38.7					0.30	0.24	0.03	0.21						
Extrusion charge for tube samples			15.6		39.1					0.29		0.22							

PERCENT FINER BY WEIGHT

GRAIN SIZE - mm

Grain Size (mm)	Sieve Size	Percent Finer (%)
16	16 in.	100
3	3 in.	100
2	2 in.	100
1.5	1-1/2 in.	100
1	1 in.	100
0.75	3/4 in.	100
0.5	1/2 in.	100
0.375	3/8 in.	98
0.25	#4	95
0.15	#10	88
0.075	#20	70
0.0475	#40	43
0.025	#60	28
0.015	#100	16
0.0075	#200	10
0.00425	-	8

[illegible][illegible]

C



FILE NO: 31807-001

PERCENT FINER BY WEIGHT

GRAIN SIZE - mm

Grain Size (mm)	Percent Finer (%)
60	100
30	98
15	80
7.5	65
3.75	51
1.9	37
0.85	25
0.425	18
0.25	14
0.15	11
0.075	10

[illegible]

10 Olive brown Poorly graded sand with silt and gravel

0



DATE: 9/21/2005

FILE NO: 31807-001

APPENDIX C

Geotechnical Laboratory Test Results

H&A FILE NO.	31807-001
PROJECT MGR.	W. Chadbourne
FIELD REP.	-
DATE	1/4/2006

[illegible]

HALEY & ALDRICH

OBSERVATION WELL INSTALLATION REPORT

Well No.
OW-121
Boring No.
HA05-121

PROJECT	Mercy Hospital - Fore river, Phase 1 Replacement	H&A FILE NO.	31807-001
LOCATION	Portland, Maine	PROJECT MGR.	W. Chadbourne
CLIENT	Mercy Hospital	FIELD REP.	R. Estes
CONTRACTOR	Maine Test Borings, Inc.	DATE INSTALLED	12/20/2005
DRILLER	E. Enos	WATER LEVEL	24.5 ft.

Ground El.	33 +/-	ft	Location	See Plan	<input checked="" type="checkbox"/> Guard Pipe
El. Datum	NGVD29				<input type="checkbox"/> Roadway Box

SOIL/ROCK CONDITIONS	BOREHOLE BACKFILL	Type of protective cover/lock			Aluminum/padlock
			Height of top of riser pipe above ground surface	3.5	ft
			Height of top of riser pipe above ground surface	3.4	ft
0.0	0.0		Type of protective casing:	Steel	
	Bentonite Chips		Length	5.2	ft
Lean CLAY	10.0		Inside Diameter	3.3	in
			Depth of bottom of guard pipe	1.7	ft
15.4	Filter Sand		Type of Seals	Top of Seal (ft)	Thickness (ft)
	22.0		Concrete	-	-
	Bentonite		Bentonite Seal	0.0	10.0
Lean CLAY	23.8		Bentonite	22.0	1.8
			Type of riser pipe:	PVC	
			Inside diameter of riser pipe	1.0	in
			Type of backfill around riser	Bentonite/Filter sand	
29.0	Filter Sand		Diameter of borehole	3.5	in
Silty SAND			Depth to top of well screen	25.8	ft
32.5			Type of screen	Slotted PVC	
ORGANIC SOIL and and Silty SAND			Screen gauge or size of openings	0.010	in
33.7			Diameter of screen	1.0	in
			Type of backfill around screen	Filter sand	
Well-Graded SAND	44.8		Depth of bottom of well screen	35.4	ft
	Caved		Bottom of Silt trap	35.8	ft
47	47		Depth of bottom of borehole	47.0	ft

(Bottom of Exploration)
(Numbers refer to depth from ground surface in feet)

(Not to Scale)

29.3	+	9.6	ft	+	0.4	ft	=	39.3	ft
Riser Pay Length (L1)		Length of screen (L2)		Length of silt trap (L3)		Pay length			

COMMENTS:

GROUNDWATER MONITORING REPORT

OW/PZ NUMBER
HA05-121(OW)

Page 1 of 1

PROJECT	Mercy Hospital - Fore River, Phase 1 Replacement
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LOCATION	Portland, Maine
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CLIENT	Mercy Hospital
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CONTRACTOR	Maine Test Borings, Inc.
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ELEVATION SUBTRAHEND	33	ft +/-, NGVD 29
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DATE AND TIME OF CONSTRUCTION	12/20/2005 12:00 PM
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H&A FILE NO. 31807-001

PROJECT MGR.	W. Chadbourne
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FIELD REP. R. Estes

DATE 1/4/2006

[illegible]

HALEY & ALDRICH

OBSERVATION WELL INSTALLATION REPORT

Well No.
OW-118Boring No.
HA05-118(OW)

PROJECT Mercy Hospital - Fore river, Phase 1 Replacement

H&A FILE NO. 31807-001

LOCATION Portland, Maine

PROJECT MGR. W. Chadbourne

CLIENT Mercy Hospital

FIELD REP. R. Estes

CONTRACTOR Maine Test Borings, Inc.

DATE INSTALLED 12/20/2005

DRILLER B. Enos

WATER LEVEL 12.1 ft

Ground El. 36 +/- ft

Location See Plan

EL Datum NGVD29

☒ Guard Pipe☐ Roadway Box

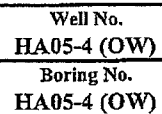
SOIL/ROCK CONDITIONS	BOREHOLE BACKFILL	Type of protective cover/lock	Aluminum/padlock
0.0	0.0	Height of top of riser pipe above ground surface	3.0 ft
-FOREST MAT-		Height of top of riser pipe above ground surface	2.9 ft
1.5	Filter SAND	Type of protective casing:	Steel
		Length	5.2 ft
		Inside Diameter	3.3 in
		Depth of bottom of guard pipe	2.2 ft
		Type of Seals	Top of Seal (ft) Thickness (ft)
		Concrete	- -
		Bentonite Seal	10.0 5.0
		Type of riser pipe:	PVC
		Inside diameter of riser pipe	1.0 in
		Type of backfill around riser	Filter sand
		Diameter of borehole	3.5 in
		Depth to top of well screen	17.0 ft
		Type of screen	Slotted PVC
		Screen gauge or size of openings	0.010 in
		Diameter of screen	1.0 in
		Type of backfill around screen	Filter sand
		Depth of bottom of well screen	26.6 ft
		Bottom of Silt trap	27.0 ft
		Depth of bottom of borehole	83.0 ft

(Bottom of Exploration)
(Numbers refer to depth from ground surface in feet)

(Not to Scale)

19.9 + 9.6 ft + 0.4 ft = 29.9 ft
Riser Pay Length (L1) Length of screen (L2) Length of silt trap (L3) Pay length

COMMENTS:



H&A FILE NO.	31807-001
PROJECT MGR.	W. Chadbourne
FIELD REP.	A. Blaisdell
DATE INSTALLED	8/15/2005
WATER LEVEL	26.0 ft.

☒ Guard Pipe
☐ Roadway Box

$\frac{25.0 \text{ ft}}{\text{Riser Pay Length (L1)}} + \frac{9.8 \text{ ft}}{\text{Length of screen (L2)}} + \frac{0.2 \text{ ft}}{\text{Length of sill trap (L3)}} = \frac{35 \text{ ft}}{\text{Pay length}}$				
COMMENTS: Length of borehole below 32.0 ft. was backfilled with cuttings, see Test Boring Report HA05-4 (OW) for soil conditions.				

H&A FILE NO.	31807-001
PROJECT MGR.	W. Chadbourne
FIELD REP.	A. Blaisdell
DATE	1/4/2006

[illegible]

HALEY & ALDRICH

OBSERVATION WELL
INSTALLATION REPORTWell No.
HA05-1 (OW)
Boring No.
HA05-1 (OW)

PROJECT	Mercy Hospital - Fore River, Phase 1 Replacement	H&A FILE NO.	31807-001
LOCATION	Portland, Maine	PROJECT MGR.	W. Chadbourne
CLIENT	Mercy Hospital	FIELD REP.	A. Blaisdell
CONTRACTOR	Maine Test Borings, Inc.	DATE INSTALLED	8/9/2005
DRILLER	D. McKeen	WATER LEVEL	4.0 ft.

Ground El.	37.9 ft.	Location	See Plan	<input checked="" type="checkbox"/> Guard Pipe
El. Datum	NGVD 29			<input type="checkbox"/> Roadway Box

SOIL/ROCK CONDITIONS	BOREHOLE BACKFILL	Type of protective cover/lock		Stainless Steel Cap with Lock	
TOPSOIL (OL/OH)		Height/Depth of top of guard pipe/roadway box above ground surface	3.0	ft	
0.8	BENTONITE CHIPS	Height/Depth of top of riser pipe below ground surface	2.9	ft	
		Type of protective casing:	Steel		
	2.0	Length	5.0	ft	
		Inside Diameter	3.0	in	
SANDY LEAN CLAY (CL)		Depth of bottom of guard pipe/roadway box	2.0	ft	
		Type of Seals	Top of Seal (ft)	Thickness (ft)	
		Concrete	-	-	
		Bentonite	0.0	2.0	
4.4	SAND	Type of riser pipe:	PVC		
		Inside diameter of riser pipe	1.0	in	
		Type of backfill around riser	Sand		
		Diameter of borehole	3.0	in	
5.5		Depth to top of well screen,	15.0	ft	
		Type of screen	Slotted PVC		
		Screen gauge or size of openings	0.010	in	
		Diameter of screen	1.0	in	
		Type of backfill around screen	Sand		
		Depth of bottom of well screen	24.8	ft	
		Bottom of Silt trap	25.0	ft	
		Depth of bottom of borehole	25.0	ft	
26.2	26.2				
(Bottom of Exploration)		(Not to Scale)			

18.0	ft	+	9.8	ft	+	0.2	ft	=	28	ft
Riser Pay Length (L1)		Length of screen (L2)		Length of silt trap (L3)		Pay length				

COMMENTS:

GROUNDWATER MONITORING REPORT

OW/PZ NUMBER

HA05-1(OW)

Page 1 of 1

PROJECT	Mercy Hospital - Fore River, Phase 1 Replacement		
LOCATION	Portland, Maine		
CLIENT	Mercy Hospital		
CONTRACTOR	Maine Test Borings, Inc.		
ELEVATION SUBTRAHEND	37.89	ft, NGVD 29	
DATE AND TIME OF CONSTRUCTION	8/9/2005 4:00 PM		

H&A FILE NO.	31807-001
PROJECT MGR.	W. Chadbourne
FIELD REP.	A. Blaisdell
DATE	1/4/2006

[illegible]

APPENDIX B

Observation Well Installation and Groundwater Monitoring Reports



TEST BORING REPORT

Boring No. HA05-127

File No. 31807-001

Sheet No. 3 of 3

Depth (ft.)	SPT ¹	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size ² , structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel		Sand		Fines		Field Test			
								% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
50	8 10 9 14	S12 24	50.0 52.0			CL	Very stiff, gray, lean CLAY (CL), mps < 1.0 mm., wet, with occasional fine sand seams and partings.						100	S	M	M	
65	8 9 9 13	S13 24	55.0 57.0			CL	Very stiff, gray, lean CLAY (CL), mps < 1.0 mm., wet, with occasional fine sand seams and partings. -MARINE CLAY-						100	S	M	M	
60	8 9 9 13	S14 24	60.0 62.0			CL	Very stiff, gray, lean CLAY (CL), mps < 1.0 mm., wet, with fine sand seams and partings.					5	95	S	M	M	
65	8 14 10 19	S15 24	65.0 67.0		64.0	SP/ SM/ CL	Medium dense and stiff, gray-brown to gray, interbedded poorly graded SAND (SP), silty SAND (SM) and lean CLAY (CL), mps < 1.0 mm., wet. -INTERBEDDED MARINE DEPOSITS-					60	40				
					67.0		-BOTTOM OF EXPLORATION-										
							NOTE: WOR = Weight of Rods										

¹SPT = Sampler blows per 6 in. ²Maximum particle size (mm) is determined by direct observation within the limitations of sampler

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA05-127

TEST BORING REPORT

Boring No. HA05-127
 File No. 31807-001
 Sheet No. 2 of 3

Depth (ft.)	SPT	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size ² , structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel		Sand		Fines		Field Test			
								% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
20	5 11 16 18	S6 16	20.0 22.0			SM	Medium dense, gray, silty SAND (SM), mps=1.0 mm., wet.					85	15				
25	13 22 23 38	S7 21	25.0 27.0		23.0	SW	Dense to very dense, yellow-brown to light brown, well graded SAND with gravel (SW), mps=1.5 in., wet. -GLACIOFLUVIAL DEPOSIT-	15	10	15	40	20					
30	4 26 69 50	S8 24	30.0 32.0			SP	Very dense, yellow-brown to light brown, poorly graded SAND (SP), mps=2.0 mm., wet. -GLACIOFLUVIAL DEPOSIT-			25	75						
31.8						SM	Very dense, red-brown to gray, silty SAND (SM), mps=1.0 mm., wet. -GLACIOFLUVIAL DEPOSIT-			5	80	15					
35	4 5 7 8	S9 24	35.0 37.0		33.5	CL	Stiff, gray, lean CLAY (CL), mps < 1.0 mm., wet, with black streaks and frequent fine sand seams and partings. -MARINE CLAY-					10	90	S	M	M	
40	4 6 8 11	S10 24	40.0 42.0			CL	Stiff, gray, lean CLAY (CL), mps < 1.0 mm., wet, with occasional fine sand seams and partings.					100		S	M	M	
45	WOH 6 7 9	S11 24	45.0 47.0			CL	Stiff, gray, lean CLAY (CL), mps < 1.0 mm., wet, with occasional fine sand seams and partings.					100		S	M	M	

¹SPT = Sampler blows per 6 in. ²Maximum particle size (mm) is determined by direct observation within the limitations of sampler

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA05-127

TEST BORING REPORT

Boring No. HA05-122

File No. 31807-001

Sheet No. 4 of 5

Depth (ft.)	SPT ¹	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size ² , structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel		Sand		Field Test			
								% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness
80	16	S19	80.0			SM/	Very dense, gray, interbedded silty SAND (SM) and clayey SAND (SC), mps < 1.0 mm., wet. -INTERBEDDED MARINE DEPOSITS-					80	20		
	24	24	82.0			SC									
	33														
	35														
85	11	S20	85.0			SM/	Medium dense and stiff, gray, interbedded silty SAND (SM), clayey SAND (SC) and lean CLAY (CL), mps < 1.0 mm., wet. -INTERBEDDED MARINE DEPOSITS-					70	30		
	12	24	87.0			SC/									
	16					CL									
	24														
90	4	S21	90.0			SM	Loose to medium dense, gray, silty SAND (SM), mps < 1.0 mm., wet. -INTERBEDDED MARINE DEPOSITS-					85	15		
	2	24	92.0												
	8														
	11														
95	53	S22	95.0		94.3	SM	Very dense, gray, silty SAND with gravel (SM), slightly bonded, mps = 1.0 in., wet. -GLACIAL TILL-	10	10	5	20	35	20		
	86	8	96.1		95.5		Weathered bedrock (SCHIST).								
	75(1 in.)				96.1		Competent bedrock. Rollercone to 96.3 ft. Begin N-series core at 96.3 ft. See Core Boring Report HA05-122								
					96.3		NOTE: WOR = Weight of Rods WOH = Weight of Hammer								

¹SPT = Sampler blows per 6 in. ²Maximum particle size (mm) is determined by direct observation within the limitations of sampler

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA05-122

CORE BORING REPORT

Boring No. HA05-122

File No. 31807-001

Sheet No. 5 of 5

Depth (ft)	Drilling Rate Min./ft	Run No.	Depth (ft)	Recovery/RQD		Weath- ering	Well Dia- gram	Elev./ Depth (ft)	Visual Description and Remarks
				in.	%				
90									SEE TEST BORING REPORT FOR OVERBURDEN DETAILS
95									
		C1	96.3 100.4	43/88	32/65			96.3	Moderately hard, fresh to slightly weathered, gray, aphanitic to fine grained PHYLLITE/SCHIST. Joints are generally spaced moderate and moderately dipping (50-55°) and easily parted along foliation with several joint sets. Occasional low angle joints. Joints mostly planar to undulating, rough to smooth, fresh to slightly weathered, tight to open, occasional mud infilling.
100								100.4	-BOTTOM OF EXPLORATION-

NO WELL INSTALLED

TEST BORING REPORT

Boring No. HA05-122

File No. 31807-001

Sheet No. 2 of 5

Depth (ft.)	SPT ¹	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size ² , structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel		Sand		Fines		Field Test			
								% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
20	WOR WOR WOR WOH	S6 24	20.0 22.0			CL	Soft, gray, lean CLAY (CL), mps < 1.0 mm., wet, with black streaks. -GLACIOMARINE DEPOSIT- NOTE: Take V1 (2x7 vane) from 20.0-20.6 ft. Su = 740 psf/ 110 psf (remolded)						100	S	M	M	
	WOR WOR 4 3	S7 24	23.0 25.0			CL	Soft to medium stiff, gray, lean CLAY (CL), mps < 1.0 mm., wet, with black streaks. -GLACIOMARINE DEPOSIT-						100	S	M	M	
25	1 WOH WOH 5	S8 24	25.0 27.0			CL	Soft to medium stiff, gray, lean CLAY (CL), mps < 1.0 mm., wet, with black streaks. -GLACIOMARINE DEPOSIT-						100	S	M	M	
					28.9												
30	23 33 38 37	S9 13	30.0 32.0			SP/ SW	Very dense, light brown and yellow-brown to tan, interbedded poorly graded SAND (SP) and well graded SAND (SW), mps = 1.25 in., wet. -GLACIOFLUVIAL DEPOSIT-	10	5	10	25	45	5				
35	16 16 19 18	S10 8	35.0 37.0			SW	Dense, brown, to yellow-brown, well graded SAND with gravel (SW), mps = 1.25 in., wet. -GLACIOFLUVIAL DEPOSIT-	10	20	30	25	15					
40	21 23 20 16	S11 9	40.0 42.0			SW	Dense, light brown, well graded SAND with gravel (SW), mps = 0.75 in., wet.	5	10	20	40	25					
45	27 30 52 54	S12 11	45.0 47.0			SP/ SW	Very dense, light brown to yellow-brown, interbedded poorly graded SAND (SP) and well graded SAND with gravel (SW), mps = 1.25 in., wet. -GLACIOFLUVIAL DEPOSIT-	10	10	15	25	40					

¹SPT = Sampler blows per 6 in. ²Maximum particle size (mm) is determined by direct observation within the limitations of sampler

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA05-122

Jan 9, 00

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