

73-A-1

179 Fore River Parkway

Mercy Hospital

on Spreadsheet

add to project on G: Drive

**Predevelopment**

Type III 24-hr 100 YR Rainfall=6.70"

Prepared by {enter your company name here}

Printed 7/9/2012

HydroCAD® 8.50 s/n 000734 © 2007 HydroCAD Software Solutions LLC

Page 13

**Summary for Pond POI 2: POI 2**

[58] Hint: Peaked 14.99' above defined flood level

Inflow Area = 4.669 ac, 54.43% Impervious, Inflow Depth = 3.52" for 100 YR event  
Inflow = 18.83 cfs @ 12.09 hrs, Volume= 1.369 af  
Outflow = 18.83 cfs @ 12.09 hrs, Volume= 1.369 af, Atten= 0%, Lag= 0.0 min  
Primary = 18.83 cfs @ 12.09 hrs, Volume= 1.369 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.05 hrs

Peak Elev= 28.41' @ 12.09 hrs

Flood Elev= 13.42'

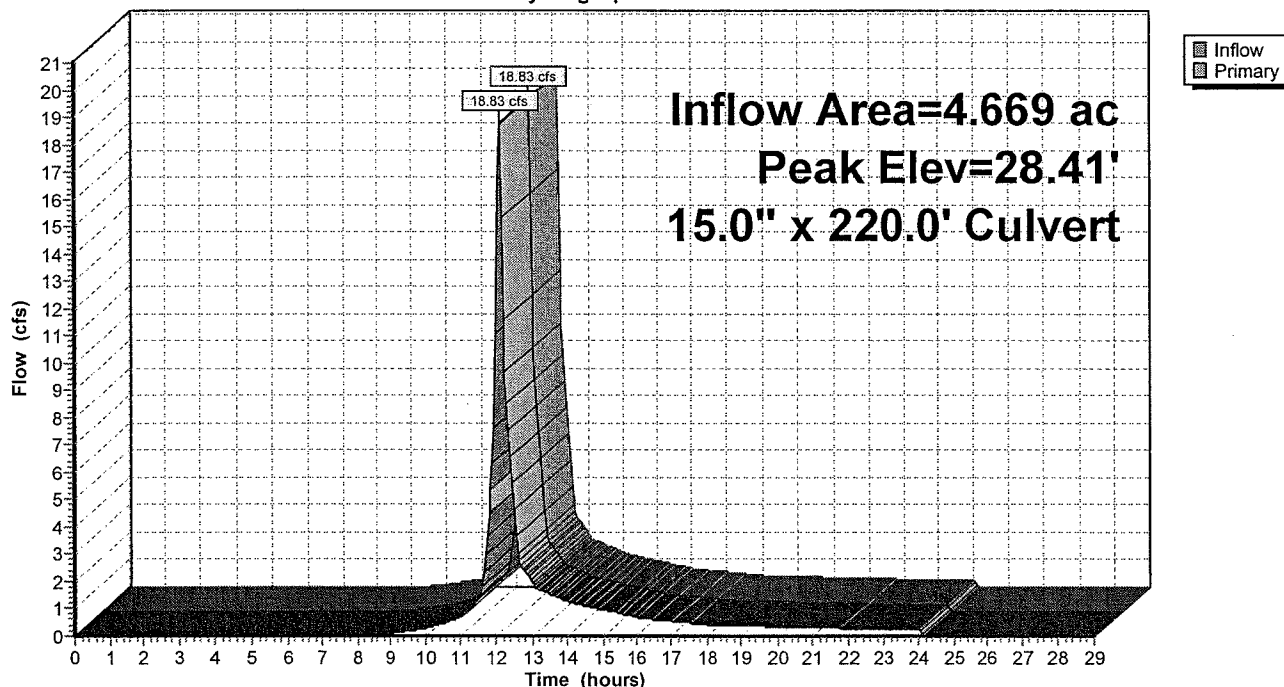
| Device | Routing | Invert | Outlet Devices  |
|--------|---------|--------|---|
| #1     | Primary | 6.82'  | 15.0" x 220.0' long Culvert RCP, sq.cut end projecting, Ke= 0.500<br>Outlet Invert= 5.71' S= 0.0050 '/ Cc= 0.900 n= 0.012 |

Primary OutFlow Max=18.53 cfs @ 12.09 hrs HW=27.76' (Free Discharge)

↑1=Culvert (Barrel Controls 18.53 cfs @ 15.10 fps)

**Pond POI 2: POI 2**

**Hydrograph**



**Predevelopment**

Prepared by {enter your company name here}

HydroCAD® 8.50 s/n 000734 © 2007 HydroCAD Software Solutions LLC

Type III 24-hr 100 YR Rainfall=6.70"

Printed 7/9/2012

Page 14

**Summary for Pond POI 3: POI 3**

[57] Hint: Peaked at 7.13' (Flood elevation advised)

Inflow Area = 7.376 ac, 15.50% Impervious, Inflow Depth = 5.25" for 100 YR event  
 Inflow = 9.93 cfs @ 12.06 hrs, Volume= 3.228 af  
 Outflow = 9.93 cfs @ 12.06 hrs, Volume= 3.228 af, Atten= 0%, Lag= 0.0 min  
 Primary = 9.93 cfs @ 12.06 hrs, Volume= 3.228 af

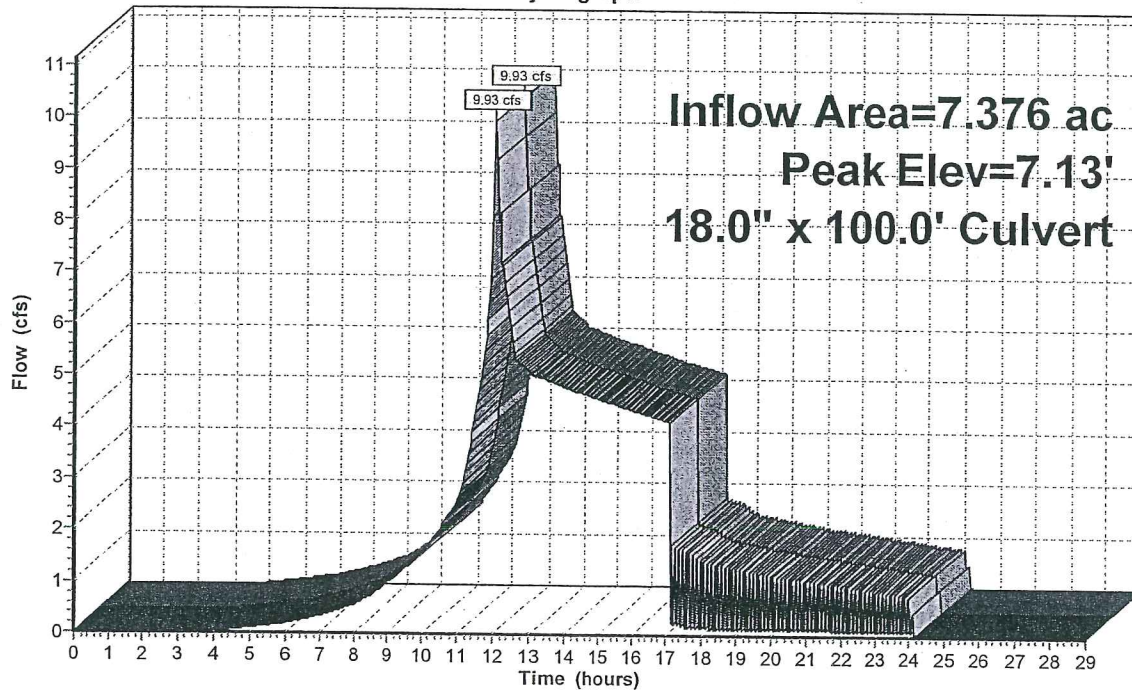
Routing by Dyn-Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.05 hrs  
 Peak Elev= 7.13' @ 12.06 hrs

| Device # | Routing | Invert | Outlet Devices  |
|----------|---------|--------|---|
| #1       | Primary | 4.71'  | 18.0" x 100.0' long Culvert RCP, sq.cut end projecting, Ke= 0.500<br>Outlet Invert= 4.12' S= 0.0059 /' Cc= 0.900 n= 0.012 |

Primary OutFlow Max=9.73 cfs @ 12.06 hrs HW=7.06' (Free Discharge)  
 ↑1=Culvert (Barrel Controls 9.73 cfs @ 5.50 fps)

**Pond POI 3: POI 3**

Hydrograph



# Predevelopment

Prepared by {enter your company name here}

HydroCAD® 8.50 s/n 000734 © 2007 HydroCAD Software Solutions LLC

Type III 24-hr 100 YR Rainfall=6.70"

Printed 7/9/2012

Page 11

## Summary for Pond EX DMH: EXISTING DMH 10

[57] Hint: Peaked at 8.81' (Flood elevation advised)

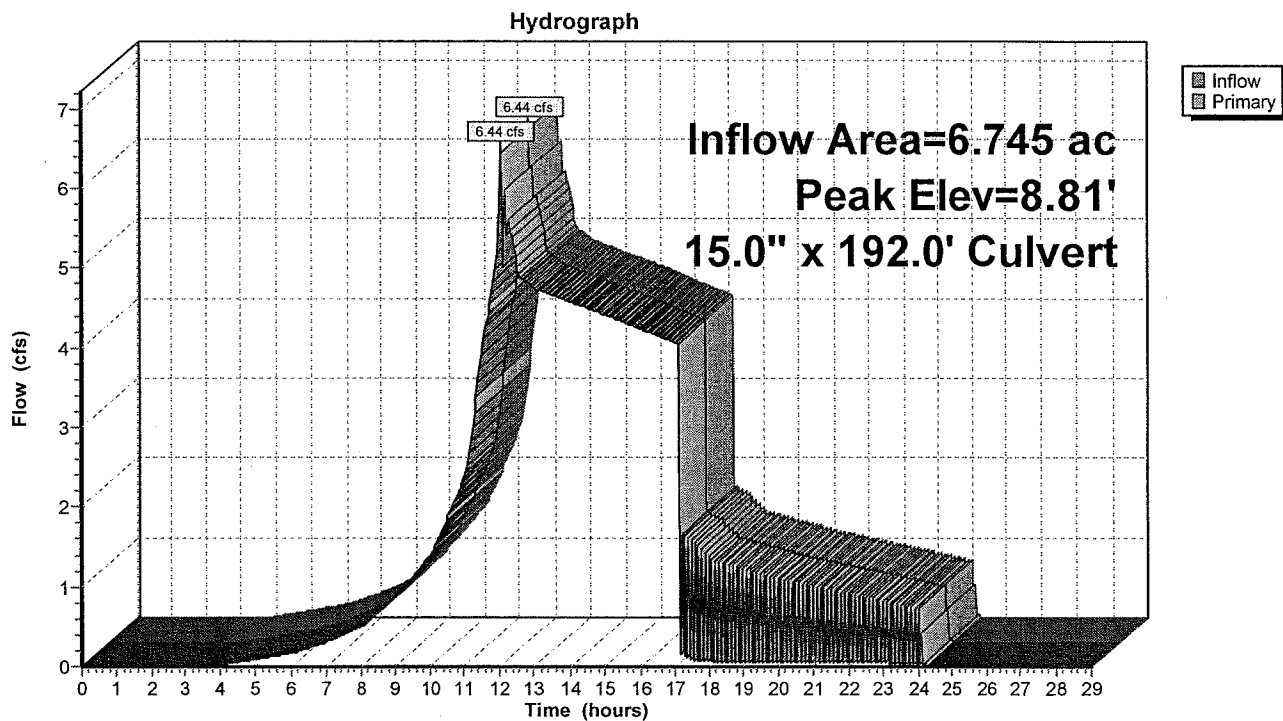
Inflow Area = 6.745 ac, 11.11% Impervious, Inflow Depth = 5.24" for 100 YR event  
Inflow = 6.44 cfs @ 12.05 hrs, Volume= 2.943 af  
Outflow = 6.44 cfs @ 12.05 hrs, Volume= 2.943 af, Atten= 0%, Lag= 0.0 min  
Primary = 6.44 cfs @ 12.05 hrs, Volume= 2.943 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.05 hrs  
Peak Elev= 8.81' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices   |
|--------|---------|--------|--|
| #1     | Primary | 6.76'  | 15.0" x 192.0' long Culvert CPP, square edge headwall, Ke= 0.500<br>Outlet Invert= 5.13' S= 0.0085 '/ Cc= 0.900 n= 0.012 |

Primary OutFlow Max=5.48 cfs @ 12.05 hrs HW=8.70' TW=7.06' (Dynamic Tailwater)  
1=Culvert (Outlet Controls 5.48 cfs @ 4.47 fps)

## Pond EX DMH: EXISTING DMH 10





**Predevelopment**

Type III 24-hr 100 YR Rainfall=6.70"

Prepared by {enter your company name here}

Printed 7/9/2012

HydroCAD® 8.50 s/n 000734 © 2007 HydroCAD Software Solutions LLC

Page 12

**Summary for Pond POI 1: POI 1**

Inflow Area = 8.360 ac, 75.65% Impervious, Inflow Depth = 4.78" for 100 YR event  
 Inflow = 44.94 cfs @ 12.09 hrs, Volume= 3.332 af  
 Outflow = 44.94 cfs @ 12.09 hrs, Volume= 3.332 af, Atten= 0%, Lag= 0.0 min  
 Primary = 44.94 cfs @ 12.09 hrs, Volume= 3.332 af

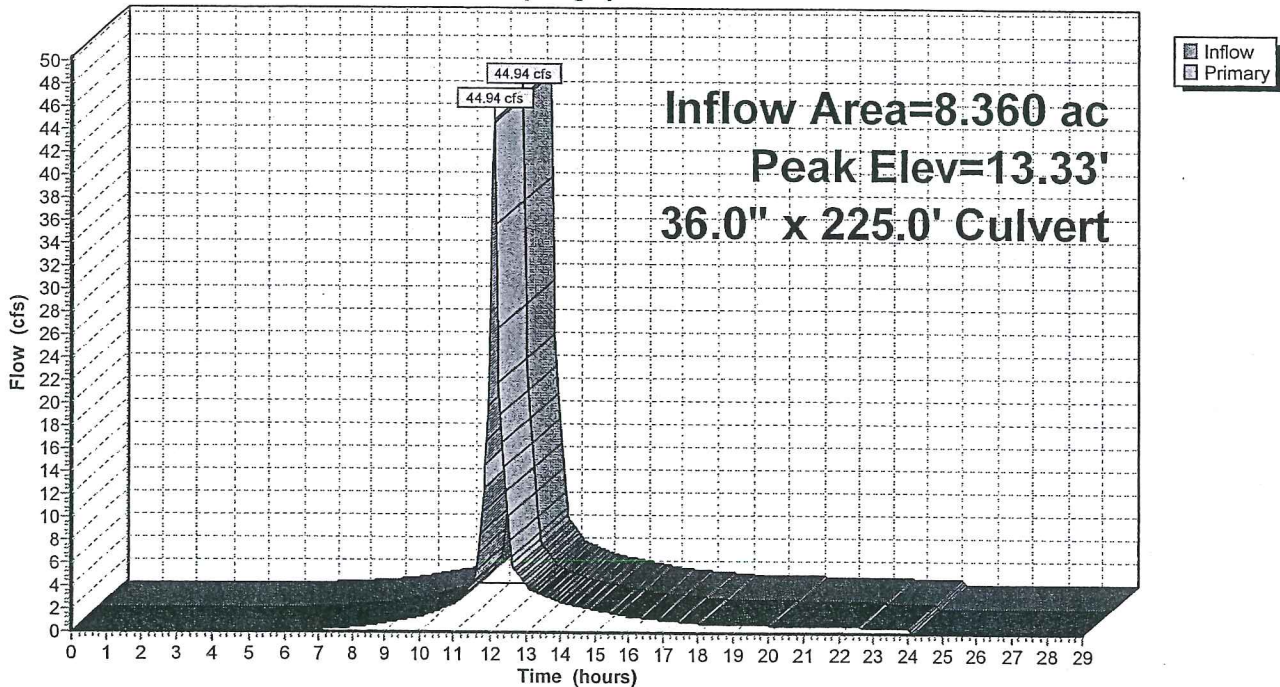
Routing by Dyn-Stor-Ind method, Time Span= 0.00-29.00 hrs, dt= 0.05 hrs  
 Peak Elev= 13.33' @ 12.09 hrs  
 Flood Elev= 21.69'

| Device | Routing | Invert | Outlet Devices  |
|--------|---------|--------|---|
| #1     | Primary | 10.09' | 36.0" x 225.0' long Culvert RCP, sq.cut end projecting, Ke= 0.500<br>Outlet Invert= 7.52' S= 0.0114 '/ Cc= 0.900 n= 0.012 |

Primary OutFlow Max=43.87 cfs @ 12.09 hrs HW=13.25' (Free Discharge)  
 ↑1=Culvert (Inlet Controls 43.87 cfs @ 6.21 fps)

**Pond POI 1: POI 1**

Hydrograph



**Predevelopment**

Type III 24-hr 100 YR Rainfall=6.70"

Prepared by {enter your company name here}

Printed 7/9/2012

HydroCAD® 8.50 s/n 000734 © 2007 HydroCAD Software Solutions LLC

Page 9

**Summary for Subcatchment 30: 3 OFFSITE**

Runoff = 3.73 cfs @ 12.09 hrs, Volume= 0.285 af, Depth= 5.42"

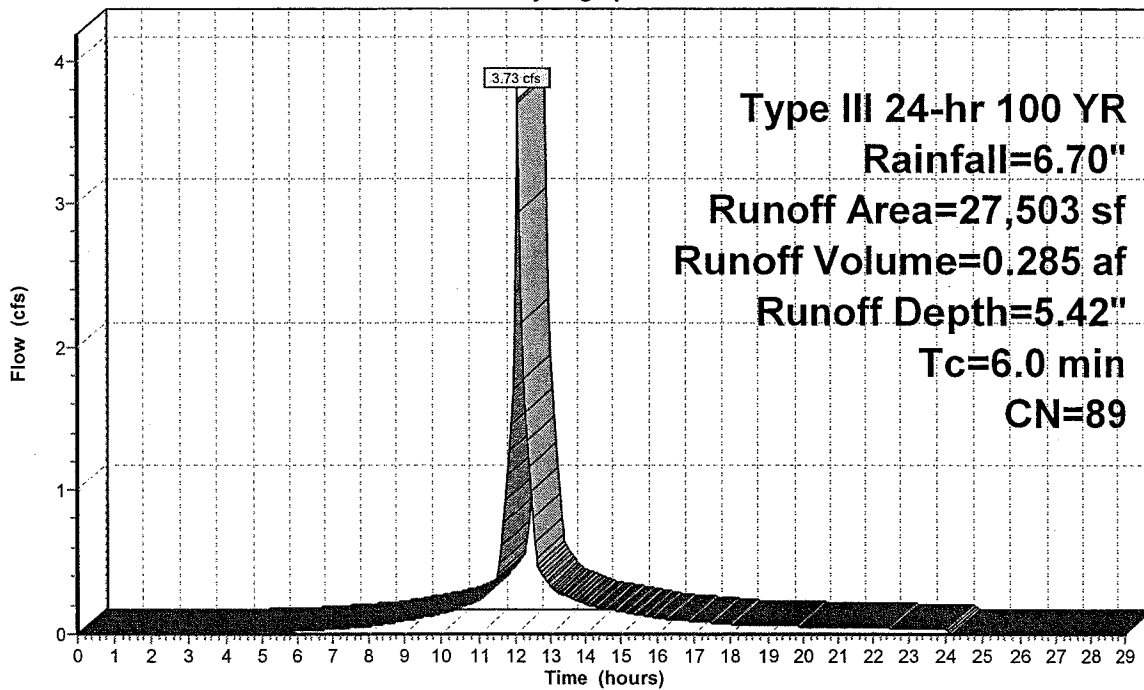
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-29.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100 YR Rainfall=6.70"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 17,144    | 98 | Paved roads w/curbs & sewers  |
| 10,359    | 74 | >75% Grass cover, Good, HSG C |
| 27,503    | 89 | Weighted Average              |
| 10,359    |    | Pervious Area                 |
| 17,144    |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

**Subcatchment 30: 3 OFFSITE**

Hydrograph



Runoff

Type III 24-hr 100 YR  
 Rainfall=6.70"  
 Runoff Area=27,503 sf  
 Runoff Volume=0.285 af  
 Runoff Depth=5.42"  
 Tc=6.0 min  
 CN=89

**Predevelopment**

Type III 24-hr 100 YR Rainfall=6.70"

Prepared by {enter your company name here}

Printed 7/9/2012

HydroCAD® 8.50 s/n 000734 © 2007 HydroCAD Software Solutions LLC

Page 10

**Summary for Subcatchment 4: 4**

Runoff = 38.08 cfs @ 12.09 hrs, Volume= 2.928 af, Depth= 5.53"

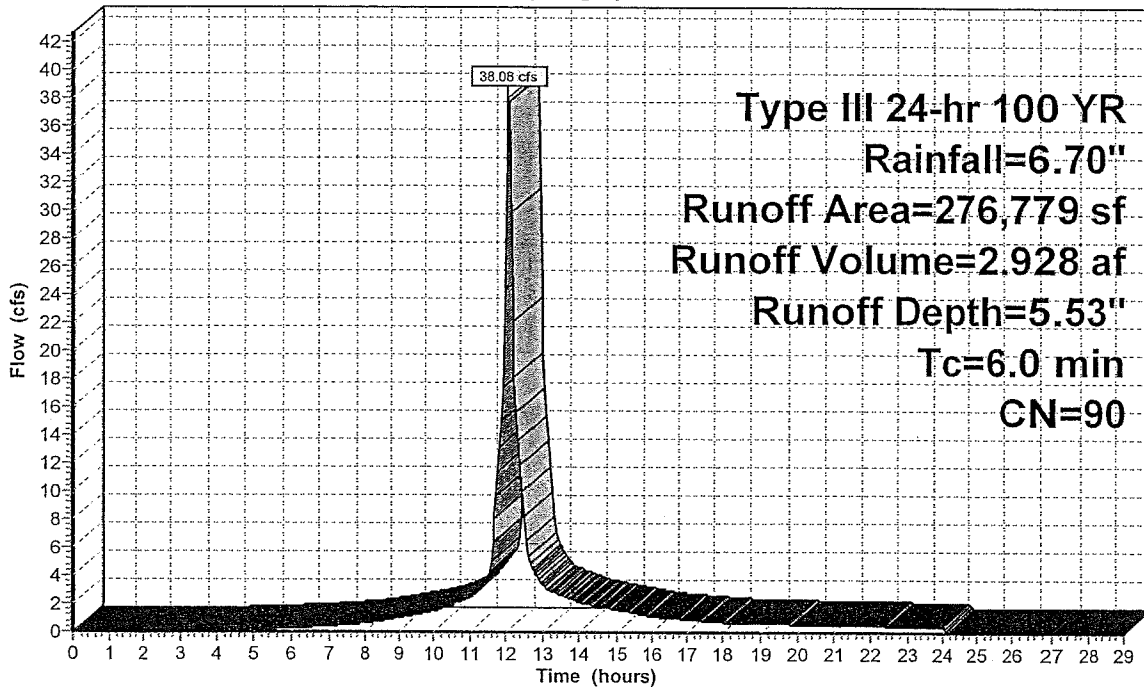
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-29.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100 YR Rainfall=6.70"

| Area (sf) | CN | Description                           |
|-----------|----|---------------------------------------|
| 95,854    | 74 | >75% Grass cover, Good, HSG C         |
| 172,050   | 98 | Paved parking                         |
| * 7,016   | 98 | Roofs                                 |
| * 1,859   | 74 | >75% Grass cover, Good, HSG C-Offsite |
| 276,779   | 90 | Weighted Average                      |
| 97,713    |    | Pervious Area                         |
| 179,066   |    | Impervious Area                       |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

**Subcatchment 4: 4**

Hydrograph



Runoff

Type III 24-hr 100 YR  
Rainfall=6.70"  
Runoff Area=276,779 sf  
Runoff Volume=2.928 af  
Runoff Depth=5.53"  
Tc=6.0 min  
CN=90

**Predevelopment**

Prepared by {enter your company name here}

HydroCAD® 8.50 s/n 000734 © 2007 HydroCAD Software Solutions LLC

Type III 24-hr 100 YR Rainfall=6.70"

Printed 7/9/2012

Page 7

**Summary for Subcatchment 3 - 3: 3 -3**

Runoff = 3.79 cfs @ 12.09 hrs, Volume= 0.294 af, Depth= 5.64"

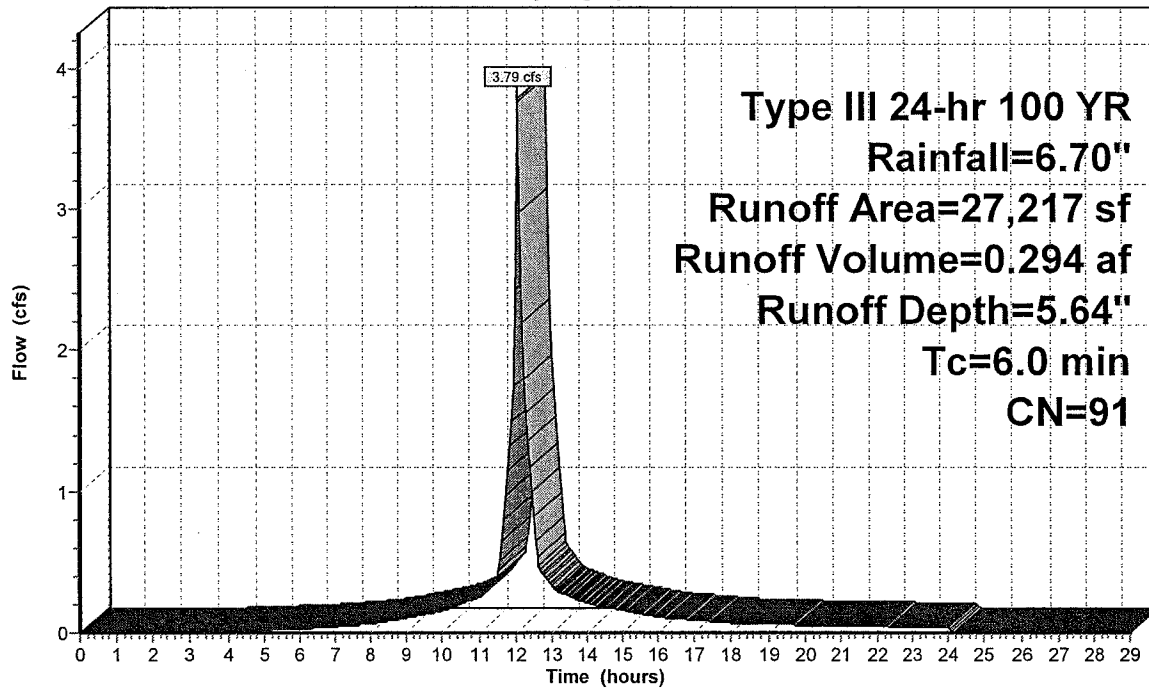
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-29.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100 YR Rainfall=6.70"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 19,719    | 98 | Paved parking & roofs         |
| 7,498     | 74 | >75% Grass cover, Good, HSG C |
| 27,217    | 91 | Weighted Average              |
| 7,498     |    | Pervious Area                 |
| 19,719    |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

**Subcatchment 3 - 3: 3 -3**

Hydrograph



**Predevelopment**

Type III 24-hr 100 YR Rainfall=6.70"

Prepared by {enter your company name here}

Printed 7/9/2012

HydroCAD® 8.50 s/n 000734 © 2007 HydroCAD Software Solutions LLC

Page 8

**Summary for Subcatchment 3 - 4: 3-4**

Runoff = 2.16 cfs @ 12.09 hrs, Volume= 0.166 af, Depth= 5.53"

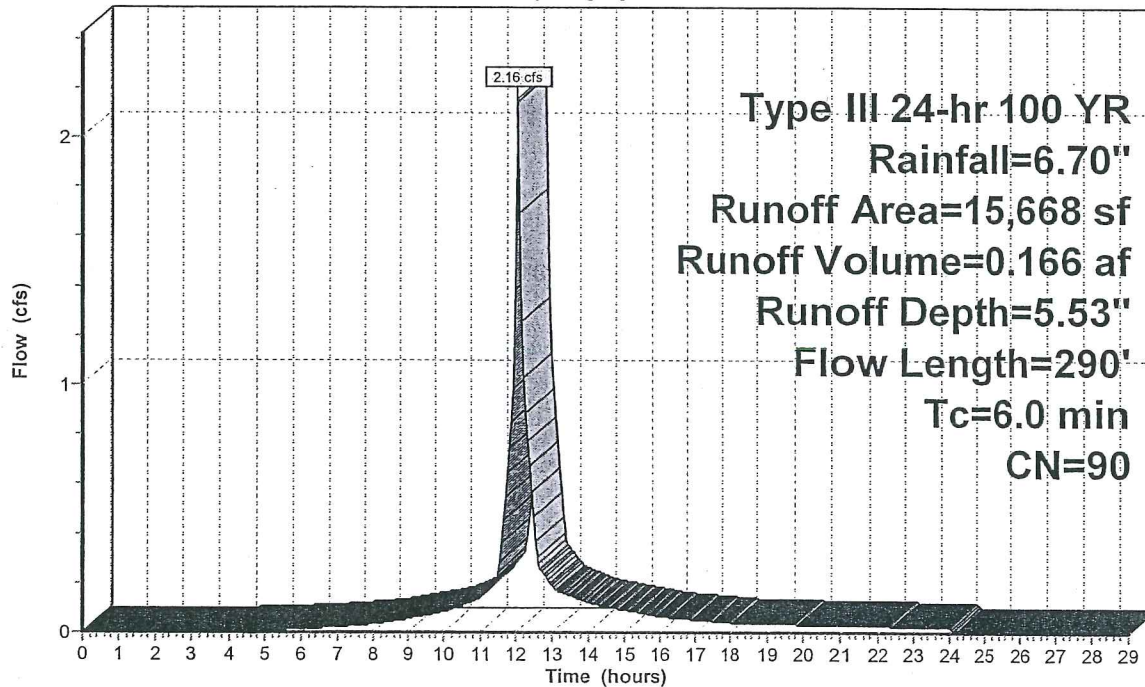
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-29.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100 YR Rainfall=6.70"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 10,490    | 98 | Paved parking & roofs         |
| 5,178     | 74 | >75% Grass cover, Good, HSG C |
| 15,668    | 90 | Weighted Average              |
| 5,178     |    | Pervious Area                 |
| 10,490    |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft)                            | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|--|-------------------|----------------|--|
| 4.0      | 50            | 0.0500                                   | 0.21              |                | Sheet Flow,<br>Grass: Short n= 0.150 P2= 3.00"                                     |
| 0.8      | 150           | 0.0267                                   | 3.32              |                | Shallow Concentrated Flow,<br>Paved Kv= 20.3 fps                                   |
| 0.2      | 90            | 0.0200                                   | 6.95              | 5.46           | Circular Channel (pipe),<br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 |
| 5.0      | 290           | Total, Increased to minimum Tc = 6.0 min |                   |                |  |

**Subcatchment 3 - 4: 3-4**

Hydrograph



**Predevelopment**

Prepared by {enter your company name here}

HydroCAD® 8.50 s/n 000734 © 2007 HydroCAD Software Solutions LLC

Type III 24-hr 100 YR Rainfall=6.70"

Printed 7/9/2012

Page 5

**Summary for Subcatchment 3 - 1: 3-1**

Runoff = 2.65 cfs @ 12.09 hrs, Volume= 0.193 af, Depth= 3.99"

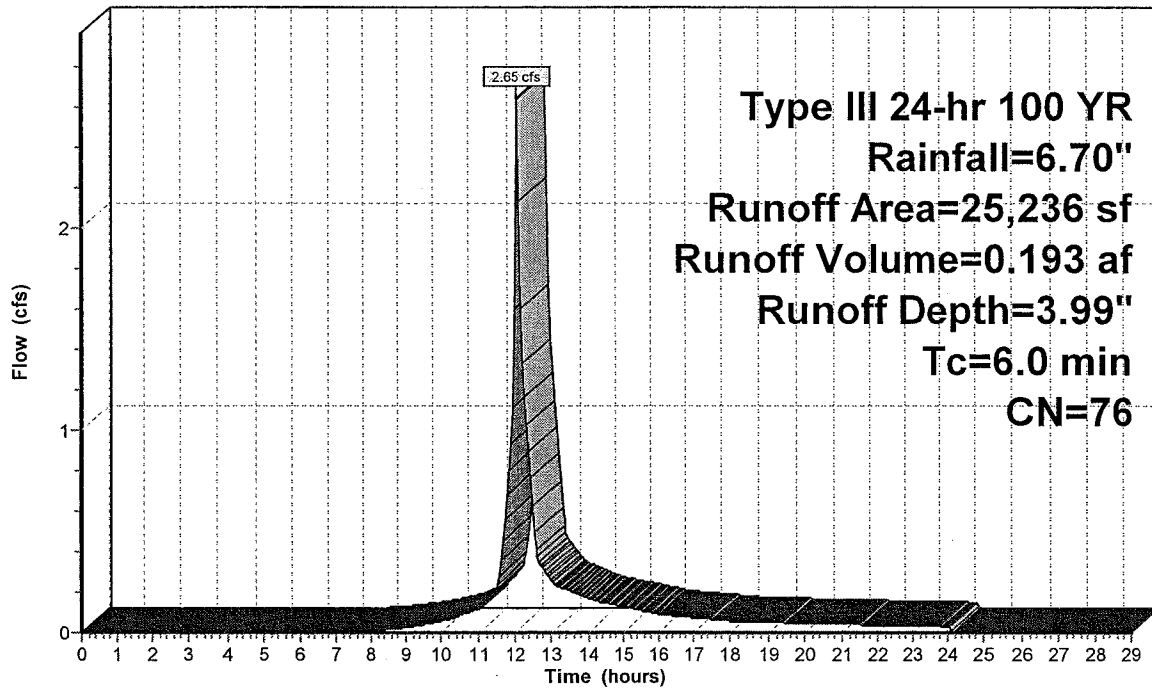
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-29.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100 YR Rainfall=6.70"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 22,795    | 74 | >75% Grass cover, Good, HSG C |
| 2,441     | 98 | Paved roads w/curbs & sewers  |
| 25,236    | 76 | Weighted Average              |
| 22,795    |    | Pervious Area                 |
| 2,441     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

**Subcatchment 3 - 1: 3-1**

Hydrograph



Runoff

Type III 24-hr 100 YR  
Rainfall=6.70"  
Runoff Area=25,236 sf  
Runoff Volume=0.193 af  
Runoff Depth=3.99"  
Tc=6.0 min  
CN=76



**Predevelopment**

Prepared by {enter your company name here}

HydroCAD® 8.50 s/n 000734 © 2007 HydroCAD Software Solutions LLC

Type III 24-hr 100 YR Rainfall=6.70"

Printed 7/9/2012

Page 6

**Summary for Subcatchment 3 - 2: 3-2**

Runoff = 30.19 cfs @ 12.09 hrs, Volume= 2.289 af, Depth= 5.30"

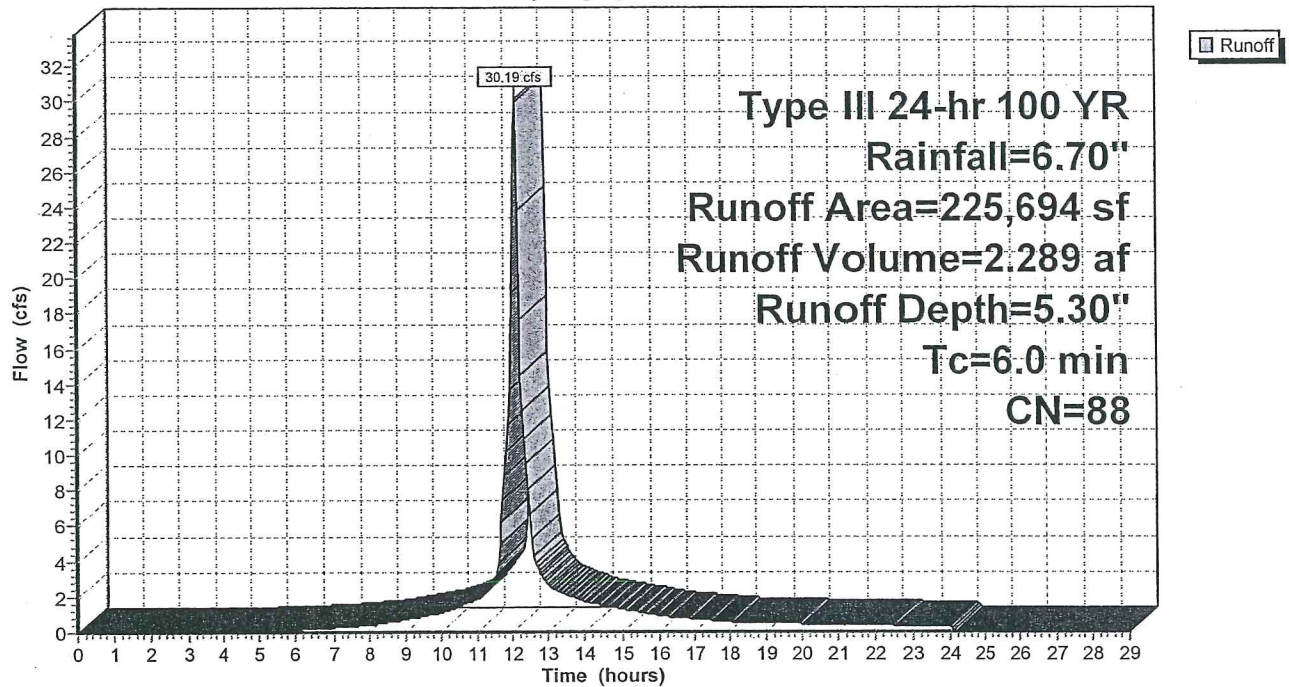
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-29.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100 YR Rainfall=6.70"

| Area (sf) | CN | Description           |
|-----------|----|-----------------------|
| 79,274    | 70 | Woods, Good, HSG C    |
| 146,420   | 98 | Water Surface, 0% imp |
| 225,694   | 88 | Weighted Average      |
| 225,694   |    | Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

**Subcatchment 3 - 2: 3-2**

Hydrograph





**Predevelopment**

Prepared by {enter your company name here}

HydroCAD® 8.50 s/n 000734 © 2007 HydroCAD Software Solutions LLC

Type III 24-hr 100 YR Rainfall=6.70"

Printed 7/9/2012

Page 3

**Summary for Subcatchment 2: 2**

Runoff = 15.25 cfs @ 12.09 hrs, Volume= 1.107 af, Depth= 3.37"

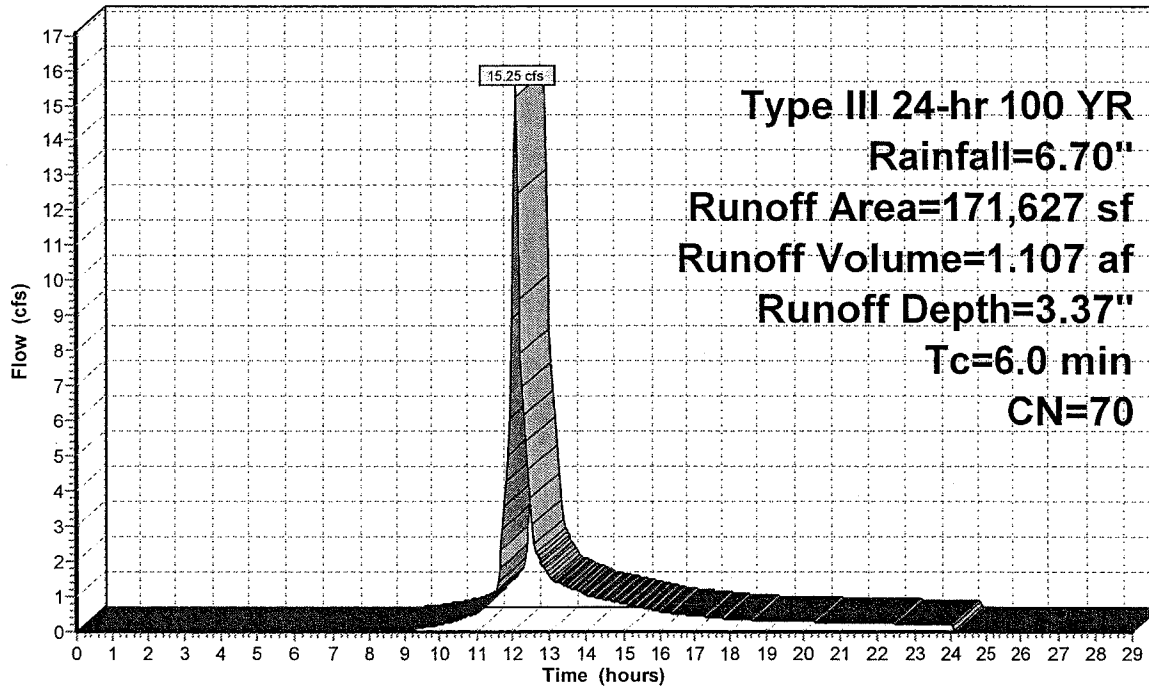
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-29.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100 YR Rainfall=6.70"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 82,386    | 39 | >75% Grass cover, Good, HSG A |
| 56,114    | 98 | Paved parking                 |
| * 33,127  | 98 | Roofs                         |
| 171,627   | 70 | Weighted Average              |
| 82,386    |    | Pervious Area                 |
| 89,241    |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

**Subcatchment 2: 2**

Hydrograph



Runoff

Type III 24-hr 100 YR  
 Rainfall=6.70"  
 Runoff Area=171,627 sf  
 Runoff Volume=1.107 af  
 Runoff Depth=3.37"  
 Tc=6.0 min  
 CN=70

**Predevelopment**

Type III 24-hr 100 YR Rainfall=6.70"

Prepared by {enter your company name here}

Printed 7/9/2012

HydroCAD® 8.50 s/n 000734 © 2007 HydroCAD Software Solutions LLC

Page 4

**Summary for Subcatchment 2 O: 2 OFFSITE**

Runoff = 3.59 cfs @ 12.09 hrs, Volume= 0.262 af, Depth= 4.31"

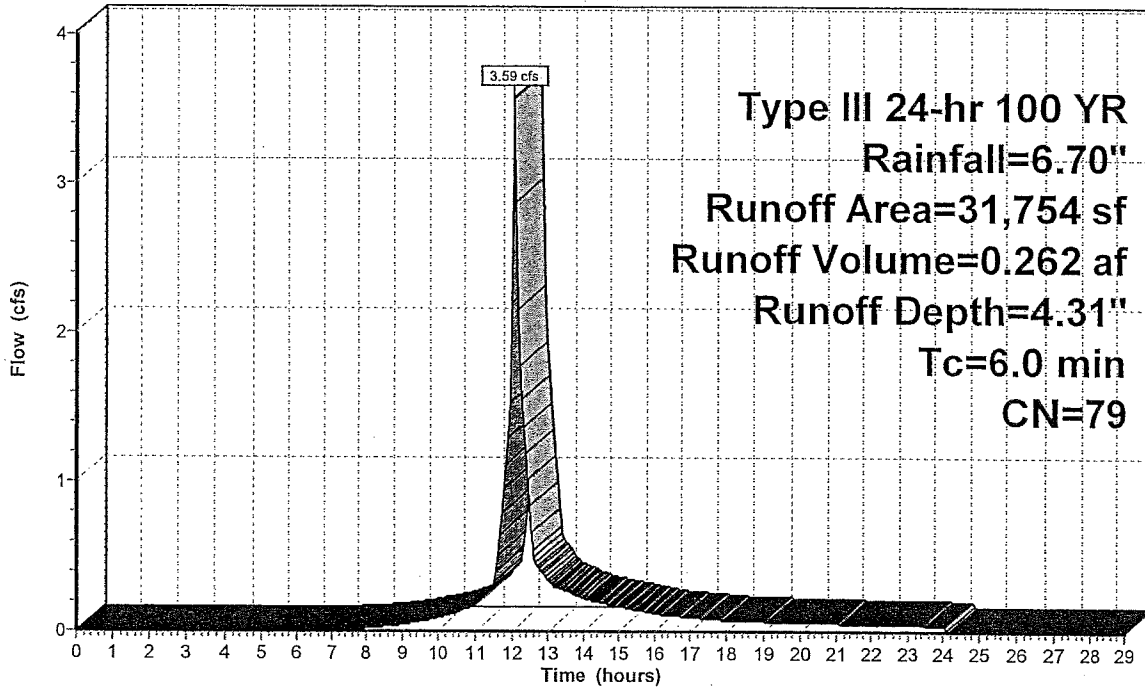
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-29.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100 YR Rainfall=6.70"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 10,301    | 39 | >75% Grass cover, Good, HSG A |
| 21,453    | 98 | Paved parking                 |
| 31,754    | 79 | Weighted Average              |
| 10,301    |    | Pervious Area                 |
| 21,453    |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

**Subcatchment 2 O: 2 OFFSITE**

Hydrograph



**Predevelopment**

Prepared by {enter your company name here}

HydroCAD® 8.50 s/n 000734 © 2007 HydroCAD Software Solutions LLC

Type III 24-hr 100 YR Rainfall=6.70"

Printed 7/9/2012

Page 1

**Summary for Subcatchment 1: 1**

Runoff = 42.74 cfs @ 12.09 hrs, Volume= 3.172 af, Depth= 4.86"

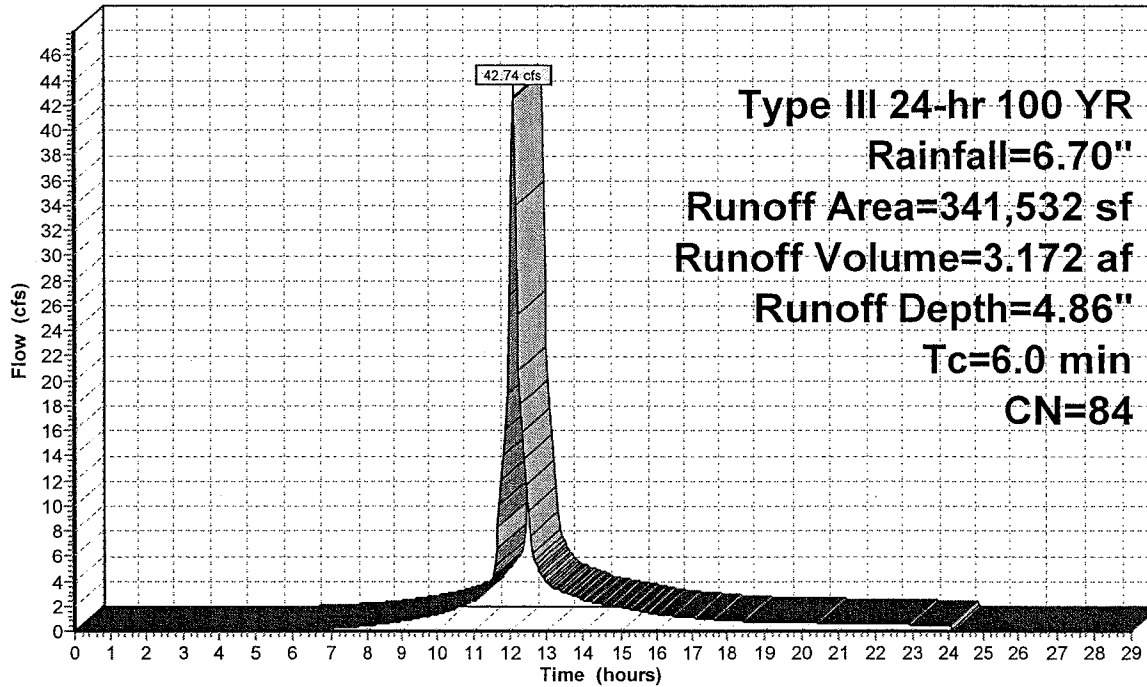
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-29.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100 YR Rainfall=6.70"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 79,084    | 39 | >75% Grass cover, Good, HSG A |
| 240,785   | 98 | Paved parking                 |
| 21,663    | 98 | roofs                         |
| 341,532   | 84 | Weighted Average              |
| 79,084    |    | Pervious Area                 |
| 262,448   |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

**Subcatchment 1: 1**

Hydrograph



Runoff

Type III 24-hr 100 YR  
Rainfall=6.70"  
Runoff Area=341,532 sf  
Runoff Volume=3.172 af  
Runoff Depth=4.86"  
Tc=6.0 min  
CN=84

**Predevelopment**

Prepared by {enter your company name here}

HydroCAD® 8.50 s/n 000734 © 2007 HydroCAD Software Solutions LLC

Type III 24-hr 100 YR Rainfall=6.70"

Printed 7/9/2012

Page 2

**Summary for Subcatchment 1 O: 1 Offsite**

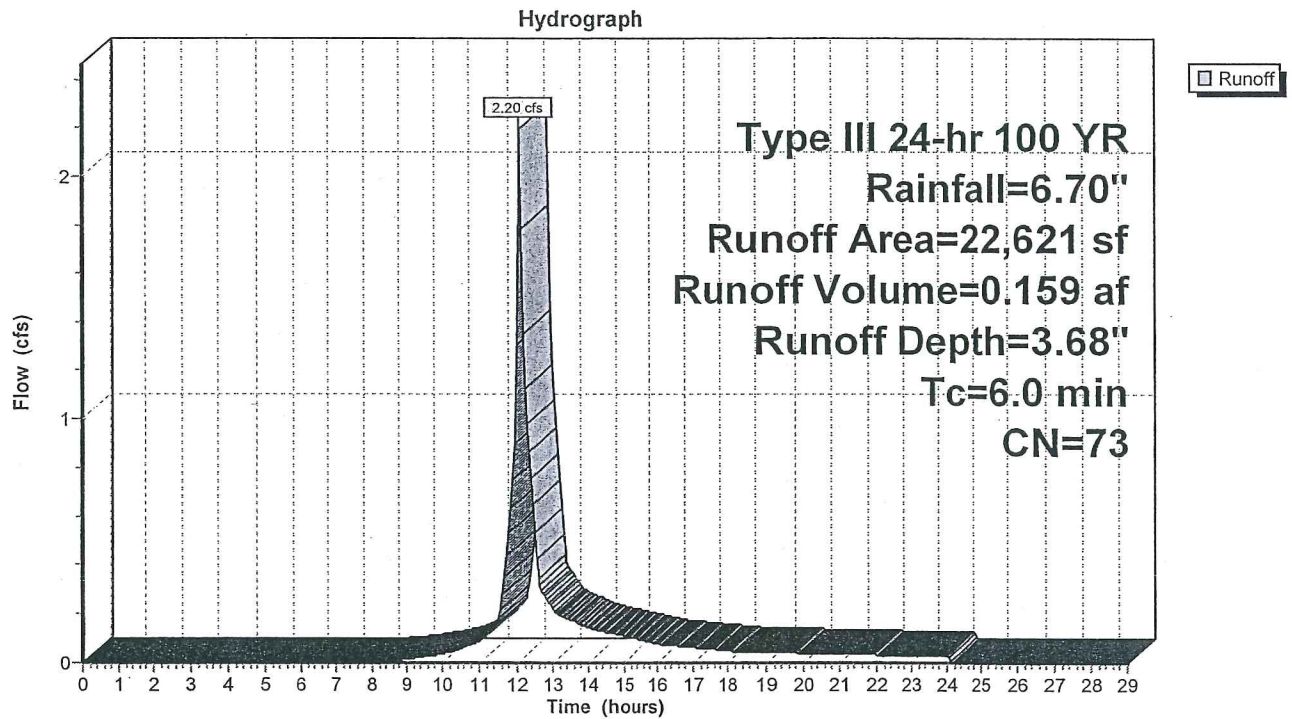
Runoff = 2.20 cfs @ 12.09 hrs, Volume= 0.159 af, Depth= 3.68"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-29.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100 YR Rainfall=6.70"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 9,604     | 39 | >75% Grass cover, Good, HSG A |
| 13,017    | 98 | Paved parking                 |
| 22,621    | 73 | Weighted Average              |
| 9,604     |    | Pervious Area                 |
| 13,017    |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

**Subcatchment 1 O: 1 Offsite**



**Predevelopment**

Type III 24-hr 100 YR Rainfall=6.70"

Prepared by {enter your company name here}

Printed 7/9/2012

HydroCAD® 8.50 s/n 000734 © 2007 HydroCAD Software Solutions LLC

Page 12

Time span=0.00-29.00 hrs, dt=0.05 hrs, 581 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

|                                     |  |
|-------------------------------------|--|
| <b>Subcatchment 1: 1</b>            | Runoff Area=341,532 sf 76.84% Impervious Runoff Depth=4.86"<br>Tc=6.0 min CN=84 Runoff=42.74 cfs 3.172 af                |
| <b>Subcatchment 1 O: 1 Offsite</b>  | Runoff Area=22,621 sf 57.54% Impervious Runoff Depth=3.68"<br>Tc=6.0 min CN=73 Runoff=2.20 cfs 0.159 af                  |
| <b>Subcatchment 2: 2</b>            | Runoff Area=171,627 sf 52.00% Impervious Runoff Depth=3.37"<br>Tc=6.0 min CN=70 Runoff=15.25 cfs 1.107 af                |
| <b>Subcatchment 2 O: 2 OFFSITE</b>  | Runoff Area=31,754 sf 67.56% Impervious Runoff Depth=4.31"<br>Tc=6.0 min CN=79 Runoff=3.59 cfs 0.262 af                  |
| <b>Subcatchment 3 - 1: 3-1</b>      | Runoff Area=25,236 sf 9.67% Impervious Runoff Depth=3.99"<br>Tc=6.0 min CN=76 Runoff=2.65 cfs 0.193 af                   |
| <b>Subcatchment 3 - 2: 3-2</b>      | Runoff Area=225,694 sf 0.00% Impervious Runoff Depth=5.30"<br>Tc=6.0 min CN=88 Runoff=30.19 cfs 2.289 af                 |
| <b>Subcatchment 3 - 3: 3-3</b>      | Runoff Area=27,217 sf 72.45% Impervious Runoff Depth=5.64"<br>Tc=6.0 min CN=91 Runoff=3.79 cfs 0.294 af                  |
| <b>Subcatchment 3 - 4: 3-4</b>      | Runoff Area=15,668 sf 66.95% Impervious Runoff Depth=5.53"<br>Flow Length=290' Tc=6.0 min CN=90 Runoff=2.16 cfs 0.166 af |
| <b>Subcatchment 3O: 3 OFFSITE</b>   | Runoff Area=27,503 sf 62.34% Impervious Runoff Depth=5.42"<br>Tc=6.0 min CN=89 Runoff=3.73 cfs 0.285 af                  |
| <b>Subcatchment 4: 4</b>            | Runoff Area=276,779 sf 64.70% Impervious Runoff Depth=5.53"<br>Tc=6.0 min CN=90 Runoff=38.08 cfs 2.928 af                |
| <b>Pond EX DMH: EXISTING DMH 10</b> | Peak Elev=8.81' Inflow=6.44 cfs 2.943 af<br>15.0" x 192.0' Culvert Outflow=6.44 cfs 2.943 af                             |
| <b>Pond POI 1: POI 1</b>            | Peak Elev=13.33' Inflow=44.94 cfs 3.332 af<br>36.0" x 225.0' Culvert Outflow=44.94 cfs 3.332 af                          |
| <b>Pond POI 2: POI 2</b>            | Peak Elev=28.41' Inflow=18.83 cfs 1.369 af<br>15.0" x 220.0' Culvert Outflow=18.83 cfs 1.369 af                          |
| <b>Pond POI 3: POI 3</b>            | Peak Elev=7.13' Inflow=9.93 cfs 3.228 af<br>18.0" x 100.0' Culvert Outflow=9.93 cfs 3.228 af                             |
| <b>Pond POI 4: POI 4</b>            | Peak Elev=12.11' Inflow=38.08 cfs 2.928 af<br>36.0" x 239.0' Culvert Outflow=38.08 cfs 2.928 af                          |
| <b>Pond WETLAND: WETLAND POND</b>   | Peak Elev=9.21' Storage=39,954 cf Inflow=36.14 cfs 2.749 af<br>15.0" x 69.0' Culvert Outflow=4.51 cfs 2.751 af           |

**Predevelopment**

Type III 24-hr 100 YR Rainfall=6.70"

Prepared by {enter your company name here}

Printed 7/9/2012

HydroCAD® 8.50 s/n 000734 © 2007 HydroCAD Software Solutions LLC

Page 13

Total Runoff Area = 26.759 ac   Runoff Volume = 10.855 af   Average Runoff Depth = 4.87"  
47.24% Pervious = 12.640 ac   52.76% Impervious = 14.119 ac

**Predevelopment**

Type III 24-hr 25 YR Rainfall=5.50"

Prepared by {enter your company name here}

Printed 7/9/2012

HydroCAD® 8.50 s/n 000734 © 2007 HydroCAD Software Solutions LLC

Page 10

Time span=0.00-29.00 hrs, dt=0.05 hrs, 581 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

|                                     |  |
|-------------------------------------|--|
| <b>Subcatchment 1: 1</b>            | Runoff Area=341,532 sf 76.84% Impervious Runoff Depth=3.73"<br>Tc=6.0 min CN=84 Runoff=33.19 cfs 2.438 af                |
| <b>Subcatchment 1 O: 1 Offsite</b>  | Runoff Area=22,621 sf 57.54% Impervious Runoff Depth=2.68"<br>Tc=6.0 min CN=73 Runoff=1.60 cfs 0.116 af                  |
| <b>Subcatchment 2: 2</b>            | Runoff Area=171,627 sf 52.00% Impervious Runoff Depth=2.41"<br>Tc=6.0 min CN=70 Runoff=10.84 cfs 0.793 af                |
| <b>Subcatchment 2 O: 2 OFFSITE</b>  | Runoff Area=31,754 sf 67.56% Impervious Runoff Depth=3.24"<br>Tc=6.0 min CN=79 Runoff=2.71 cfs 0.197 af                  |
| <b>Subcatchment 3 - 1: 3-1</b>      | Runoff Area=25,236 sf 9.67% Impervious Runoff Depth=2.95"<br>Tc=6.0 min CN=76 Runoff=1.97 cfs 0.143 af                   |
| <b>Subcatchment 3 - 2: 3-2</b>      | Runoff Area=225,694 sf 0.00% Impervious Runoff Depth=4.15"<br>Tc=6.0 min CN=88 Runoff=23.92 cfs 1.790 af                 |
| <b>Subcatchment 3 - 3: 3-3</b>      | Runoff Area=27,217 sf 72.45% Impervious Runoff Depth=4.47"<br>Tc=6.0 min CN=91 Runoff=3.04 cfs 0.233 af                  |
| <b>Subcatchment 3 - 4: 3-4</b>      | Runoff Area=15,668 sf 66.95% Impervious Runoff Depth=4.36"<br>Flow Length=290' Tc=6.0 min CN=90 Runoff=1.72 cfs 0.131 af |
| <b>Subcatchment 3O: 3 OFFSITE</b>   | Runoff Area=27,503 sf 62.34% Impervious Runoff Depth=4.25"<br>Tc=6.0 min CN=89 Runoff=2.97 cfs 0.224 af                  |
| <b>Subcatchment 4: 4</b>            | Runoff Area=276,779 sf 64.70% Impervious Runoff Depth=4.36"<br>Tc=6.0 min CN=90 Runoff=30.43 cfs 2.309 af                |
| <b>Pond EX DMH: EXISTING DMH 10</b> | Peak Elev=8.37' Inflow=5.91 cfs 2.297 af<br>15.0" x 192.0' Culvert Outflow=5.91 cfs 2.297 af                             |
| <b>Pond POI 1: POI 1</b>            | Peak Elev=12.64' Inflow=34.78 cfs 2.554 af<br>36.0" x 225.0' Culvert Outflow=34.78 cfs 2.554 af                          |
| <b>Pond POI 2: POI 2</b>            | Peak Elev=18.06' Inflow=13.55 cfs 0.989 af<br>15.0" x 220.0' Culvert Outflow=13.55 cfs 0.989 af                          |
| <b>Pond POI 3: POI 3</b>            | Peak Elev=6.81' Inflow=8.87 cfs 2.521 af<br>18.0" x 100.0' Culvert Outflow=8.87 cfs 2.521 af                             |
| <b>Pond POI 4: POI 4</b>            | Peak Elev=11.70' Inflow=30.43 cfs 2.309 af<br>36.0" x 239.0' Culvert Outflow=30.43 cfs 2.309 af                          |
| <b>Pond WETLAND: WETLAND POND</b>   | Peak Elev=9.15' Storage=28,308 cf Inflow=28.68 cfs 2.153 af<br>15.0" x 69.0' Culvert Outflow=4.36 cfs 2.155 af           |



**Predevelopment**

Type III 24-hr 25 YR Rainfall=5.50"

Prepared by {enter your company name here}

Printed 7/9/2012

HydroCAD® 8.50 s/n 000734 © 2007 HydroCAD Software Solutions LLC

Page 11

Total Runoff Area = 26.759 ac   Runoff Volume = 8.371 af   Average Runoff Depth = 3.75"  
47.24% Pervious = 12.640 ac   52.76% Impervious = 14.119 ac

**Predevelopment**

Type III 24-hr 10 YR Rainfall=4.70"

Prepared by {enter your company name here}

Printed 7/9/2012

HydroCAD® 8.50 s/n 000734 © 2007 HydroCAD Software Solutions LLC

Page 8

Time span=0.00-29.00 hrs, dt=0.05 hrs, 581 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

|                                     |  |
|-------------------------------------|--|
| <b>Subcatchment 1: 1</b>            | Runoff Area=341,532 sf 76.84% Impervious Runoff Depth=3.00"<br>Tc=6.0 min CN=84 Runoff=26.84 cfs 1.958 af                |
| <b>Subcatchment 1 O: 1 Offsite</b>  | Runoff Area=22,621 sf 57.54% Impervious Runoff Depth=2.05"<br>Tc=6.0 min CN=73 Runoff=1.21 cfs 0.089 af                  |
| <b>Subcatchment 2: 2</b>            | Runoff Area=171,627 sf 52.00% Impervious Runoff Depth=1.82"<br>Tc=6.0 min CN=70 Runoff=8.05 cfs 0.597 af                 |
| <b>Subcatchment 2 O: 2 OFFSITE</b>  | Runoff Area=31,754 sf 67.56% Impervious Runoff Depth=2.55"<br>Tc=6.0 min CN=79 Runoff=2.13 cfs 0.155 af                  |
| <b>Subcatchment 3 - 1: 3-1</b>      | Runoff Area=25,236 sf 9.67% Impervious Runoff Depth=2.29"<br>Tc=6.0 min CN=76 Runoff=1.52 cfs 0.111 af                   |
| <b>Subcatchment 3 - 2: 3-2</b>      | Runoff Area=225,694 sf 0.00% Impervious Runoff Depth=3.38"<br>Tc=6.0 min CN=88 Runoff=19.71 cfs 1.461 af                 |
| <b>Subcatchment 3 - 3: 3-3</b>      | Runoff Area=27,217 sf 72.45% Impervious Runoff Depth=3.69"<br>Tc=6.0 min CN=91 Runoff=2.54 cfs 0.192 af                  |
| <b>Subcatchment 3 - 4: 3-4</b>      | Runoff Area=15,668 sf 66.95% Impervious Runoff Depth=3.59"<br>Flow Length=290' Tc=6.0 min CN=90 Runoff=1.43 cfs 0.108 af |
| <b>Subcatchment 3O: 3 OFFSITE</b>   | Runoff Area=27,503 sf 62.34% Impervious Runoff Depth=3.49"<br>Tc=6.0 min CN=89 Runoff=2.46 cfs 0.183 af                  |
| <b>Subcatchment 4: 4</b>            | Runoff Area=276,779 sf 64.70% Impervious Runoff Depth=3.59"<br>Tc=6.0 min CN=90 Runoff=25.30 cfs 1.900 af                |
| <b>Pond EX DMH: EXISTING DMH 10</b> | Peak Elev=8.30' Inflow=5.64 cfs 1.874 af<br>15.0" x 192.0' Culvert Outflow=5.64 cfs 1.874 af                             |
| <b>Pond POI 1: POI 1</b>            | Peak Elev=12.29' Inflow=28.05 cfs 2.047 af<br>36.0" x 225.0' Culvert Outflow=28.05 cfs 2.047 af                          |
| <b>Pond POI 2: POI 2</b>            | Peak Elev=13.23' Inflow=10.18 cfs 0.751 af<br>15.0" x 220.0' Culvert Outflow=10.18 cfs 0.751 af                          |
| <b>Pond POI 3: POI 3</b>            | Peak Elev=6.46' Inflow=8.09 cfs 2.058 af<br>18.0" x 100.0' Culvert Outflow=8.09 cfs 2.058 af                             |
| <b>Pond POI 4: POI 4</b>            | Peak Elev=11.44' Inflow=25.30 cfs 1.900 af<br>36.0" x 239.0' Culvert Outflow=25.30 cfs 1.900 af                          |
| <b>Pond WETLAND: WETLAND POND</b>   | Peak Elev=9.11' Storage=20,980 cf Inflow=23.69 cfs 1.761 af<br>15.0" x 69.0' Culvert Outflow=4.26 cfs 1.764 af           |

**Predevelopment**

Type III 24-hr 10 YR Rainfall=4.70"

Prepared by {enter your company name here}

Printed 7/9/2012

HydroCAD® 8.50 s/n 000734 © 2007 HydroCAD Software Solutions LLC

Page 9

Total Runoff Area = 26.759 ac   Runoff Volume = 6.753 af   Average Runoff Depth = 3.03"  
47.24% Pervious = 12.640 ac   52.76% Impervious = 14.119 ac

**Predevelopment**

Type III 24-hr 2 YR Rainfall=3.00"

Prepared by {enter your company name here}

Printed 7/9/2012

HydroCAD® 8.50 s/n 000734 © 2007 HydroCAD Software Solutions LLC

Page 6

Time span=0.00-29.00 hrs, dt=0.05 hrs, 581 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

|                                     |  |
|-------------------------------------|--|
| <b>Subcatchment 1: 1</b>            | Runoff Area=341,532 sf 76.84% Impervious Runoff Depth=1.52"<br>Tc=6.0 min CN=84 Runoff=13.65 cfs 0.991 af                |
| <b>Subcatchment 1 O: 1 Offsite</b>  | Runoff Area=22,621 sf 57.54% Impervious Runoff Depth=0.86"<br>Tc=6.0 min CN=73 Runoff=0.47 cfs 0.037 af                  |
| <b>Subcatchment 2: 2</b>            | Runoff Area=171,627 sf 52.00% Impervious Runoff Depth=0.71"<br>Tc=6.0 min CN=70 Runoff=2.83 cfs 0.235 af                 |
| <b>Subcatchment 2 O: 2 OFFSITE</b>  | Runoff Area=31,754 sf 67.56% Impervious Runoff Depth=1.19"<br>Tc=6.0 min CN=79 Runoff=0.98 cfs 0.072 af                  |
| <b>Subcatchment 3 - 1: 3-1</b>      | Runoff Area=25,236 sf 9.67% Impervious Runoff Depth=1.02"<br>Tc=6.0 min CN=76 Runoff=0.65 cfs 0.049 af                   |
| <b>Subcatchment 3 - 2: 3-2</b>      | Runoff Area=225,694 sf 0.00% Impervious Runoff Depth=1.82"<br>Tc=6.0 min CN=88 Runoff=10.80 cfs 0.785 af                 |
| <b>Subcatchment 3 - 3: 3-3</b>      | Runoff Area=27,217 sf 72.45% Impervious Runoff Depth=2.07"<br>Tc=6.0 min CN=91 Runoff=1.46 cfs 0.108 af                  |
| <b>Subcatchment 3 - 4: 3-4</b>      | Runoff Area=15,668 sf 66.95% Impervious Runoff Depth=1.98"<br>Flow Length=290' Tc=6.0 min CN=90 Runoff=0.81 cfs 0.059 af |
| <b>Subcatchment 3O: 3 OFFSITE</b>   | Runoff Area=27,503 sf 62.34% Impervious Runoff Depth=1.90"<br>Tc=6.0 min CN=89 Runoff=1.37 cfs 0.100 af                  |
| <b>Subcatchment 4: 4</b>            | Runoff Area=276,779 sf 64.70% Impervious Runoff Depth=1.98"<br>Tc=6.0 min CN=90 Runoff=14.35 cfs 1.051 af                |
| <b>Pond EX DMH: EXISTING DMH 10</b> | Peak Elev=8.01' Inflow=4.67 cfs 1.003 af<br>15.0" x 192.0' Culvert Outflow=4.67 cfs 1.003 af                             |
| <b>Pond POI 1: POI 1</b>            | Peak Elev=11.55' Inflow=14.12 cfs 1.028 af<br>36.0" x 225.0' Culvert Outflow=14.12 cfs 1.028 af                          |
| <b>Pond POI 2: POI 2</b>            | Peak Elev=7.97' Inflow=3.81 cfs 0.307 af<br>15.0" x 220.0' Culvert Outflow=3.81 cfs 0.307 af                             |
| <b>Pond POI 3: POI 3</b>            | Peak Elev=6.08' Inflow=6.03 cfs 1.103 af<br>18.0" x 100.0' Culvert Outflow=6.03 cfs 1.103 af                             |
| <b>Pond POI 4: POI 4</b>            | Peak Elev=10.86' Inflow=14.35 cfs 1.051 af<br>36.0" x 239.0' Culvert Outflow=14.35 cfs 1.051 af                          |
| <b>Pond WETLAND: WETLAND POND</b>   | Peak Elev=9.04' Storage=6,976 cf Inflow=13.07 cfs 0.952 af<br>15.0" x 69.0' Culvert Outflow=4.07 cfs 0.954 af            |

**Predevelopment**

Type III 24-hr 2 YR Rainfall=3.00"

Prepared by {enter your company name here}

Printed 7/9/2012

HydroCAD® 8.50 s/n 000734 © 2007 HydroCAD Software Solutions LLC

Page 7

Total Runoff Area = 26.759 ac Runoff Volume = 3.486 af Average Runoff Depth = 1.56"  
47.24% Pervious = 12.640 ac 52.76% Impervious = 14.119 ac

**Predevelopment**

Type III 24-hr 1 IN Rainfall=1.00"

Prepared by {enter your company name here}

Printed 7/9/2012

HydroCAD® 8.50 s/n 000734 © 2007 HydroCAD Software Solutions LLC

Page 4

Time span=0.00-29.00 hrs, dt=0.05 hrs, 581 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

|                                     |  |
|-------------------------------------|--|
| <b>Subcatchment 1: 1</b>            | Runoff Area=341,532 sf 76.84% Impervious Runoff Depth=0.15"<br>Tc=6.0 min CN=84 Runoff=0.94 cfs 0.099 af                 |
| <b>Subcatchment 1 O: 1 Offsite</b>  | Runoff Area=22,621 sf 57.54% Impervious Runoff Depth=0.02"<br>Tc=6.0 min CN=73 Runoff=0.00 cfs 0.001 af                  |
| <b>Subcatchment 2: 2</b>            | Runoff Area=171,627 sf 52.00% Impervious Runoff Depth=0.00"<br>Tc=6.0 min CN=70 Runoff=0.00 cfs 0.002 af                 |
| <b>Subcatchment 2 O: 2 OFFSITE</b>  | Runoff Area=31,754 sf 67.56% Impervious Runoff Depth=0.07"<br>Tc=6.0 min CN=79 Runoff=0.02 cfs 0.004 af                  |
| <b>Subcatchment 3 - 1: 3-1</b>      | Runoff Area=25,236 sf 9.67% Impervious Runoff Depth=0.04"<br>Tc=6.0 min CN=76 Runoff=0.00 cfs 0.002 af                   |
| <b>Subcatchment 3 - 2: 3-2</b>      | Runoff Area=225,694 sf 0.00% Impervious Runoff Depth=0.25"<br>Tc=6.0 min CN=88 Runoff=1.35 cfs 0.109 af                  |
| <b>Subcatchment 3 - 3: 3 -3</b>     | Runoff Area=27,217 sf 72.45% Impervious Runoff Depth=0.36"<br>Tc=6.0 min CN=91 Runoff=0.25 cfs 0.019 af                  |
| <b>Subcatchment 3 - 4: 3-4</b>      | Runoff Area=15,668 sf 66.95% Impervious Runoff Depth=0.32"<br>Flow Length=290' Tc=6.0 min CN=90 Runoff=0.13 cfs 0.010 af |
| <b>Subcatchment 3O: 3 OFFSITE</b>   | Runoff Area=27,503 sf 62.34% Impervious Runoff Depth=0.28"<br>Tc=6.0 min CN=89 Runoff=0.19 cfs 0.015 af                  |
| <b>Subcatchment 4: 4</b>            | Runoff Area=276,779 sf 64.70% Impervious Runoff Depth=0.32"<br>Tc=6.0 min CN=90 Runoff=2.22 cfs 0.170 af                 |
| <b>Pond EX DMH: EXISTING DMH 10</b> | Peak Elev=7.40' Inflow=1.72 cfs 0.139 af<br>15.0" x 192.0' Culvert Outflow=1.72 cfs 0.139 af                             |
| <b>Pond POI 1: POI 1</b>            | Peak Elev=10.44' Inflow=0.94 cfs 0.100 af<br>36.0" x 225.0' Culvert Outflow=0.94 cfs 0.100 af                            |
| <b>Pond POI 2: POI 2</b>            | Peak Elev=6.90' Inflow=0.02 cfs 0.006 af<br>15.0" x 220.0' Culvert Outflow=0.02 cfs 0.006 af                             |
| <b>Pond POI 3: POI 3</b>            | Peak Elev=5.39' Inflow=1.91 cfs 0.154 af<br>18.0" x 100.0' Culvert Outflow=1.91 cfs 0.154 af                             |
| <b>Pond POI 4: POI 4</b>            | Peak Elev=9.93' Inflow=2.22 cfs 0.170 af<br>36.0" x 239.0' Culvert Outflow=2.22 cfs 0.170 af                             |
| <b>Pond WETLAND: WETLAND POND</b>   | Peak Elev=9.00' Storage=0 cf Inflow=1.72 cfs 0.138 af<br>15.0" x 69.0' Culvert Outflow=1.72 cfs 0.138 af                 |

**Predevelopment**

Type III 24-hr 1 IN Rainfall=1.00"

Prepared by {enter your company name here}

Printed 7/9/2012

HydroCAD® 8.50 s/n 000734 © 2007 HydroCAD Software Solutions LLC

Page 5

Total Runoff Area = 26.759 ac   Runoff Volume = 0.430 af   Average Runoff Depth = 0.19"  
47.24% Pervious = 12.640 ac   52.76% Impervious = 14.119 ac



# Predevelopment

Prepared by {enter your company name here}

HydroCAD® 8.50 s/n 000734 © 2007 HydroCAD Software Solutions LLC

Printed 7/9/2012

Page 2

## Area Listing (all nodes)

| Area<br>(acres) | CN | Description<br>(subcatchment-numbers)                  |
|-----------------|----|--|
| 4.164           | 39 | >75% Grass cover, Good, HSG A (1,1 O,2,2 O)            |
| 1.820           | 70 | Woods, Good, HSG C (3 - 2)                             |
| 3.253           | 74 | >75% Grass cover, Good, HSG C (3 - 1,3 - 3,3 - 4,3O,4) |
| 0.043           | 74 | >75% Grass cover, Good, HSG C-Offsite (4)              |
| 11.557          | 98 | Paved parking (1,1 O,2,2 O,4)                          |
| 0.694           | 98 | Paved parking & roofs (3 - 3,3 - 4)                    |
| 0.450           | 98 | Paved roads w/curbs & sewers (3 - 1,3O)                |
| 0.922           | 98 | Roofs (2,4)  |
| 3.361           | 98 | Water Surface, 0% imp (3 - 2)                          |
| 0.497           | 98 | roofs (1)  |
| <b>26.759</b>   |    | <b>TOTAL AREA</b>                                      |

# Predevelopment

Prepared by {enter your company name here}  
HydroCAD® 8.50 s/n 000734 © 2007 HydroCAD Software Solutions LLC

Printed 7/9/2012  
Page 3

## Soil Listing (all nodes)

| Area<br>(acres) | Soil<br>Group | Subcatchment<br>Numbers                           |
|-----------------|---------------|---|
| 4.164           | HSG A         | 1, 1 O, 2, 2 O                                    |
| 0.000           | HSG B         |   |
| 5.115           | HSG C         | 3 - 1, 3 - 2, 3 - 3, 3 - 4, 3O, 4                 |
| 0.000           | HSG D         |   |
| 17.480          | Other         | 1, 1 O, 2, 2 O, 3 - 1, 3 - 2, 3 - 3, 3 - 4, 3O, 4 |
| <b>26.759</b>   |               | <b>TOTAL AREA</b>                                 |

**APPENDIX A**

**Sample Inspection Logs**

**MERCY HOSPITAL PHASE 2 RELOCATION PROJECT  
FORE RIVER SITE – PORTLAND, MAINE**

STORMWATER MANAGEMENT  
IN-LINE STORAGE  
ANNUAL INSPECTION & MAINTENANCE LOG

|                            |                                  |                                 |
|----------------------------|----------------------------------|---------------------------------|
| <b>FACILITY:</b>           |                                  | <b>YEAR:</b>                    |
| <b>LOCATION:</b>           |                                  | <b>CONTRACTOR:</b>              |
| <b>FUNCTION:</b>           |                                  | <b>INSPECTOR:</b>               |
| <b>DATE OF INSPECTION:</b> |                                  |                                 |
| <b>ITEM IDENTIFICATION</b> | <b>DESCRIPTION OF CONDITIONS</b> | <b>MAINTENANCE ACCOMPLISHED</b> |
|                            |                                  | <b>DATE OF MAINTENANCE</b>      |
|                            |                                  |                                 |
|                            |                                  |                                 |
| <b>GENERAL COMMENTS:</b>   |                                  |                                 |

**MERCY HOSPITAL PHASE 2 RELOCATION PROJECT  
FORE RIVER SITE – PORTLAND, MAINE**

STORMWATER MANAGEMENT  
IN-LINE STORAGE  
MONTHLY INSPECTION & MAINTENANCE LOG

| FACILITY:                            |     | YEAR:       |             |               |        |                |  |
|--------------------------------------|-----|-------------|-------------|---------------|--------|----------------|--|
| LOCATION:                            |     | CONTRACTOR: |             |               |        |                |  |
| FUNCTION:                            |     |             |             |               |        |                |  |
| MONTH                                | DAY | INSPECTOR   | WATER DEPTH | OVERFLOW WEIR |        | WEIR CONDITION |  |
|                                      |     |             |             | CLEAR         | DEBRIS |                |  |
| JANUARY                              |     |             |             |               |        |                |  |
| FEBRUARY                             |     |             |             |               |        |                |  |
| MARCH                                |     |             |             |               |        |                |  |
| APRIL                                |     |             |             |               |        |                |  |
| MAY                                  |     |             |             |               |        |                |  |
| JUNE                                 |     |             |             |               |        |                |  |
| JULY                                 |     |             |             |               |        |                |  |
| AUGUST                               |     |             |             |               |        |                |  |
| SEPTEMBER                            |     |             |             |               |        |                |  |
| OCTOBER                              |     |             |             |               |        |                |  |
| NOVEMBER                             |     |             |             |               |        |                |  |
| DECEMBER                             |     |             |             |               |        |                |  |
| LIST SPECIAL MAINTENANCE UNDERTAKEN: |     |             |             |               |        |                |  |

**MERCY HOSPITAL PHASE 2 RELOCATION PROJECT  
FORE RIVER SITE – PORTLAND, MAINE**

STORMWATER MANAGEMENT  
IN-LINE STORAGE  
SEMI-ANNUAL INSPECTION & MAINTENANCE LOG

|                                |  |           |  |
|--------------------------------|--|-----------|--|
| <b>SEMI-ANNUAL INSPECT 1.2</b> |  | FACILITY: |  |
| DATE:                          |  | LOCATION: |  |
| INSPECTOR:                     |  | FUNCTION: |  |
| WEIR CONDITION:                |  |           |  |
| OUTLET CONDITION               |  |           |  |

| FORE BAY SUMP | EST. DEPTH SED. | REMOVED? Y/N | EST. VOL. CY | WHERE DISPOSED OF | STRUCTURAL CONDITION |
|---------------|-----------------|--------------|--------------|-------------------|----------------------|
|               |                 |              |              |                   |                      |

|   |
|---|
| CONTROL STRUCTURE:                                    |
| DESCRIBE CONDITIONS FOUND & MAINTENANCE ACCOMPLISHED: |

**APPENDIX B**

**Permits for Project**

**(To be Added at a Subsequent Time)**



**APPENDIX C**

**Summary Checklist  
Inspection and Maintenance**

**Stormwater Management System  
Maintenance Program  
Summary Checklist**

| Item  | Commentary   | Frequency |                          |             |                       |           |
|---|--|-----------|--------------------------|-------------|-----------------------|-----------|
|   |  | Monthly   | Quarterly                | Semi-Annual | Annual                | Long Term |
| Control Structure                                       | Inspect outlet control to assure it maintains its hydraulic characteristics.<br>Inspect inlets for blockage.   |           | X                        |             |                       |           |
| Stormwater Inlets in Series                             | Stormwater inlets allow flow entry from a surface swale to a piped system. Entry may or may not be equipped with a bar rack. Inspect entry for debris accumulation. Remove debris to allow unimpeded entry. Lawn clippings and leaves should be removed from yard areas. | X         |                          |             | X<br>Clearing         |           |
| Tributary Drainage                                      | Inspect to assure that the carrying capacity has not been diminished by debris, sediment or other hydraulic impediments.   |           |                          |             | X                     |           |
| In-Line Storage (Underground detention and Sand Filter) | Inspect for standing water not anticipated, sedimentation, outlet control, inlets.<br><br>Jet Stream sediment removal from Isolator Row  |           |                          |             | X                     | X         |
| Filterra® Units (or approved equal)                     | The Filterra® units should be inspected for sedimentation accumulation in the sump and mulch area. Replace mulch, prune plant(s), clean Isolator Row.  |           |                          |             | X                     |           |
| StormFilter® by CONTECH                                 | The StormFilter® should be inspected to ensure the stored volume is draining within 72 hours.<br><br>Clean sediment accumulation, replace filter.  |           |                          | X           | X                     |           |
| Sorbent Booms   | Sorbent boom should be raised out of the inlet, inspected, and replaced if necessary.  |           | X<br>For first 12 months |             | X<br>After first year |           |
| Pond Dewatering   |  |           |                          |             |                       |           |
| Sediment Monitoring/ Water Quality Filters              | Inspect for standing water longer than 48 hours, sedimentation, outlet control, healthy grass growth.  |           |                          |             | X                     | X         |
| Sediment in Forebay                                     |  |           |                          | X           |                       |           |
| Parking Lot Cleaning                                    | Parking lot to be swept at mid winter and spring.<br>Power washing with an appropriate vacuum/power wash vehicle to be done once a year.   |           |                          | X           | X                     |           |
| Litter  | Litter should be removed daily.  |           |                          |             |                       |           |

**ATTACHMENT B**

**Draft Stormwater Management Systems Inspection and  
Maintenance Contract**

Environmental  
Services Inc.



PO Box 7244 Gilford, NH 03247-7244 Phone: 603-518-5225 Fax: 508-796-6131

[www.esi-team.com](http://www.esi-team.com)

July 18, 2012  
Bo Kennedy  
Project Manager  
Deluca-Hoffman Assoc Inc.

Subject: Stormwater Maintenance Mercy Hospital Expansion

Dear Bo:

In accordance with your request, ESI is pleased to submit this contract for storm-water maintenance at the above referenced location. This contract is based on a review of the facilities in the field and our understanding of your needs and requirements.

### Scope of Services

Maintain and clean the following filtration systems with Best Management Practices (BMPs) per MeDEP Chapter 500 Stormwater Management regulations. These systems include:

- Underdrained Grassed Soil Filter
- Underdrained Bioretention Cell (Rain Garden)
- Underdrained Subsurface Sand Filter
- Property Filters (Filtererra and StormFilter)
- Clean approximately 60 catch basins
- Clean 4 hydrodynamic separators
- Disposal of material is included for all of the above

A detailed inspection annual report will be generated for all of the above systems.

### Fees & Payments

We propose to provide the work in the above scope of services with a detailed report on a yearly basis for a lump sum cost of **\$ 21,140**

This will be a five year contact based on the above yearly price with a 5% increase per year..

Any other requested work not specifically described above will be performed on a time and materials basis. For the purpose of this proposal, our fee quotes are valid for thirty days. Billing will be on completion of the work and payment is due within 45 days of invoice date. The following General Provisions are also made as part of this contract.

See General Provisions on page 3.

If you find the above acceptable, please sign below and return a copy to our office. Your verbal authorization for ESI to proceed with the work acknowledges your acceptance of the terms of this proposal and applicability of the conditions and general provisions attached hereto.

Environmental  
Services Inc.



PO Box 7244 Gilford, NH 03247-7244

Phone: 603-518-5225

Fax: 508-796-6131

[www.esi-team.com](http://www.esi-team.com)

Thank you for the opportunity to submit this contract. We are looking forward to working with you on this project.

Very Truly Yours,

A handwritten signature in black ink, appearing to be 'SE', written over a horizontal line.

ESI Environmental Services  
Steve Ebling  
President

Agreed and Accepted this \_\_\_\_\_ day of \_\_\_\_\_, 2012.

By \_\_\_\_\_

Printed Name: \_\_\_\_\_

Title: \_\_\_\_\_

By signing above, you acknowledge that you are authorized to enter into contractual agreements for the entity that is responsible for the work proposed herein.

Environmental  
Services Inc.



PO Box 7244 Gilford, NH 03247-7244

Phone: 603-518-5225

Fax: 508-796-6131

[www.esi-team.com](http://www.esi-team.com)

**ESI Environmental Services**  
GENERAL PROVISIONS

**1. SCOPE OF WORK**

ESI shall perform the services defined in this Agreement and shall invoice the Client as proposed and/or at our standard rates. If additional work is required – but not authorized - to complete work proposed in the Scope of Services, client shall remain financially responsible for the cost of work actually completed. This constitutes our entire agreement and may be withdrawn by us if not accepted within 30 days. No modification of this agreement shall be valid unless in writing and signed by both parties. Additional work may be performed upon verbal agreement of the parties without any additional writing, and all such additional work shall be performed according to the terms of this agreement unless modified as stated herein.

**2. STANDARD OF CARE**

ESI's work will be performed in accordance with generally accepted principles and construction practices.

**3. CONFINED SPACE ENTRY**

Confined space entry will be limited to spaces that are determined by ESI or regulatory authorities to be NON-PERMIT confined spaces. Should work be required in Permit Spaces, additional costs will be required. ESI reserves the right to not complete work that requires entry into Permit Spaces.

**4. PAYMENTS**

Invoices will be submitted as indicated above. Payments will be due and payable in full within forty five (45) days of the date of invoice. If at any time, an invoice remains unpaid for a period in excess of forty five (45) days, a service charge of one and one half percent (1 1/2%) per month from the date of the invoice, an effective maximum rate of eighteen percent (18%) per annum, will be charged on past due accounts. In the event of a dispute between the parties, any action shall be brought in the State of New Hampshire and the laws of that jurisdiction shall apply. If contractor prevails on any part of its claim in such action, the other party shall pay the costs and reasonable attorney fees of the contractor.

**5. WEATHER AND SITE CONDITIONS**

All work proposed herein is subject to favorable weather, water levels, and ground conditions.

**6. PERMITS AND FEES**

Unless specifically discussed in the Scope of Services, it is assumed that no sediment control measures or permits are required to complete the work. Additional costs and delays may result if permits are required. ESI shall not be responsible for permit fees or any delays related to permits.

# STERLING

Stormwater Maintenance Services

## Stormwater Compliance Proposal

Site Name: Mercy at the Fore

Site Location: Portland, ME

Quote Number: 3047M

Quote Date: 7/20/2012

### Stormwater Compliance Service Fees

| Item # <sup>1</sup> | Description                 | Total             |
|---------------------|-----------------------------|-------------------|
| 1                   | Annual Inspection Service   | \$1,800.00        |
| 2                   | Annual Maintenance Service  | \$2,800.00        |
| 3                   | Annual Compliance Reporting | \$400.00          |
| <b>Total</b>        |                             | <b>\$5,000.00</b> |

**Notes:**

1. Item #1 pertains to inspection of the stormwater systems on this site in accordance with the ME DEP and City of Portland. A summary of the stormwater components and inspection frequency is provided in Appendix A of this proposal.
2. Item #2 pertains to maintenance of select stormwater components as identified in Appendix B.
3. Item #3 pertains to the preparation and submittal of a Stormwater Compliance Report. Submittal of this report will satisfy regulatory requirements and include photographic documentation of all inspection and maintenance activities performed.

**Terms & Conditions:**

1. Invoicing
  - a. Annual inspection service will be broken into 4 invoices for equal amount and submittal on a quarterly basis.
  - b. Annual Maintenance Services will be invoiced once per year at completion of maintenance activities.
  - c. Annual compliance reporting service will be invoice once per year upon completion of reporting activities.
2. Payment of invoice is due within 30 days of receipt.
3. Quote is valid for 90 days from the quote date listed above.
4. STERLING Stormwater Maintenance Services is not the manufacturer nor was it involved in the design of the above listed stormwater management systems and therefore accepts no responsibility for the actual performance of the storm water management systems.

As an authorized representative of the above referenced site, I hereby accept this contract and the associated terms and conditions:

Print Name: \_\_\_\_\_ Sign Here: \_\_\_\_\_ Date: \_\_\_\_\_

## Appendix A

### Inspection Frequency for Stormwater Components

| <b>Stormwater Management System<br/>Maintenance Program<br/>Summary Checklist</b> |  |                  |                          |                    |                       |                  |
|---|--|------------------|--------------------------|--------------------|-----------------------|------------------|
| <b>Item</b>   | <b>Commentary</b>  | <b>Frequency</b> |                          |                    |                       |                  |
|   |  | <b>Monthly</b>   | <b>Quarterly</b>         | <b>Semi-Annual</b> | <b>Annual</b>         | <b>Long Term</b> |
| Control Structure   | Inspect outlet control to assure it maintains its hydraulic characteristics.<br>Inspect inlets for blockage.   |                  | X                        |                    |                       |                  |
| Stormwater Inlets in Series   | Stormwater inlets allow flow entry from a surface swale to a piped system. Entry may or may not be equipped with a bar rack. Inspect entry for debris accumulation. Remove debris to allow unimpeded entry. Lawn clippings and leaves should be removed from yard areas. | X                |                          |                    | X<br>Clearing         |                  |
| Tributary Drainage  | Inspect to assure that the carrying capacity has not been diminished by debris, sediment or other hydraulic impediments.   |                  |                          |                    | X                     |                  |
| In-Line Storage (Underground detention and Sand Filter)                           | Inspect for standing water not anticipated, sedimentation, outlet control, inlets.<br><br>Jet Stream sediment removal from Isolator Row  |                  |                          |                    | X                     | X                |
| Filterra® Units (or approved equal)   | The Filterra® units should be inspected for sedimentation accumulation in the sump and mulch area. Replace mulch, prune plant(s), clean Isolator Row.  |                  |                          |                    | X                     |                  |
| StormFilter® by CONTECH   | The StormFilter® should be inspected to ensure the stored volume is draining within 72 hours.<br><br>Clean sediment accumulation, replace filter.  |                  |                          | X                  | X                     |                  |
| Sorbent Booms   | Sorbent boom should be raised out of the inlet, inspected, and replaced if necessary.  |                  | X<br>For first 12 months |                    | X<br>After first year |                  |
| Pond Dewatering   |  |                  |                          |                    |                       |                  |
| Sediment Monitoring/ Water Quality Filters  | Inspect for standing water longer than 48 hours, sedimentation, outlet control, healthy grass growth.  |                  |                          |                    | X                     | X                |
| Sediment in Forebay   |  |                  |                          | X                  |                       |                  |
| Parking Lot Cleaning  | Parking lot to be swept at mid winter and spring.<br>Power washing with an appropriate vacuum/power wash vehicle to be done once a year.   |                  |                          | X                  | X                     |                  |
| Litter  | Litter should be removed daily.  |                  |                          |                    |                       |                  |



## Appendix B

### Maintenance Summary

| Stormwater Component               | Frequency | Maintenance Costs Included in Quote | Comments  |
|------------------------------------|-----------|-------------------------------------|---|
| Soil Filters                       | Quarterly | Yes                                 | Pertains to flushing underdrains only   |
| Isolator Row/Filtrerra Systems     | Annual    | Yes                                 | Pertains to 4 Filterra Systems and 2 Sets of Isolator Row Locations   |
| StormTech Chambers/Brentwood Tanks | As Needed | No                                  | The maintenance frequency and type maintenance activities needed for these system may vary greatly. The most critical component in ensuring the proper function of these systems is to perform routine inspections. Maintenance recommendations, if any, should always be based on the results of the inspections. Therefore, a separate quote will be provided for the maintenance of these systems if and when maintenance is deemed necessary as based on the inspections. |
| Control Structures                 | As Needed | No                                  |   |
| Conveyance                         | As Needed | No                                  |   |
| Pretreatment Systems               | As Needed | No                                  |   |
| StormFilter System                 | As Needed | No                                  |   |
| Catch Basin Inlets                 | Annual    | No                                  |   |



8 Blue Moon Drive • North Yarmouth, Maine 04097  
PHONE: 207.829.2198 • FAX: 207.829.2178 • [www.StormwaterComp.com](http://www.StormwaterComp.com)

Maintaining your investment • Protecting our environment™

July 19, 2012

Mr. William Connolly  
Director of Maintenance  
Mercy Fore River Campus  
Fore River Parkway  
Portland, Maine 04102  
Via email to: [ConnollyB@mercyme.com](mailto:ConnollyB@mercyme.com)

**Re: Stormwater Management Services:      Mercy at the Fore Expanded Master Plan**

Mr. Connolly,

StormWater Compliance, LLC (SWC) is pleased to present you with the following proposal to provide management services including **StormWater Inspection, Maintenance, and Documentation** for the stormwater management system (SMS) at the above referenced location. This proposal was requested by you to satisfy your on-going Stormwater Operation and Maintenance Recertification requirements with the State of Maine DEP.

### **Scope of Work**

StormWater Compliance, LLC will develop and implement the site specific Stormwater Management Program based upon current Stormwater Industry Operation and Maintenance Standards and the attached Stormwater Operation and Maintenance Plan. In general, the Stormwater Management Program will consist of **Semi-Annual** inspections with annual reporting. Additional general site inspections will be performed as needed after major storm events.

Stormwater Compliance intends to place storm drain markers on select stormwater features. These markers will aid in identification of drainage structures for inspection and maintenance activities, provide good housekeeping public awareness and demonstrate **Mercy Hospital's** ongoing commitment to our environment.

The annual cost to provide Stormwater Management Services as described above for the Stormwater Management System at **Mercy at the Fore Expanded Master Plan is \$6,800.** This scope of work and cost is subject to the terms and conditions set forth on Exhibit A hereto.

The term for this contract will be five years commencing on the date executed below and renewing automatically for an additional five-year term unless one party provides the other with written notice of termination at least one month before the initial termination date. Either party may terminate this agreement at any time with 30 days' notice.



Maintaining your investment • Protecting our environment™

8 Blue Moon Drive • North Yarmouth, Maine 04097

PHONE: 207.829.2198 • FAX: 207.829.2178 • www.StormwaterComp.com

### **Inspection:**

An approximate inventory of Stormwater Best Management Practices (BMPs) is as follows:

- 60+/- Catch Basins
- 8+/- Water Quality Devices (Vortechincs, Downstream Defender, ADS, First Defense)
- 1 Contech StormFilter (11+/- cartridges)
- 3 Under-drain Pond / Bio-retention areas
- 1 Brentwood Subsurface Detention System
- 3 Filterra Bio-Retention Units
- 6-10 Structures with Absorbent Booms
- 6-10 Structures with Fabco Catch Basin Inserts

The overall site will be inspected to ensure that proper stormwater “good housekeeping” practices are in place. We will visually inspect the entire site for any signs of erosion, check parking lots for major cracks or settling and confirm proper sweeping is being employed. We will visually inspect anticipated high trash / pollutant areas (i.e. loading dock, compactor areas, etc.)

**Semi-Annual** inspections will consist of the removal of all grates and covers from all structural stormwater features (i.e. catch basins, water quality devices (Vortechincs, Downstream Defender, ADS, etc.), trench drains, yard drains, etc.) in order to gage the working condition of the structure as well as to measure any accumulated sediment and floatable debris (i.e. free-floating oil and trash). Conveyance structures (i.e. manholes, clean-outs, etc.) will be inspected as required to confirm they are free of obstructions and to determine the overall condition of the structure. An image of each stormwater structure will be taken to assist in documentation.

Sub-surface detention and filtration (StormTech Isolator Rows, sand filtration, Brentwood Systems, etc.) will be photo / video inspected using a Quick-View Zoom Camera specifically designed for subsurface inspections. Accumulated sediment / debris, structural condition, and function will be documented. Additionally, pavement surfaces above these facilities will be observed for abnormal settlement and cracking.

Filterra Bio-retention units will be visually inspected AND maintained semi-annually according to manufacturer’s recommendations.

Open stormwater features will be visually inspected for proper function and condition. All inlets, outlet controls, outfalls, and embankments will be visually inspected for erosion, swamping, stability, undesirable vegetation, and obstruction. Images of all open features components will be taken to assist in documentation.

We have assumed that monthly visual inspections of surface conditions will be completed during the course of daily activities by Mercy Hospital’s facilities maintenance personnel.



8 Blue Moon Drive • North Yarmouth, Maine 04097  
PHONE: 207.829.2198 • FAX: 207.829.2178 • www.StormwaterComp.com

Maintaining your investment • Protecting our environment™

### **Maintenance:**

In an effort to keep reoccurring costs to a minimum, most routine maintenance has been excluded from this proposal as many BMPs will not require maintenance every year. Some regular maintenance can be accurately anticipated is **included** in this proposal and is listed below. Other maintenance and repairs will be recommended **as-needed** and quoted separately based on inspection observations. We feel this is the most cost effective way to manage maintenance of a sophisticated SMS.

### **Included Maintenance**

- Incidental light maintenance will be performed as part of inspections. Incidental light maintenance activities are those activities easily completed with hand tools by our field inspectors. These maintenance activities include skimming floatable debris, removal of light trash and debris from critical areas, obstruction removal where possible, etc.
- Semi-annual maintenance of Filterra Bio-retention units is also included in this proposal due to the sensitive nature of surface filtration devices.
- Catch basin inserts will be inspected and maintained / replaced as need.
- Absorbent Oil Boom will be inspected and replaced as needed.

Due to the unknown nature of pollutant loading and variety of best management practices (BMPs) utilized for this SMS, all other routine maintenance activities (i.e. vacuuming, jetting, insert/filter replacement, etc.) have been **excluded** from this proposal. We have assumed that vegetation within and around open stormwater features (detention ponds, bio-retention areas, outfalls, etc.) will be maintained by facilities staff or landscape contractor as part of normal site maintenance activities. SWC can provide regular vegetation maintenance services if requested.

In the instance of a spill or discharge (accidental or intentional) of pollutants not typical of stormwater StormWater Compliance, LLC will notify appropriate management personnel who will engage a licensed disposal contractor equipped to handle and dispose of spill materials.

### **Reporting and Documentation:**

An Annual Inspection and Maintenance Log report will be prepared and submitted to you electronically for your records. Hard copies of reports will be provided upon request. As necessary and upon request by Management, StormWater Compliance will submit the annual report to appropriate agencies (i.e. Conservation Commission, City, DES etc.). The report shall include documentation of all Inspection, Maintenance, performed on the site during the previous year. The report shall also include images (and in some cases video) and field documentation of all activities that have taken place. The report will verify that the Stormwater Management System is in good working order and in compliance with Stormwater permits, or will detail recommendations if repairs are required.

### **SWC Customer Web Portal:**

Access will be provided to the StormWater Compliance Customer Web Portal. This is a unique password protected, centralized location for storage and transfer of all pertinent stormwater documents, including reports, plans, permit documents, aerial photos, maps, etc.. The portal provides one spot for access to all stormwater documents for this project.



8 Blue Moon Drive • North Yarmouth, Maine 04097  
PHONE: 207.829.2198 • FAX: 207.829.2178 • www.StormwaterComp.com

Maintaining your investment • Protecting our environment™

**Acceptance:**

If this proposal, as presented, is acceptable to you, please execute a copy of this document in the place indicated below and we will begin work.

We are prepared and eager to begin work outlined in this proposal. If you have any questions, concerns, or require any additional information, please do not hesitate to contact me (207) 712-7181. We thank you for this opportunity and look forward to working with you.

Sincerely,

Gregg Novick  
StormWater Compliance, LLC  
[gnovick@StormWaterComp.com](mailto:gnovick@StormWaterComp.com)

Agreed and Accepted this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

Company Name: \_\_\_\_\_

Signature: \_\_\_\_\_ Name: \_\_\_\_\_

Title: \_\_\_\_\_

By signing above, you acknowledge that you are authorized to enter into this contractual agreement for the entity that is responsible for the work proposed herein.



8 Blue Moon Drive • North Yarmouth, Maine 04097  
PHONE: 207.829.2198 • FAX: 207.829.2178 • www.StormwaterComp.com

Maintaining your investment • Protecting our environment™

#### EXHIBIT A: GENERAL PROVISIONS

These general provisions govern the Contract between **StormWater Compliance, LLC** (the "Contractor") and **Mercy Hospital** (the "Client") for work to be performed at **Mercy at the Fore Expanded Master Plan** (the "Site").

1. **Scope of Work.** The Scope of work is as set forth in the accompanying proposal and contract (the "Proposal and Contract").
2. **Client Obligations.** The Client will:
  - a) not knowingly permit the release of any hazardous or regulated materials at the Site.
  - b) provide the Contractor with written notice of: (i) the actual, suspected or threatened release of any regulated or hazardous materials at the site as well as (ii) all information known to the Client regarding the storage and use of any hazardous materials at the Site by any person or entity.
  - c) reasonably cooperate with the Contractor in connection with the Contractor's work at the site.
3. **Payment for Services.** Invoices shall be due 30 days after the date of the invoice.
4. **Termination.** This Agreement may be terminated by (i) the Contractor upon a breach of any payment obligation which has not been cured within ten days after written notice from the Contractor to Client and (ii) either party upon a breach of this Agreement by the other party if breach has not been cured after thirty (30) days written notice to the other party (iii) the Client upon the event of a sale of the property. Either party may terminate this agreement at any time with 30 days' written notice to the other party.
5. **Limitations of Liability.** The Client understands and acknowledges that the Contractor's roles are in the areas of inspection and maintenance of the Stormwater Maintenance System ("SMS") at the Site and that, while inspection and maintenance of the SMS at the Site are essential elements of effective stormwater management, the Contractor's activities are limited and periodic and the Contractor's work cannot and does not guaranty that the SMS cannot be rendered ineffective by sudden events beyond Contractor's control between inspections. The Contractor is also not responsible for any deficiencies which are caused by improper or inadequate SMS installations / construction. The foregoing shall not be deemed to limit Contractor's liability under this Agreement for any damages or liabilities incurred by Client arising from the Contractor's failure to perform Contractor's obligations under this Agreement.
6. **Assumptions and Exclusions.** Unless otherwise stated in scope of work, the price schedule set forth in this agreement reflects an assumption that the Site is either new construction (and therefore free of sediment and debris) and/or that all normal routine inspections, maintenance, repairs and rehabilitation work has been completed prior to the date of this agreement. In the event that is not the case, the Contractor will so notify the Client and will provide the Client with an appropriate written change order to reflect the additional maintenance work which may be required in a system which has not been regularly inspected, maintained and/or repaired. This contract is for routine inspection and maintenance services only and does not include system repairs, system replacements or system rehabilitation work. Furthermore, the removal of sediment and debris caused by natural disasters (i.e. hurricanes, floods, etc.) would not be considered routine maintenance services. The Client shall be responsible for costs of (i) removal and disposal of any hazardous or regulated materials discovered including any of the Contractor's additional costs for labor or materials relating to such hazardous materials and (ii) required maintenance deemed by the Contractor to be caused by construction related activities, including but not limited to removal by mechanical means of sediment and debris any stormwater implement including any of the Contractor's additional costs for labor, materials or disposal relating to such maintenance functions. In either case (i or ii) a report of any findings and recommended work shall be furnished to the client and no work shall be performed without the client's authorization.
7. **Indemnification.** The Client agrees, upon demand, to defend, indemnify and hold the Contractor and its officers, directors, shareholders, employees and agents, harmless from any and all claims, liabilities or causes of action or any kind arising from or relating to any negligence or willful misconduct by the Client, its officers, employees, agents, or contractors at the Site. The Contractor agrees, upon demand, to defend, indemnify and hold the Client and its officers, directors, shareholders, employees and agents, harmless from any and all claims, liabilities or causes of action or any kind arising from or relating to (i) a breach of Contractor's obligations under this Agreement by the Contractor, its officers, employees, agents, or contractors or (ii) any negligence or willful misconduct, by the Contractor, its officers, employees, agents, or contractors at the Site.
8. **Choice of Law, Limitation of Liability, Costs and fees.** The rights of the Customer and Client will be interpreted in accordance with the law of the State in which the Site is located, including all matters of construction, validity, performance, and enforcement, without giving effect to any principles of conflict of laws. In no event shall either party be liable to the other party under any theory of liability whatsoever for any consequential or punitive damages. In any litigation arising from or relating to this agreement, the prevailing party will recover all such party's attorney's fees costs.
9. **Amendments/Waivers.** This Agreement may not be amended except in writing signed by all parties.
10. **Entire Agreement.** This Agreement, including the Proposal and Contract contains the entire and complete understanding between the parties concerning its subject matter and all representations, agreements, arrangements, and understandings between or among the parties, whether oral or written, have been fully merged herein and are superseded hereby.

**SECTION 14**

**EROSION AND SEDIMENTATION CONTROL REPORT**

**MERCY HOSPITAL PHASE 2 RELOCATION PROJECT  
FORE RIVER SITE – PORTLAND, ME**

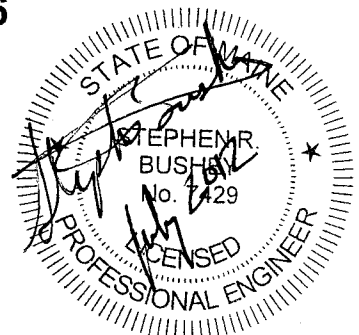
**PREPARED FOR**

**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**



# TABLE OF CONTENTS

| SECTION | DESCRIPTION  | PAGE |
|---------|--|------|
| A.      | Introduction.....  | 1    |
| B.      | Existing Site Conditions .....   | 1    |
| C.      | Existing Drainage Features.....  | 1    |
| D.      | Overview of Soil Erosion and Sedimentation Concerns .....                    | 1    |
| E.      | Description and Location of Limits of All Proposed Earth Movements .....     | 2    |
| F.      | Proposed Drainage Features.....  | 3    |
| G.      | Critical Areas .....   | 3    |
| H.      | Erosion/Sedimentation Control Devices.....                                   | 3    |
| I.      | Temporary Erosion/Sedimentation Control Measures.....                        | 5    |
| J.      | Standards for Stabilizing Sites for the Winter.....                          | 7    |
| K.      | Special Measures for Summer Construction.....                                | 10   |
| L.      | Sedimentation Sumps.....   | 10   |
| M.      | Permanent Erosion Control Measures .....                                     | 10   |
| N.      | Timing and Sequence of Erosion/Sedimentation Control Measures .....          | 11   |
| O.      | Contracting Procedure.....   | 12   |
| P.      | Provisions for Maintenance of the Erosion/Sedimentation Control Features ... | 17   |
| Q.      | Preconstruction Conference .....   | 19   |
| R.      | Appendices.....  | 19   |

## **Appendices**

Appendix A – Seeding Plan

Appendix B – Sample Erosion Control Compliance Certification and Inspection Forms

Appendix C – Open Channel, Outlet Aprons, and Temporary Sedimentation Sump Computations

Appendix D – DirtGlue™ Application and Use Requirements



## A. INTRODUCTION

Mercy Hospital is proposing to complete Phase 2 of their relocation of hospital facilities from the State Street location to the Fore River Campus. The primary earthwork activity associated with the Phase 2 project involves earthmoving and fill placement within an approximately 5-acre area containing wetlands and existing drainage.

This study and section of the permit application presents the Erosion Sediment Control Plan designed for the project. The erosion control plans will be contained in the contract documents for implementation by the Contractor who is awarded the bid for the project. The construction of the project will be phased. This project is to be coordinated with the MeDEP erosion control requirements. The Contract documents will require that turbid discharges from the site do not occur (measured by NTU with non-turbid runoff defined by representative samples with turbidity below 280 NTU at any discharge location), fugitive dust emissions will be controlled and the requirements of this erosion control plan, and all permit requirements, will be fulfilled. Winter construction will be required. Specific erosion controls stipulated by the plan and this report are minimum requirements.

## B. EXISTING SITE CONDITIONS

The current site cover conditions within the project area bounded by the Fore River Parkway and the railroad tracks are summarized in the table below:

| SUMMARY OF LAND USE COVER        |              |
|----------------------------------|--------------|
| Current Land Cover               | Area (acre)  |
| Woods/Unmaintained Pervious Area | 5.18         |
| Roof                             | 1.42         |
| Lawn                             | 8.30         |
| Pavement                         | 12.32        |
| <b>Total</b>                     | <b>27.22</b> |

## C. EXISTING DRAINAGE FEATURES

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 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 and detains storm event surges in the wetland pond prior to crossing the Fore River Parkway in an 18" culvert and discharges to the Fore River. The southerly system 'D' collects runoff from the southerly parking lot and maintenance yard and crosses the Fore River Parkway in a 36" culvert and discharges to a vegetated treatment swale under the new Veterans Memorial Bridge.

## D. OVERVIEW OF SOIL EROSION AND SEDIMENTATION CONCERNS

The susceptibility of soils to erosion is indicated on a relative "K" scale of values over a range of 0.02 to 0.69. The "K" value is frequently used with the universal soil loss equation. The higher values are indicative of the more erodible soils. The relative K values of the underlying material at the site would be as follows:

| Soil Type              | Soil Description    | K Value |
|------------------------|---------------------|---------|
| Cu – Cut and Fill Land | Gravelly sandy loam | 0.02    |
| Gp- Gravel Pit         | Gravelly sandy loam | 0.02    |
| HIC- Hinckley          | Gravelly sandy loam | 0.17    |

The primary emphasis of the Erosion and Sedimentation Control Plan to be implemented for this project is as follows:

- **Temporary Measures:** Planning the project to have erosion resistant measures in place by implementing measures intended to prevent erosion from occurring.
- **Phasing Sequencing:** The plan includes measures to intercept and convey runoff to temporary sediment ponds and control devices as the construction of the project occurs. The use of small collection sumps with a clean sand filter above an underdrained discharge is recommended to supplement the principal sumps to help reduce turbidity. Turbidity should be controlled to fewer than 280 NTU's in any discharge through the use of settling, filters, or chemical coagulants.
- **Use of Type 1 Settling:** Installing sediment sumps and swales early in the construction sequence to provide secondary relief for erosion control measures within the site until late in the project when the sedimentation areas need to be removed for final restoration.
- **Restabilization:** Stabilization of areas denuded to underlying parent material must occur within stipulated time frame to minimize the period of soil exposure and stabilization of drainage paths to avoid rill and gully erosion.
- **Interim Entrapment:** The use of on-site measures to capture sediment (hay bales/silt fence, etc.) before it is conveyed to sediment sumps.
- **Long Term Site Protection:** The implementation of long-term measures for erosion/sediment and pollutant treatment through the construction of permanent water quality measures.
- **Special Winter Construction Measures:** These will be required for work between September 15 and April 15.

#### E. DESCRIPTION AND LOCATION OF LIMITS OF ALL PROPOSED EARTH MOVEMENTS

The construction of the project will disturb about 13.44 acres of land. The limit of disturbance is generally coincident with the limit of grading.

The earth moving will include trenching for underground utilities, excavation for the water quality measures, earthwork to fill in the former gravel pit area, earthwork to prepare and shape the parking lots, and excavation attendant with the buildings and excavation and borrow for the project improvements. Some additional work may be required to remove and or bury contaminated materials pursuant to the MeDEP VRAP plan.

## F. PROPOSED DRAINAGE FEATURES

The postdevelopment plan includes consideration and design for water quality treatment of stormwater runoff. These measures constitute the stormwater management plan for the project.

Certain manholes on the project provide flow management by directing stormwater to different areas. The hydraulic controls for this project include manholes to regulate the discharge, flow splitting manholes, and overflow manholes.

The proposed cover conditions for the project boundary portion of the site upon completion of the project will be as follows:

| <b>Proposed Land Cover</b>       | <b>Area (acre)</b> | <b>Change from Current (acre)</b> |
|----------------------------------|--------------------|-----------------------------------|
| Woods/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                             |
| <b>Total</b>                     | <b>27.22</b>       | <b>0.00</b>                       |

## G. CRITICAL AREAS

Critical resource areas include the Fore River and associated wetlands. No special species habitats have been identified on the project site. It is noted that certain stormwater systems including underground storage, subsurface sand filters, Filterra®, and StormFilter® treatment units shall not be activated until the tributary areas have been stabilized and at least three weeks has passed subsequent to placement of bituminous concrete paving materials.

## H. EROSION/SEDIMENTATION CONTROL DEVICES

As part of the site development, the Contractor will be obligated to implement the following erosion and sediment control devices. These devices shall be installed as indicated on the plans or as described within this report. For further reference on these devices, see the *Maine Department of Environmental Protection Erosion and Sediment Control BMPS Manual (March, 2003)*.

1. Siltation fence shall be installed down slope of any disturbed areas to trap runoff borne sediments until the site is revegetated. The silt fence shall be installed per the detail provided in the plan set and inspected immediately after each rainfall and at least daily during prolonged rainfall. The Contractor shall make repairs immediately if there are any signs of erosion or sedimentation below the fence line. If such erosion is observed, the Contractor shall take proactive action to identify the cause of the erosion and take action to avoid its reoccurrence. Typically, this requires that stabilization measures be undertaken. Proper placement of stakes and keying the bottom of the fabric into the ground is critical to the fence's effectiveness. If there are signs of undercutting at the center or the edges, or impounding of large volumes of water behind the fence, the barrier shall be replaced with a stone check dam and measures taken to avoid the concentration of flows not directed to the silt fence.

2. Silt fence is shown by three purposes of application, depending upon the timing and intent, as follows:

| SCHEDULE OF SILT FENCE REQUIREMENTS |  |   |
|-------------------------------------|--|---|
| Silt Fence                          | Type/Purpose   | Time of Installation  |
| Condition 1                         | To trap sediment along the grading edge where the new contours nearly parallel existing contours.  | At initial site preparation, prior to other work.   |
| Condition 2                         | To trap sediment from the work area; install in short sections parallel to existing contour; typically occurs where proposed and existing contours form a "V" shape. | At initial site preparation, prior to other work. On occasion, this needs to be deferred until the area for the silt fence installation can be reached. |
| Condition 3                         | To trap sediment along the base of proposed contours, typically in cut areas.  | During construction after new grade is shaped. Time between work in area and shaping new grade to allow silt fence to be installed shall be minimized.  |

Conditions 2 and 3 silt fence will be used extensively between project phases. In the event of frozen ground where silt fence cannot be installed, a wood waste berm may be used as a substitute.

3. Straw or hay mulch including hydroseeding is intended to provide cover for denuded or seeded areas until revegetation is established. Mulching should be occurring several times per week when the site construction activity is high and at sufficient intervals to reduce the period of exposure of bare soils to the time limits set forth in this plan. Mulch placed on slopes of less than 10 percent shall be anchored by applying water; mulch placed on slopes steeper than 10 percent shall be covered with fabric netting as immediately after mulching as practicable and anchored with staples in accordance with the manufacturer's recommendations. Proposed drainage channels, which are to be revegetated, shall receive Curlex blankets by American Green selected for the slope, velocity, and whether the measure is temporary or intended to be in place for a sustained period. Mulch application rates are provided in Appendix A of this section. Hay mulch shall be available on site at all times in order to provide immediate temporary stabilization when necessary. Where necessary, a windrow of crushed stone and/or gravel shall be placed at the top of the slope and directed to a temporary stone channel or pipe sluice to convey runoff down slopes. A dissipation device such as stone or a plunge pool should be installed at the base of the slope and sluice outlet to dissipate the energy of the water from the sluice or channel.
4. Temporary sediment sumps will provide sedimentation control for stormwater runoff from disturbed areas during construction until stabilization has been achieved. The sediment sumps need to include a sand filter above an underdrain or a chemical coagulant to remove fine-grained sediment. Appropriate measures to reduce sediment suspended in discharges to less than 280 NTU's will be required.
5. Riprap slopes, ditch linings, stone check dams, hay bale barriers, and culvert outlet aprons are intended to stabilize and protect denuded soil surfaces or dissipate the energy and erosive forces from concentrated flows. Installation details and stone sizes are provided in the construction plan set on the erosion control detail sheets.

6. A construction entrance will be constructed at all access points onto the site to prevent tracking of soil onto adjacent local roads and streets and the existing parking lots.
7. Stone sediment traps or a premanufactured SiltSack™ and a sediment bag will be installed at catch basin inlets to prevent silt from entering the storm drain system. Installation details are provided in the plan set on the erosion control detail sheets.
8. Dirtbags™ will be required to be on site and available for construction dewatering. The Contractor will be required to provide four Dirtbags™ with one prepared for operation prior to commencing any trenching operations. Dirtbags™ will need to be installed above filter sand and crushed stone in accordance with the details shown on the plan set will need to be installed.
9. Loam and seed is intended to serve as the primary permanent revegetative measure for all denuded areas not provided with other erosion control measures, such as riprap. Specific areas as shown on the landscape plan will receive sod. Application rates are provided in Appendix A of this section for temporary and permanent seeding.
10. Stone check dams will be installed in areas noted on the plan or as warranted, based upon observations during construction of the site.
11. Silt logs are an option for stone check dams and may be substituted provided the devices are well anchored.
12. Sorbent booms are intended to capture oils and the asphalt sheen from paved surfaces and shall be installed in all catch basins before pavement is installed.
13. DirtGlue™ is an acceptable means of temporary stabilization and is intended to form a "crust" on the surface that is resistant to erosion. However, applications where DirtGlue™ is used must be protected from traffic that would crack the "crust" and the DirtGlue™ has temperature limitations that restrict the periods of use. Use of this material shall conform to the requirements of Appendix D.
14. Wattles (constructed of rice straw) are to be used for small areas where the surface is irregular and where an immediate measure is needed to protect downstream measures.

#### **I. TEMPORARY EROSION/SEDIMENTATION CONTROL MEASURES**

The following are planned as temporary erosion/sedimentation control measures during construction:

1. Crushed stone-stabilized construction entrances shall be placed at any construction access points from adjacent drive aisles or the existing parking lots. The locations of the construction entrances shown on the drawings should be considered illustrative and will need to be adjusted as appropriate and located at any area where there is the potential for tracking of mud and debris onto existing roads or streets. Stone stabilized construction entrances will require the stone to be removed and replaced, as it becomes covered or filled with mud and material tracked by vehicles exiting the site.
2. Condition 1 and 2 silt fence shall be installed along the downgradient side of the proposed improvement areas. The silt fence will remain in place and properly maintained until the site is acceptably re-vegetated. Condition 3 silt fence is to be used along the contour of significant fill slopes as maybe illustrated on the erosion control plan site drawings. Silt fence needs to be checked to insure the bottom is properly keyed in and inspected after significant rains. Wood chips or Erosion Control Mix is often used on the construction side of the silt fence to provide an extra margin

of safety and security for the silt fence. This practice is encouraged, provided the chips are removed when the fence is removed.

3. Dirtbags™ shall be installed in accordance with the details in the plan set. The purpose of the Dirtbags™ is to receive any water pumped from excavations during construction. A Dirtbag™ shall be installed and prepared for operation prior to any trenching on site. When Dirtbags™ are observed to be at 50% capacity, they shall be cleaned or replaced. Stone and filter sand under the Dirtbag™ shall be removed and replaced concurrently with the replacement of the Dirtbag™.
4. Temporary stockpiles of common excavation will be protected as follows:
  - a) Temporary stockpiles shall not be located at least 50 feet upgradient of the perimeter silt fence.
  - b) Inactive stockpiles shall be stabilized within 5 days by either temporarily seeding the stockpile with a hydroseed method containing an emulsified mulch tackifier or by covering the stockpile with mulch. If necessary, mesh shall be installed to prevent wind from removing the mulch.
5. All denuded areas except gravel areas shall receive mulch, erosion control mesh fabric, or other approved temporary erosion sediment measure within 7 days of initial disturbance of soil or before a predicted rain event of  $>1/2"$  unless permanent measures are installed.
6. All soils disturbed between September 15 and April 15 will be covered with mulch within 5 days of disturbance, prior to any predicted storm event of the equivalent of  $1/2"$  of rainfall in a 24-hour period, or prior to any work shutdown lasting more than 35 hours (including weekends and holidays). The mulch rate shall be double the normal rate.

For work that is conducted between September 15 and April 15 of any calendar year, all denuded areas will be covered with hay mulch, applied at twice the normal application rate, and (in areas over 10% grade) anchored with a fabric netting. The time period for applying mulch shall be limited to 5 days for all areas, or immediately in advance of a predicted rainfall event.
7. Stone check dams, silt logs, or hay bale barriers will be installed at any evident concentrated flow discharge points during construction and earthwork operations.
8. Silt fencing with a maximum stake spacing of 6 feet should be used, unless the fence is supported by wire fence reinforcement of minimum 14 gauge and with a maximum mesh spacing of 6 inches, in which case stakes may be spaced a maximum of 10 feet apart. The bottom of the fence should be properly anchored a minimum of 6" per the plan detail and backfilled. Any silt fence identified by the owner or reviewing agencies as not being properly installed during construction shall be immediately repaired in accordance with the installation details.
9. Storm drain catch basin inlet protection shall be provided through the use of stone sediment barriers or a premanufactured SiltSack™. Stone sediment barrier installation details are provided in the plan set. The barriers or SiltSacks™ shall be inspected after each rainfall and repairs made as necessary, including the removal of sediment. Sediment shall be removed and the barrier or SiltSack™ restored to its original dimensions when the sediment has accumulated to one-half the design depth of the barrier. Sediment shall be removed from SiltSacks™ as necessary. Inlet protection shall be removed when the tributary drainage area has been stabilized.

10. All slopes steeper than 4:1 shall receive erosion control mesh.
11. Slopes steeper than 3:1 shall receive reinforced turf.
12. Condition 3 silt fences shall be installed as construction progresses.
13. Areas of visible erosion and the temporary sediment sumps shall be stabilized with crushed stone. The size of the stone shall be determined by the contractor's designated representative in consultation with the Owner.
14. New catch basins and certain existing catch basins shall all be installed with an opening 2'-6" below finish grade to receive a 4" underdrain with an end cap except for inlets along underdrains. A 3'-0" stub of underdrain surrounded by 6" of ¾" crushed stone and filter fabric shall be installed. The purpose of this measure is to provide drainage relief until site grades are at finish elevations.
15. All catch basins, which receive runoff from current or paved areas being constructed as part of this project, shall have a temporary sorbent boom installed prior to placing the basin in operation installing binder pavement, or overlays. These sorbent booms shall be checked weekly for the three weeks following paving and replaced as necessary with the booms disposed of in accordance with local and State regulations.
16. Any flow from the site that is concentrated must be directed to a sump with sand filter and underdrained discharge.
17. Concentrated runoff shall be diverted away from slopes of over 10 percent unless the slope is armored with stone.
18. Underground utilities must be installed in compliance with the following standards and other requirements of this erosion control plan:
  - No more than 500 linear feet of trench may be opened at one time;
  - Excavated materials shall be placed on the uphill side of trenches;
  - Dewatering of the trench shall be pumped through a Dirtbag™ and appropriate sediment control facilities to avoid a turbid discharge; and
  - Stabilization shall occur as soon as practicable.
19. Rice straw wattles shall be used to control localized erosion.
20. Maintenance of the erosion control, sedimentation facilities, and control of fugitive dust must occur until the site is stabilized with permanent erosion control measures. For turf areas, stabilization shall be defined to be the establishment of a 90 percent "catch of grass" with no areas larger than 2 square feet, and no spots that cumulatively add up to more than 5 square feet per 100 square feet.

#### **J. STANDARDS FOR STABILIZING SITES FOR THE WINTER**

The construction of the project will require winter construction. The project is anticipated to require about 18-36 months to construct. For permitted winter construction, the erosion control measures are substantially more stringent due to the cold temperatures and lack of weather conditions which aid in drying the subgrade soils through evaporation.

If construction activities involving earth disturbance continue past September 15 or begin before April 15, the following must be incorporated with the erosion control plan and implementation:

1. Enlarged access points must be stabilized to provide for snow stockpiling.
2. Limits of disturbance shall be reduced to the extent practicable.
3. A snow management plan including adequate storage and control of snowmelt, requiring cleared snow to be stored downgradient of all areas of disturbance shall be prepared by the contractor and submitted to the Owner for review and approval.
4. Snow shall not be stored in sediment basins or to preclude drainage structures from operating as intended.
5. A minimum 25-foot buffer maintained from perimeter controls such as silt fence shall be maintained on the "work area side" to allow for snow clearing and maintenance.
6. Drainage systems intended to operate during the winter shall be catalogued, shown on a plan, and inspected after each snow removal period to make sure the drainage structures are open and free of snow and ice dams.
7. To ensure cover of disturbed soil in advance of a melt event, areas of disturbed soil must be stabilized at the end of each work day, with the following exceptions:
  - If no precipitation within 24 hours is forecast and work will resume in the same disturbed area within 24 hours, daily stabilization is not necessary.
  - Disturbed areas that collect and retain runoff, such as house foundations or open utility trenches.
8. Standard for the timely stabilization of ditches and channels: The Contractor shall construct and stabilize all stone-lined ditches and channels on the site by September 15. The contractor shall construct and stabilize all grass-lined ditches and channels on the site by September 1. If the Contractor fails to stabilize a ditch or channel to be grass-lined by September 1, then the Contractor shall take one of the following actions to stabilize the ditch for late fall and winter.
  - i. Install a sod lining in the ditch. The contractor shall line the ditch with properly installed sod by September 15. Proper installation includes the applicant pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, watering the sod to promote root growth into the disturbed soil, and anchoring the sod with jute or plastic mesh to prevent the sod strips from sloughing during flow conditions.
  - ii. Install a stone lining in the ditch. The contractor shall line the ditch with stone riprap by September 15. The contractor shall hire a registered professional engineer to determine the stone size and lining thickness needed to withstand the anticipated flow velocities and flow depths within the ditch. If necessary, the Contractor shall regrade the ditch prior to placing the stone lining so as to prevent the stone lining from reducing the ditch's cross-sectional area.
9. Standard for the timely stabilization of disturbed slopes: The Contractor shall construct and stabilize stone-covered slopes by September 15. The Contractor shall seed and mulch all slopes to be vegetated by September 1. The Department will consider any area having a grade greater than 15% (10H:1V) to be a slope. If the Contractor fails to stabilize any slope to be vegetated by September 1, then the Contractor shall take one of the following actions to stabilize the slope for late fall and winter.



- i. Stabilize the soil with temporary vegetation and erosion control mesh. By September 15, the Contractor shall seed the disturbed slope with winter rye at a seeding rate of 3 pounds per 1,000 square feet and apply erosion control mats over the mulched slope. The contractor shall monitor growth of the rye over the next 30 days. If the rye fails to grow at least three inches or fails to cover at least 75% of the disturbed slope by September 15, then the Contractor shall cover the slope with a layer of wood waste compost as described in item iii of this standard or with stone rip rap as described in item iv of this standard.
  - ii. Stabilize the slope with sod. The Contractor shall stabilize the disturbed slope with properly installed sod by September 15. Proper installation includes the Contractor pinning the sod onto the slope with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil. The Contractor shall not use late-season sod installation to stabilize slopes having a grade greater than 33% (3H:1V) or having groundwater seeps on the slope face.
  - iii. Stabilize the slope with wood waste compost. The Contractor shall place a six-inch layer of wood waste compost on the slope by September 15. Prior to placing the wood waste compost, the Contractor shall remove any snow accumulation on the disturbed slope. The contractor shall not use wood waste compost to stabilize slopes having grades greater than 50% (2H:1V) or having groundwater seeps on the slope face.
  - iv. Stabilize the slope with stone rip rap. The Contractor shall place a layer of stone riprap on the slope by September 15. The Contractor shall hire a registered professional engineer to determine the stone size needed for stability and to design a filter layer for underneath the riprap.
10. Standard for the timely stabilization of disturbed soil: By September 1, the Contractor shall seed and mulch all disturbed soils on areas having a slope less than 15%. If the Contractor fails to stabilize these soils by this date, then the Contractor shall take one of the following actions to stabilize the soil for late fall and winter.
- i. Stabilize the soil with temporary vegetation. By September 15, the Contractor shall seed the disturbed soil with winter rye at a seeding rate of 3 pounds per 1,000 square feet, lightly mulch the seeded soil with hay or straw at 75 pounds per 1,000 square feet, and anchor the mulch with plastic netting. The Contractor shall monitor the growth of the rye over the next 30 days. If the rye fails to grow at least three inches or fails to cover at least 75% of the disturbed soil before September 15, then the Contractor shall mulch the area for over-winter protection as described in item iii of this standard.
  - ii. Stabilize the soil with sod. The Contractor shall stabilize the disturbed soil with properly installed sod by September 15. Proper installation includes the Contractor pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil.
  - iii. Stabilize the soil with mulch. By September 15, the Contractor shall mulch the disturbed soil by spreading hay or straw at a rate of at least 150 pounds per 1,000 square feet on the area so that no soil is visible through the mulch. Prior to

applying the mulch, the Contractor shall remove any snow accumulation on the disturbed area. Immediately after applying the mulch, the Contractor shall anchor the mulch with plastic netting to prevent wind from moving the mulch off the disturbed soil.

- iv. Stabilize all stockpiles with mulch within 24 hours.

#### **K. SPECIAL MEASURES FOR SUMMER CONSTRUCTION**

The summer period is generally optimum for construction in Maine, but it is also the period when intense short duration storms are most common, making denuded areas very susceptible to erosion, when dust control needs to be the most stringent, and when the potential to establish vegetation is often restricted by moisture deficit. During these periods, the Contractor must:

1. Implement a program to apply dust control measures on a daily basis except those days where the precipitation exceeds 0.25 inch. This program shall extend to and include adjacent streets used by construction vehicles.
2. Spray any mulches with water after anchoring to dampen the soil and encourage early growth. Spraying may be required several times. Temporary seed may be required until the late summer seeding season.
3. Mulch, cover, and moisten stockpiles of fine-grained materials, which are susceptible to erosion. In the summer months, the potential for wind erosion is of concern, as well as erosion from the intense, short-duration storms, which are more prevalent in the summer months.
4. Take additional steps needed to control fugitive dust emissions to minimize reductions in visibility and the airborne disbursement of fine-grained soils. This is particularly important along the adjacent streets.

These measures may also be required in the spring and fall during the drier periods of these seasons.

#### **L. SEDIMENTATION SUMPS**

The sediment sumps shall be sized in accordance with the plan and specifications. The bottom of the sumps is intended to be used for infiltration.

Discharge must be through a sand filter over an underdrained outlet to aid in the control of turbidity levels in the discharge. An emergency bypass shall be included and shall be constructed of 6" of stone overlaying filter-fabric and discharge to undisturbed turf.

#### **M. PERMANENT EROSION CONTROL MEASURES**

The following permanent erosion control measures have been designed as part of the Erosion/Sedimentation Control Plan:

1. The drainage conveyance systems have been designed to intercept and convey the 25-year storm. In the case of open channels or swales, this includes the design of measures to resist scour of the channel. Velocity computation for channel aprons and the sizing of the temporary riser for the sediment pond will be appended to the NOI.

2. All storm drain pipes shall have riprap aprons at their outlet to protect the outlet and receiving channel of the culverts from scour and deterioration. Installation details are provided in the plan set. The aprons shall be installed and stabilized prior to directing runoff to the tributary pipe or culvert. It is noted that all inlets and outlets over 18" in diameter are to have a flared concrete inlet and an aluminum bar rack. Small pipes will be protected with rodent guards. Orifices in hydraulic control structures will be protected with a wire mesh screen with an opening of no more than 25 percent of the orifice size and a surface area of at least 25 times the area of the orifice.
3. All areas disturbed during construction, but not subject to other restoration (paving, riprap, etc.), will be loamed, limed, fertilized, mulched, and seeded. Fabric netting, anchored with staples, shall be placed over the mulch in areas where the finish grade slope is greater than 10 percent. Native topsoil shall be stockpiled and temporarily stabilized with seed and mulch and reused for final restoration when it is of sufficient quality.
4. Catch basins shall be provided with sediment sumps for all outlet pipes that are 12" in diameter or greater. Catch basins that are not within 100 feet of wells have been designed with an under drain connection to allow the subbase gravel to drain and reduce frost heave and movement at the basin. A sediment collection bag and an oil sorbent pillow shall be installed in all basins.
5. Permanent seeding shall be conducted only in April through May and in late summer until September 15.

**N. TIMING AND SEQUENCE OF EROSION/SEDIMENTATION CONTROL MEASURES**

The site is currently stable with a mixture of vegetated ground cover and wetland. The site activity is almost entirely internally draining; therefore, these conditions will reduce the extent of erosion controls. However, the project will be phased and the Contractor must control fugitive dust emissions, respect and not impede the neighboring land uses, control sediment laden runoff to 280 NTU or less. For all grading activities, the Contractor shall exercise extreme caution not to overexpose the site by limiting the disturbed area and shall stabilize any steep slopes within 24 hours if final slope grading and stabilization will not be completed within 7 days. Any final slopes shall have the specified erosion control measures installed within 7 days of final stabilization. Control of discharges to the wetland ponds' single outlet will be critical.

The following construction sequence shall be required, (unless otherwise authorized in writing by the Owner's project manager or authorized permit agent).

The description of the work is:

Phase 1: The initial phase of the project will include the installation of the sedimentation facilities to serve the initial fill placement within the pond area. The Contractor will need to perform the following work

- Mark the Phase 1 work limits.
- Install safety fence and security signs around the perimeter of the site.

- Establish and install construction entrances with gates.
- Install silt fence along the perimeter and other designated areas requiring Condition 1 silt fence.
- Establish Dirtbag™ area and pump system for dewatering activities.
- Construct a diversion swale to direct as much of the site to the sedimentation basin as possible including the installation of culverts and rip rap where the diversion swale passes under the construction access drives.
- Clear and grub pond bottom and slopes.
- Commence lift controlled fill placement throughout the pond area while monitoring discharge conditions at the single pond outfall.
- Install temporary seed and mulch around the perimeter of the sedimentation facilities, as required.

Subsequent Phases: There is more flexibility for the contractor to schedule the work provided that the erosion control measures are in place.

This includes diversion of stormwater from the site to the temporary sedimentation pond(s), providing berms to restrict the runoff from flowing off the steep banks of the site, maintaining construction entrances, providing and use of the Dirtbag™ for pretreatment of water pumped from excavations, maintaining a crushed stone working pad(s) around the foundation area(s) until gravels and pavements are placed, and diversion of stormwater runoff away from the underground treatment, detention, and infiltration areas. The manhole details included with the drawing set include specific locations and elevations for the diversion lines. Placement of the underground systems in service shall not occur until the site has been stabilized and pavement has been allowed to "cure" for a period of three weeks.

The underground facilities and treatment units shall not be activated until authorized by the design engineer or a certified erosion control professional who has signed an affidavit indicating they have reviewed the plans, Stormwater Management, Erosion Sediment Control Plan, Stormwater O&M Manual, and any State and Local site permits issued for the project.

#### **O. CONTRACTING PROCEDURE**

The onsite components of the project will be constructed by a General Contractor under contract to the Developer. The Contractor shall submit a schedule for the completion of the work, which will satisfy the following criteria:

1. The construction sequence of Section M should generally be completed in the specified order; however, several separate items may be constructed simultaneously. Work must also be scheduled or phased to prevent the duration of areas exposed or susceptible to erosion as specified below. The intent of this sequence is to provide for erosion control and to have structural measures such as silt fence and construction entrances in place before large areas of land are denuded.

3. The work shall be conducted in sections which will:
  - a) Limit the amount of exposed area to those areas in which work is expected to be undertaken during the preceding 30 days.
  - b) Revegetate disturbed areas as rapidly as possible. All areas shall be permanently stabilized within 7 days of final grading and temporarily stabilized within 7 days of initial disturbance or before a predicted storm event of over ½" of rain.
  - c) Incorporate planned inlets and drainage system as early as possible into the construction phase. The ditches shall be immediately lined or revegetated as soon as their installation is complete.
  - d) Achieve the parking space numbers indicated in the construction phasing.
4. Once final grade has been established, the Contractor may choose to dormant seed the disturbed areas prior to placement of mulch and placement of fabric netting anchored with staples.
  - a) If dormant seeding is used for the site, all disturbed areas shall receive 6" of loam and seed at an application rate of 5#/1,000 s.f.

All areas seeded during the winter months will be inspected in the spring for adequate catch. All areas insufficiently vegetated (less than 75 percent catch) shall be revegetated by replacing loam, seed, and mulch.
  - b) If dormant seeding is not used for the site, all disturbed areas shall be revegetated in the spring.
5. The area of denuded, non-stabilized construction shall be limited to the minimum area practicable. An area shall be considered to be denuded until the subbase gravel is installed in parking areas, or the areas of future loam and seed have been loamed, seeded, and mulched. The mulch rate shall be twice the rate specified in the seeding plan. [For example, 115#/1,000 s.f. x 2 = 230#/s.f.]
6. Within the exposed work area, temporary sedimentation sumps shall be provided any concentrated flow area with sand filter or chemical coagulation. Additional information is provided in prior sections of this narrative and on the Erosion Control Details of the plan set. Along the sedimentation sumps, barriers shall be provided at sufficient intervals to permit runoff to be accumulated to a minimum depth of 12" before overflowing.
7. The schedule shall be subject to the approval of the Owner.
8. The Contractor must maintain an accurate set of record drawings indicating the date when an area is first denuded, the date of temporary stabilization, and the date of final stabilization. On September 15 of any calendar year, the Contractor shall submit a detailed plan for stabilizing the site for the winter and a description of what activities are planned during the winter.
9. The Contractor must install any added measures which may be necessary to control erosion/sedimentation and fugitive dust emissions from the site, with adjustments made dependent upon forecasted and actual site and weather conditions.

10. The Contractor shall note that no area within 50 feet of a slope with a vertical drop of more than 3' in 50 feet shall remain denuded for a period of over 5 days before it is temporarily stabilized. Temporary stabilization shall be the installation of mulching. All other areas shall be stabilized within 7 days or before a predicted rain event. For construction between September 15 and April 15 of any calendar year, all areas shall be temporarily stabilized at the earlier time frames specified above.

11. Contractor shall be responsible for theirs and their subcontractor's compliance with LEED requirements (construction waste, low voc materials, etc.) and shall provide upon Owner request any documentation or data pertaining to these standards.

12. Certain erosion control products (such as DirtGlue™) come in a form that a release could occur on the site or into the environs. The Contractor shall include MSDS information for all products that have the potential for release to the environment and shall be responsible for implementing a safety control program for proper handling of these materials on the site.

13. The Stormwater Pollution Prevention Plan (SWPPP) is defined to consist of the Erosion Control Report, the Stormwater Management Plan, and the Stormwater O&M Plan. The SWPPP shall be maintained at a secure locked location at the contractor's field trailer from commencement of the project. These documents shall be moved to a designated locked location inside the building(s) at the period when the contractor's trailers are removed and maintained until the Notice of Termination has been filed by the Owner.

A notice and point of contact with cell phone number shall be posted at the trailer to permit access to the records during normal work hours and in case of emergency at other times. All additions and construction records shall be copied via e-mail to the following addresses:

[sbushey@delucahoffman.com](mailto:sbushey@delucahoffman.com)

The Owner reserves the right to add additional personnel to this list at the pre-construction conference or at reasonable intervals during the project.

14. The Owner will provide a copy of the NOI acceptance letter to the Contractor. This letter shall be maintained at the site with the SWPPP.

15. Any revisions to the SWPPP must be authorized in writing by the Preparer of the Plan (DeLuca-Hoffman Associates, Inc.) The Preparer of the Plan shall be permitted reasonable time to review and notify the city and other agencies of said changes. Revisions to the SWPPP will be required:

- a. Whenever the current provisions prove to be ineffective in minimizing pollutants in stormwater discharges from the site;
- b. Whenever there is a change in design, construction, or operation at the construction site that has or could have an effect on the discharge of pollutants; and
- c. To address issues or deficiencies identified during an inspection by the *qualified inspector*, the Department, or other regulatory authority.

16. Should the Owner notify the contractor that the activity on the site is in violation of the SWPPP, the Contractor shall at its sole cost correct the deficiencies and file a photographic log with a list of corrective actions with the Owner within 7 days of notification by the Owner.
17. The project is subject to an approved VRAP Plan and all activities shall be conducted in accordance with these requirements, including, but not limited to, soils handling, disposal and cover treatment.
18. The Contractor shall engage a qualified inspector to monitor the work. This inspector shall be approved by the Owner prior to the individual being engaged on the project. This inspection shall be a part of the Contractor's Quality Control Plan for the project by the Contractor. The inspector's qualifications and duties that he shall perform are as follows:
  - a. Licensed Professional Engineer or Certified Professional in Erosion Control
  - b. Covered by Workman's Compensation Insurance
  - c. Experienced in this type of work, the specific erosion controls applicable to this project with a resume approved by the engineer
  - d. Compensated on a unit rate basis with no incentives for reduced costs or subject to any type of compensation for passing inspections
  - e. Approved by the Owner and the preparer of this plan

The *qualified inspectors* shall conduct site inspections in accordance with the following timetable:

- a. Where soil disturbance activities are on-going, the *qualified inspector* shall conduct a site inspection at least once every seven (7) calendar days.
- b. Where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and temporary stabilization measures have been applied to all disturbed areas, the *qualified inspector* shall conduct a site inspection at least once every thirty (30) calendar days. The *owner or operator* shall notify the City's stormwater contact person or, in areas under the jurisdiction of a *regulated traditional land use control MS4*, the MS4 (provided the MS4 is not the *owner or operator* of the construction activity) in writing prior to reducing the frequency of inspections.
- c. Where soil disturbance activities have been shut down with partial project completion, the *qualified inspector* can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The *owner or operator* shall notify the City's stormwater contact person in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the Contractor shall have the *qualified inspector* perform a final inspection and certify that all disturbed

areas have achieved *final stabilization*, and all temporary, structural erosion and sediment control measures have been removed, and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the "Final Stabilization" and "Post-Construction Stormwater Management Practice" certification statements on the Notice of Termination. The *owner or operator* shall then submit the completed Notice of Termination form to the City of Portland.

At a minimum, the *qualified inspector* shall inspect all erosion and sediment control practices to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved *final stabilization*, all points of discharge to natural surface water bodies located within, or immediately adjacent to, the property boundaries of the construction site, and all points of discharge from the construction site.

The *qualified inspector* shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

- a. Date and time of inspection;
- b. Name and title of person(s) performing inspection;
- c. A description of the weather which shall be consistent with the National Weather Service Forecast Office, Portland-Gray, ME and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;
- d. A description of the condition of the runoff at all points of discharge from the construction site and sampling to determine the turbidity in NTU's. This shall include identification of any *discharges* of sediment from the construction site. Include *discharges* from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;
- e. A description of the condition of all natural surface water bodies located within, or immediately adjacent to, the property boundaries of the construction site which received runoff from disturbed areas. This shall include identification of any *discharge* of sediment to the surface water body;
- f. Identification of all erosion and sediment control practices that need repair or maintenance;
- g. Identification of all erosion and sediment control practices that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;
- h. Description and sketch of areas that are disturbed at the time of the inspection and areas that have been stabilized (temporary and/or final) since the last inspection;



- i. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;
- j. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s); and
- k. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The *qualified inspector* shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.

Within one business day of the completion of an inspection, the *qualified inspector* shall notify the owner the appropriate contractor or subcontractor of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame, at its sole cost.

All inspection reports shall be signed by the *qualified inspector*. The inspection reports shall be maintained on site with the SWPPP and distributed via email at the time of filing.

19. The Owner reserves the right to have quality assurance monitoring of the work. The Contractor shall, at its sole cost, cooperate with the Owner and their quality assurance monitoring of the work including maintaining an accurate schedule for performing the work. The Owner will notify the contractor if any particular elements of the work should be uncovered or available for observation by the Quality Assurance Monitor selected by the Owner. The Owner reserves the right to conduct the quality assurance monitoring during working hours at any time during the project.

**P. PROVISIONS FOR MAINTENANCE OF THE EROSION/SEDIMENTATION CONTROL FEATURES**

The project will be contracted to a General Contractor. The project is subject to the requirements of the local permits, and a state regulated Construction General Permit and Site Location of Development Permit.

This project requires the Contractor to prepare a list and designate by name, address and telephone number all individuals who will be responsible for implementation, inspection, and maintenance of all erosion control measures identified within this section and as contained in the Erosion and Sedimentation Control Plan of the contract drawings. Specific responsibilities of the inspector(s) will include:

1. Execution of the Contractor/Subcontractor Certification contained in Appendix B by any and all parties responsible for erosion control measures on the site as required by the permit authorities.
2. Assuring and certifying the Owner's construction sequence is in conformance with the specified schedule of this section. A weekly certification stating compliance, any deviations, and corrective measures necessary to comply with the erosion control requirements of this section shall be prepared and signed by the inspector(s).
3. In addition to the weekly certifications, the inspector(s) shall maintain written reports recording construction activities on site which include:
  - Dates when major grading activities occur in a particular areas.
  - Dates when major construction activities cease in a particular area, either temporarily or permanently.
  - Dates when an area is stabilized.
4. Inspection of this project work site on a weekly basis and after each significant rainfall event (0.5 inch or more within any consecutive 24-hour period) during construction until permanent erosion control measures have been properly installed and the site has been stabilized. Inspection of the project work site shall include:
  - Identification of proper erosion control measure installation in accordance with the erosion control detail sheet or as specified in this section.
  - Determine whether each erosion control measure is properly operating. If not, identify damage to the control device and determine remedial measures.
  - Identify areas which appear vulnerable to erosion and determine additional erosion control measures which should be used to improve conditions.
  - Inspect areas of recent seeding to determine percent catch of grass. A minimum catch of 90 percent is required prior to removal of erosion control measures.
  - All erosion controls shall be removed within 30 days of permanent stabilization except for mulch and netting not detrimental to the project. Removals shall include but not be limited to all silt fence, hay bales, inlet protection, and stone check dams.
  - Accumulated silt/sediment should be removed when the depth of sediment reaches 50 percent of the barrier height. Accumulated silt/sediment should be removed from behind silt fencing when the depth of the sediment reaches 6 inches.
  - Silt sacks should be removed and replaced at least every three months and at any time where the weekly inspection reveals that siltation has significantly retarded the rate of flow through the silt sack.
  - Discharges should be measured during storm events to document the turbidity of stormwater discharge is <280 NTU.
5. If inspection of the site indicates a change should be made to the erosion control plan, to either improve effectiveness or correct a site-specific deficiency, the inspector shall immediately implement the corrective measure and notify the Owner of the change.

6. Arranging for an on-site meeting prior to commencing winter construction to assure that all special winter construction measures will be implemented and to review the specific requirements of this plan for winter construction.

All certifications, inspection forms, and written reports prepared by the inspector(s) shall be filed with the Owner, and the Permit File contained on the project site. All written certifications, inspection forms, and written reports must be filed within one (1) week of the inspection date.

**The Contractor has sole responsibility for complying with the erosion/sediment control report, including control of fugitive dust, and shall be responsible for any monetary penalties resulting from failure to comply with these standards.**

Once construction has been completed, long-term maintenance of the stormwater management system will be the responsibility of the applicant. Inspection and Maintenance items with a list of maintenance requirements and frequency are described in a separate document. In the event of defective workmanship or any failure by the contractor and its subcontractors to adhere to the Standards set forth in these documents, the Contractor shall be responsible to correct, at its sole cost, any latent defects together with reimbursement of Owner for any expenses borne by the Owner up to the time of said correction. This provision shall remain in effect beyond any stated or implied warranty period.

#### **Q. PRECONSTRUCTION CONFERENCE**

Prior to any construction at the site, representatives of the Contractor, the Owner, and the site design engineer and any personnel identified in the permit conditions shall meet to discuss the scheduling of the site construction and the designation of the responsible parties for implementing the plan. The Contractor shall be responsible for scheduling the meeting. Prior to the meeting, the Contractor will prepare a detailed schedule and a marked-up site plan indicating areas and components of the work and key dates showing date of disturbance and completion of the work. The Contractor shall conduct a meeting with employees and sub-contractors to review the erosion control plan, the construction techniques which will be employed to implement the plan, and provide a list of attendees and items discussed at the meeting to the Owner. Three copies of the schedule, the Contractor's meeting minutes, and marked-up site plan shall be provided to the Owner.

#### **R. APPENDICES**

Appendix A – Seeding Plan

Appendix B – Sample Erosion Control Compliance Certification and Inspection Forms

Appendix C – DirtGlue™ Application and Use Requirements

# **APPENDIX A**

## **Seeding Plan**

**PERMANENT SEEDING PLAN**

**Project:**     Mercy Hospital at the Fore – Phase 2    

**Site Location:**     Portland, ME    

  X   Permanent Seeding          Temporary Seeding

1. **Area to be Seeded:** Approximately   3.0   acre(s) or       /M. Sq. Ft.
2. **Instructions on Preparation of Soil:** Prepare a good seed bed for planting method use (do not overcompact).
3. **Apply Lime as Follows:**                    #/acres or   138#  /M Sq. Ft. or per soil test
4. **Fertilize:**        pounds of            -            N-P-K/ac.  
  20   pounds of 3-27-5 N-P-K/M Sq. Ft. or per soil test
5. **Method of Applying Lime and Fertilizer:** Spread and work into the soil before seeding.
6. **Seed with the following mixture (slice seed in each direction where practical):**

30% Perennial Rye  
35% Kentucky Bluegrass  
35% Penn Lawn Tall Fescue

7. **Mulching Instructions:** Apply at the rate of    tons per acre or   115   pounds per M. Sq. Ft.
8. **Application:**

| Type             | Unit# | Tons, Etc.   |
|------------------|-------|--------------|
| Total Lime       | 138   | #/1,000 s.f. |
| Total Fertilizer | 20    | #/1,000 s.f. |
| Total Seed       | 8.0   | #/1,000 s.f. |
| Total Mulch      | 115   | #/1,000 s.f. |
| Total Other      |       |              |

9. **Remarks:**  
Seeding dates April 15 to May 31 and August 1 until September 1. Permanent seeding should be made prior to September 1 or as a dormant seeding after the first killing frost and before the first snowfall. If seeding cannot be done within these seeding dates, temporary seeding and mulching shall be used to protect the site. Permanent seeding shall be delayed until the next recommended seeding period.

Fertilizer requirements shall be subject to actual test results of the topsoil used for the project. The Contractor shall be responsible for providing topsoil test results for pH and recommended fertilizer application rates to the Owner.

Seed mixture shall be fresh, clean, new crop seed. Seed may be mixed by an appropriate method on the site or may be mixed by the dealer. If the seed is mixed on the site, each variety shall be delivered in the original containers bearing the dealer's guaranteed analysis.

Deep tine aerate if soil is compacted.

If seed is mixed by the dealer, the Seeding Contractor shall furnish to the Owner the dealer's guaranteed statement of the composition of the mixture and the percentage of purity and germination of each variety.

Seed shall be purchased from a recognized distributor and shall test to a minimum percentage of 95% for purity and 85% for germination.

All loam shall have compost or peat admixtures to raise the organic content to 6%.

**TEMPORARY SEEDING PLAN (EROSION CONTROL MIX)**

**Project:**     Mercy at the Fore – Phase 2    

**Site Location:**     Portland, ME    

Permanent Seeding     Temporary Seeding

1. **Area to be Seeded:** Approximately   5   acre(s) or       /M. Sq. Ft.
2. **Instructions on Preparation of Soil:** Prepare a good seed bed for planting method used.
3. **Apply Lime as Follows:**        #/acres or  138# /M Sq. Ft. or per soil test
4. **Fertilize:**        pounds of        -        N-P-K/ac.  
  20   pounds of 10-10-10 N-P-K/M Sq. Ft. or per soil test
5. **Method of Applying Lime and Fertilizer:** Spread and work into the soil before seeding.
6. **Seed with the following mixture:**

|                  |     |
|------------------|-----|
| Annual Rye-grass | 50% |
| Timothy          | 25% |
| Winter Rye       | 25% |
7. **Mulching Instructions:** Apply at the rate of    tons per acre or  230  pounds per M. Sq. Ft.
8. **Application:**

| Type             | Unit# | Tons, Etc.   |
|------------------|-------|--------------|
| Total Lime       | 138   | #/1,000 s.f. |
| Total Fertilizer | 20    | #/1,000 s.f. |
| Total Seed       | 1     | #/1,000 s.f. |
| Total Mulch      | 230   | #/1,000 s.f. |
| Total Other      |       |              |

9. **Remarks:**

For areas with slopes >10% and fall and winter erosion control areas, mulch netting shall be used per manufacturer's specifications.

R Permanent seeding should be made prior to September 1 or as a dormant seeding after the first killing frost and before the first snowfall. If seeding cannot be done within these seeding dates, temporary seeding and mulching shall be used to protect the site. Permanent seeding shall be delayed until the next recommended seeding period.

Fertilizer requirements shall be subject to actual test results of the topsoil used for the project. The Contractor shall be responsible for providing topsoil test results for pH and recommended fertilizer application rates to the Owner.

Seed mixture shall be fresh, clean, new crop seed. Seed may be mixed by an appropriate method on the site or may be mixed by the dealer. If the seed is mixed on the site, each variety shall be delivered in the original containers bearing the dealer's guaranteed analysis. If seed is mixed by the dealer, the Seeding Contractor shall furnish to the Owner the dealer's guaranteed statement of the composition of the mixture and the percentage of purity and germination of each variety.

Seed shall be purchased from a recognized distributor and shall test to a minimum percentage of 95% for purity and 85% for germination.

All loam shall have compost or peat admixtures to raise the organic content to 6%.



## **APPENDIX B**

### **Sample Erosion Control Compliance Certification and Inspection Forms**

**MAINE CONSTRUCTION GENERAL PERMIT  
CONTRACTOR/SUBCONTRACTOR CERTIFICATION**

PROJECT INFORMATION

Project Name:           Mercy at the Fore – Phase 2

Address:                 Portland, Maine

CONTRACTOR/SUBCONTRACTOR INFORMATION

Firm Name:

Address:

Telephone:

Type of Firm:

CERTIFICATION STATEMENT

"I certify under penalty of law that I understand the terms and conditions of the Maine Construction General Permit (MCGP) permit that authorizes the stormwater discharges associated with construction activity from the project site identified as part of this certification."

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Typed Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

**MAINE CONSTRUCTION GENERAL PERMIT  
INSPECTION REPORT**

PROJECT INFORMATION

Project Name:        Mercy at the Fore – Phase 2  
Address:             Portland, Maine

INSPECTOR INFORMATION

Inspector Name: \_\_\_\_\_  
Firm: \_\_\_\_\_  
Title: \_\_\_\_\_  
Qualifications: \_\_\_\_\_  
Weather and Soil Conditions: \_\_\_\_\_

INSPECTION SUMMARY

Date of Inspection: \_\_\_\_\_  
Major Observations: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

1. Attach the following to the Report:
  - a. A description of the condition of the runoff at all points of discharge from the construction site and sampling to determine the NTU. This shall include identification of any *discharges* of sediment from the construction site. Include *discharges* from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;
  - b. A description of the condition of all natural surface water bodies located within, or immediately adjacent to, the property boundaries of the construction site which received runoff from disturbed areas. This shall include identification of any discharge of sediment to the surface water body;
  - c. Identification of all erosion and sediment control practices that need repair or maintenance.
  - d. Identification of all erosion and sediment control practices that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;
  - e. Description and sketch of areas that are disturbed at the time of the inspection and areas that have been stabilized (temporary and/or final) since the last inspection;

- f. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPP and technical standards;
  - g. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s); and
  - h. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The *qualified inspector* shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.
2. Within one business day of the completion of an inspection, the *qualified inspector* shall notify the owner the appropriate contractor or subcontractor of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.
  3. All inspection reports shall be signed by the *qualified inspector*. The inspection reports shall be maintained on site with the SWPP and distributed via email at the time of filing.

THE FACILITY IS IN COMPLIANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN WITH THE FOLLOWING EXCEPTIONS:

---



---



---



---

ACTIONS NECESSARY TO BRING FACILITY INTO COMPLIANCE:

---



---

REQUIRED MODIFICATIONS TO STORMWATER POLLUTION PREVENTION PLAN (MUST BE SUBMITTED WITHIN 2 DAYS OF INSPECTION TO OWNER FOR APPROVAL):

---



---



---



---

CERTIFICATION STATEMENT:

"I certify under penalty of law that this document and all Appendices were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the systems, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

---

Signature

---

Typed Name

---

Title

---

Date

## **APPENDIX C**

### **DirtGlue™ Application and Use Requirements**

**DIRTGLUE™**  
**APPLICATION INSTRUCTIONS FOR DUST CONTROL**

**METHODOLOGY**

**A. Heavy Duty Driving Surface**

**Application Rates (per surface area)**

*DirtGlue™* polymer emulsion: 2,400 gallons  
Water: 3,600 -14,400 gallons

**Application Process**

1. Loosen the existing soil using a scarifying attachment mounted on a grader (or similar piece of equipment) or a tractor with an agriculture disk attachment. If additional soil is required, it should be applied and mixed into the existing soil at this time. It is important to loosen the soil to ensure penetration of the *DirtGlue™*/water mixture into the soil.
2. Apply *DirtGlue™*/water mixture to soil using a water truck equipped with a gravity feed drip bar, spray bar, or automated distributor truck. Multiple passes will be necessary to get the desired amount of *DirtGlue™* polymer emulsion for the specific application. Multiple passes will also ensure gradual, thorough saturation of the soil.
3. Thoroughly blend the *DirtGlue™*/water mixture into the soil with a rototiller, "S" harrow, or similar attachment. The soil must be evenly mixed and saturated with the *DirtGlue™*/water mixture to a depth of four (4") inches.
4. Grade the soil to finish grade with a grader, a small dozer or other suitable equipment.
5. Compact the soil with a vibratory roller. The final compaction should be greater than asphalt (Strive for 100% compaction, but always in excess of 95%).
6. Immediately after compacting, apply a topcoat of *DirtGlue™* polymer emulsion to seal the road surface. In order to ensure a longer life and superior performance of the application, an additional coat should be applied between twenty four to forty eight hours after completion and then annually as an ongoing maintenance procedure. This topcoat should be applied at a rate of 250 gallons per surface acre.

**B. Temporary Light Duty Driving Surface**

This type of application will provide acceptable performance when used by cars and light trucks. It is not intended for constant use by heavy-duty trucks and/or tracked construction equipment. Areas that will be used by this type of equipment should be treated as a heavy-duty application as noted above.

**Application Rates (per surface acre)**

*DirtGlue™* polymer emulsion: 1,200 gallons  
Water: 3,600-6000 gallons

### Application Process:

7. Loosen the existing soil for a depth of two (2") inches using a scarifying attachment mounted on a grader (or similar piece of equipment) or a tractor with a rototiller or agriculture disk attachment. If additional soil is required, it should be applied and mixed into the existing soil at this time. It is important to loosen the soil to ensure penetration of the **DirtGlue™**/water mixture into the soil.
8. Apply **DirtGlue™**/water mixture to soil using a water truck equipped with gravity feed drip bar, spray bar, or automated distributor truck. Multiple passes will be necessary to get the desired amount of **DirtGlue™** polymer emulsion for the specific application. Multiple passes will also ensure gradual, thorough saturation of the soil. Do not apply the **DirtGlue™**/water mixture so heavy as to create run-off.
9. Grade the soil to finish grade with a grader, a small dozer or other suitable equipment.
10. Compact with a vibratory roller. The final compaction should be greater than asphalt (Strive for 100% compaction, but always in excess of 95%).
11. Immediately after compacting, apply a topcoat of **DirtGlue™** polymer emulsion to seal the road surface. In order to ensure a longer life and superior performance of the application, an additional coat should be applied between twenty four to forty eight hours after completion and then again annually as an ongoing maintenance procedure.

### C. Dust & Erosion Control (Non-driving Areas)

This type of application is intended for pedestrian use only. Vehicular use will break through the skin and adversely affect the performance of the application. Areas that will require any vehicular use should be treated as a light-duty application as noted above or retreated as traffic damage occurs.

### Application Rates (per surface acre)

|                                    |   |
|------------------------------------|---|
| <i>DirtGlue™</i> polymer emulsion: | 300 gallons (windblown dust control)<br>600 gallons (bank stabilization, erosion/silt, run-off control) |
| Water:                             | 2,000-6,000 gallons   |

### Application Process

1. Apply *DirtGlue™*/water mixture to existing soil using a water truck equipped with a gravity feed spray bar or tank and pump (i.e. hydro seeder).
2. Add *DirtGlue™* to water rather than water to *DirtGlue™* or place a fill hose at bottom of tank, underneath surface of liquid to prevent foaming.
3. When applying *DirtGlue™*/water mixture, dispense large droplets. Avoid any fine mist. The intent is to apply a sheet of liquid onto the soil.
4. It is important to determine the moisture content of the soil prior to starting an application. The moisture content will have an effect on the dilution ratio of the *DirtGlue™*/water mixture. Your *DirtGlue™* representative will assist you in determining the correct dilution ratio for the conditions on your site.



5. Temperature and, to a lesser extent, humidity have a significant effect on curing/drying time. Testing has shown that applications should be done only when the air temperature will be above 50° F for at least 72 hours following the application. Soil temperature must be above 40° F for several days.
6. The *DirtGlue*™ application must be protected from the rain until the curing process has formed a skin on the surface. Uncured *DirtGlue*™ is water soluble. If the application is exposed to rain before it has the opportunity to cure, the rainwater will dilute the polymer and wash it out of the soil. If this happens, the application will not be as strong.

**CONDITIONS FOR USE OF DIRTGLUE™ (REGISTERED TRADEMARK OF  
DIRTGLUE™ ENTERPRISES)  
APPROVED MATERIALS LIST**

**Applicant: DirtGlue™ Enterprises**

**General Conditions**

1. DirtGlue™ Enterprises shall ensure that every applicator of DirtGlue™™ is provided a copy of these conditions.
2. These Conditions do not override the need for any applicator to obtain permits (including DEP permits) or approvals that may be required (e.g., use associated with activities in or near regulated wetlands, surface waters, or other regulated natural resources).
3. DirtGlue™ shall only be used as stated in these conditions and shall not be mixed with any other chemicals, including petroleum products.
4. No application shall be conducted when the National Weather Service forecasts greater than 25% probability of precipitation in the application area to occur within 24 hours, or the temperature will drop below 35° F anytime within 24 hours after the application.
5. Applications shall not be conducted when the ground is saturated (due to precipitation or wetting) as defined by visible pools of water at or in the vicinity of the application, in order to prevent movement of DirtGlue™ beyond the shoulder of the road.
6. DirtGlue™ must not be applied or handled in a manner that could result in spillage or application within 100 feet of a wetland regulated by New York State, or 50 feet of all other water bodies and bridges.
7. Any spill which could enter the waters of the state shall be reported to the DEC Spills Hotline within two hours (1-800-457-7362). Any required response (including any needed cleanup) in addition to that being conducted shall then be determined by the DEC regional office.
8. The time of application shall be chosen to take meteorological conditions into account, to avoid significant potential airborne or odor impacts.
9. Prior to application, DirtGlue™ Material Safety Data Sheet shall be provided to applicators and others who would come in proximity or contact with the material.

**SECTION 15**  
**GROUNDWATER**

**15.0 Overview**

As evidenced by the Certification of Completion issued by the MeDEP on April 12, 2011, Mercy Hospital has completed remedial actions in accordance with the approval Voluntary Response Action Plan (VRAP) for the property.

A VRAP Completion Report was completed by Hoffman Engineering, Inc. in September 2010 and filed with the MeDEP in September 2010. This report documented the remedial actions that were completed between September 2006 and the fall 2008. Record drawings depicting the cover systems installed during that period were included in the report and have been recorded in the Cumberland County Registry of Deeds. These documents are currently on file with the Bureau of Remediation and Water Management.

**15.1 Existing Conditions**

Numerous soil and groundwater evaluations and assessments have been previously completed on the subject property, including those by the MeDEP, USEPA and Hoffman Engineering, Inc. These reports have been previously submitted to MeDEP. Annual reports are also submitted to the Bureau of Remediation and Waste Management.

The proposed Phase 2 development will substantially raise existing grades in the area of the existing pond, thus eliminating the potential for direct groundwater contact after construction. During construction it may be necessary to dewater the pond area to allow for fill placement. Pond dewatering will require pumping of water to nearby drainage structures. If water conditions include turbid conditions, it may be necessary to pump into a Siltsack™ or equal sediment capture measure.

The site currently contains an above ground 20,000 gallon double wall oil storage tank and an emergency generator containing 500 gallon diesel capacity. These systems will remain in use but will be relocated as part of Phase 2 of the project. Temporary fuel storage at the maintenance building will remain place.

**15.2 Overview of Voluntary Response Action Plan (VRAP)**

As part of the redevelopment of the site, the owner prepared a Voluntary Response Action Plan (VRAP) with the MeDEP Bureau of Waste Management. This plan included the following key components:

- The solid waste was excavated and properly disposed of off the site, including solid waste that was located throughout the existing wetlands on the site. Any lead contaminated ash from the former railroad operations was covered with clean soil/asphalt to prevent direct exposure from ingestion or inhalation.
- No indications of petroleum or hazardous waste impacted soils were found in any location across the site during the development of the Phase 1 Hospital and Medical Office Building.

- A deed restriction was placed on the property that prohibits the use of groundwater on the site, the installation of monitoring wells, and future excavation without consent of the MeDEP.
- The aforementioned engineered controls have been placed under an operation and maintenance program and inspected on an annual basis.

### **15.3 Groundwater Protection Plan**

A spill prevention and contingency plan will be incorporated into the construction requirements to minimize the potential for, and impacts from, a spill or release of oil or hazardous wastes during construction. Post-construction, a similar plan will be utilized by the hospital in their operations.

The site will utilize water quality enhancing catch basin structures and other related stormwater BMP's to remove contaminants, oil and sediment prior to the stormwater runoff being discharged to the Fore River.

### **15.4 Monitoring Plan**

As required under the VRAP, all existing monitoring wells have been closed by grouting or removal of the well screen and riser. As such, there are no plans for future groundwater monitoring at the site. Based on the proposed grading, groundwater will not be encountered only during the initial fill placement activity in the pond area. Personnel from Hoffman Engineering, Inc. will oversee activities in/below groundwater to insure compliance with VRAP requirements.

### **15.5 Conclusions**

Based on the Hoffman Engineering, Inc. findings before and during Phase 1 construction, a VRAP Completion Report was submitted to the MeDEP Bureau of Waste Management in September 2010. The VRAP Completion Report outlines the methods and procedures dealing with the various sources of contamination on the site. Ongoing monitoring and reporting will be performed during the full duration of Phase 2 construction activities and any updates to the VRAP will be coordinated with the Bureau of Remediation and Waste Management.

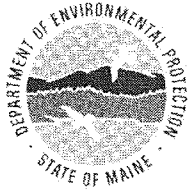
### **15.7 Attachments**

Attachment A – Commissioner's Certification of Completion of Remedial Actions under a Voluntary Response Action Plan.

Attachment B – Spill Prevention and Contingency Plan

**ATTACHMENT A**

**Commissioner's Certification of Completion of Remedial  
Actions Under a Voluntary Response Action Plan**



STATE OF MAINE  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
STATE HOUSE STATION 17 AUGUSTA, MAINE 04333

DEPARTMENT ORDER

**IN THE MATTER OF**

MERCY HOSPITAL )  
FORE RIVER CAMPUS ) COMMISSIONER'S CERTIFICATION  
PORTLAND, MAINE ) OF COMPLETION OF REMEDIAL  
 ) ACTIONS UNDER A VOLUNTARY  
 ) RESPONSE ACTION PLAN

JURISDICTION

This certification of completion of a Voluntary Response Action Plan ("VRAP") is made pursuant to the authority vested in the Commissioner of the Maine Department of Environmental Protection ("Department") or the Commissioner's delegee under 38 M.R.S.A. Section 343-E.

FINDINGS OF FACT

1. The covered property (property and/or site) is Mercy Hospital at the Fore in Portland, Maine and is identified as Portland Tax Map/Block/Lot 73/A/1, 73/B/2, 73/B/7, 74/A/1, 74/B/3, 74A/A/1, 75/A/3, 75A/A/1, 75A/A/17, 75/B/4, 76A/B/1, 76/B/33, and 76A/B/2. (The property was identified in the April 4, 2002 No Action Assurance ("NAA") letter as 73/A/1, 74/A/2, 74/A/22, 74/A/1, 75/A/3, 75/A/17, 76/A/1, and 76/A/33; the revised lot numbers reflect the changes to the tax maps that resulted from the Fore River Parkway construction circa 2005.) The property consists of 85.5 acres of land, approximately half of which is currently developed. A Site Locus Map of the property is included as Attachment A. A boundary survey of the property is recorded in the Cumberland County Registry of Deeds Book 207 Page 182.
2. Historically, various railroad companies have owned portions of the property for at least the past 50 years. In the late 1980s and 90s the railroad activities ceased and all but one set of tracks were removed. The site also contained two buildings and a gravel pit.
3. The property use in the area is commercial and industrial. Public water and sewer serve the area within 2,000 feet of the site.
4. Hoffman Engineering, Inc. (HEI) conducted a Phase I Environmental Site Assessment for the property and a Limited Phase II ESA, which were included in a Site Characterization Report dated February 2002. These assessments identified the following issues at the site: lead containing ash, petroleum contaminated soils, and a septic system and floor drain system.

MERCY HOSPITAL  
FORE RIVER CAMPUS  
PORTLAND, MAINE

2 COMMISSIONER'S CERTIFICATION  
) OF COMPLETION OF REMEDIAL  
) ACTIONS UNDER A VOLUNTARY  
) RESPONSE ACTION PLAN

5. The Department issued a NAA letter on April 4, 2002. Remedial actions required for this site by the NAA letter included: disposal of trash and debris, disposal of the dross pile, excavation and disposal of railroad ties, lead testing of on-site loam prior to its reuse, elimination of the risk from direct contact with contaminated soil through either removal of the material to an appropriate disposal facility or covering the material with a minimum of 4 inches of clean fill or consolidation of material and capping with parking lots, installation of a marker layer in areas where cover material is less than 12 inches, creation of clean corridors for utilities, investigation of floor drains in the existing building, capping by parking lot areas of unsaturated petroleum contaminated soil excavated on-site, and appropriate disposal off site of saturated soils encountered on-site. Similar remedial actions, and the remaining remedial actions required by the NAA letter, were conducted under a Voluntary Response Action Plan by the Maine Department of Transportation on the contiguous portions of the Fore River Parkway. This roadway is identified by the City of Portland as Tax Map/Block/Lot 76/A/1. That work was completed on December 15, 2005.
6. A report titled Voluntary Response Action Plan Completion Report of Mercy Hospital at the Fore was submitted to the Department by HEI in September 2010. This report documented the remedial actions that were completed between September 2006 and the fall of 2008. As-built plans of the cover systems were included in this report. These As-built Plans are recorded in the Cumberland County Registry of Deeds Plan Book 211, Pages 39, 40, 41 and 42.
7. The actions required by the VRAP's No Action Assurance Letter dated April 4, 2002, have been completed to the satisfaction of the Department.

#### CONCLUSIONS

Mercy Health Systems of Maine submitted a Voluntary Response Action Plan application to the Commissioner pursuant to 38 M.R.S.A. § 343-E for the property located on Fore River Parkway in Portland, Maine identified as City of Portland Tax Map/Block/Lot 73/A/1, 73/B/2, 73/B/7, 74/A/1, 74/B/3, 74A/A/1, 75/A/3, 75A/A/1, 75A/A/17, 75/B/4, 76A/B/1, 76/B/33, and 76A/B/2.

1. Site assessments conducted at the site included investigations and reports that adequately identified the nature and extent of contamination at the site.
2. Remedial actions addressing potential sources of contamination on the property have been completed. These actions included removal and or installation of a cover system in accordance with the No Action Assurance letter issued in April 2002.

MERCY HOSPITAL  
FORE RIVER CAMPUS  
PORTLAND, MAINE

3 COMMISSIONER'S CERTIFICATION  
) OF COMPLETION OF REMEDIAL  
) ACTIONS UNDER A VOLUNTARY  
) RESPONSE ACTION PLAN

3. Provided that Mercy Health Systems of Maine and Mercy Hospital, and their successors and/or assigns, comply with the conditions of this certification, the response actions that have been completed and the activities associated with the continued use of the site will not cause, contribute, or exacerbate releases, or threatened releases, if they exist at the site, that are not required to be removed under the VRAP.

THEREFORE, pursuant to 38 M.R.S.A. § 343-E(5), Ronald E. Dyer, Director, Bureau of Remediation and Waste Management, certifies, subject to the conditions set forth below, that remedial actions have been completed at the Mercy Hospital property described above and referenced by a boundary survey of the property recorded in the Cumberland County Registry of Deeds Book 207 Page 182.. Upon issuance of this CERTIFICATE, Mercy Health Systems of Maine, Mercy Hospital, and the persons qualified for protection under 38 M.R.S.A. § 343-E(6) are entitled to the protection from liability to the extent provided by 38 M.R.S.A. §343-E(1) and (5). This protection from liability is limited to the matters addressed by and identified by the environmental reports and is subject to the qualifications and conditions set forth below and in 38 M.R.S.A. § 343-E.

CONDITIONS

1. The cover systems will be inspected annually and maintained. Inspection reports will be maintained onsite and available to the Department upon request. Training and as-built drawings will be provided to facilities maintenance staff related to the cover systems.
2. No groundwater extraction wells will be installed on the property without the written permission of the Department.
3. Excavation in the covered areas, beneath the cover systems, is prohibited without written permission of the Department.
4. A copy of this certificate shall be recorded at the Cumberland County Registry of Deeds. A copy of the recorded document must be supplied to the Department.
5. A Declaration of Environmental Covenants, as defined in 38 M.R.S.A. § 3001 et seq., consistent with this Certificate that is acceptable to the Department, must be prepared and recorded at the Cumberland County Registry of Deeds. A copy of the recorded document must be supplied to the Department.



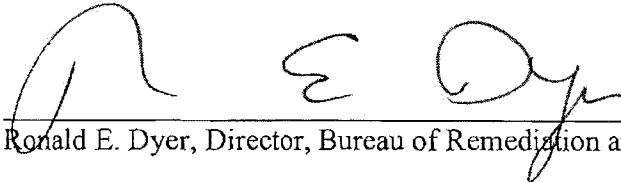
MERCY HOSPITAL  
FORE RIVER CAMPUS  
PORTLAND, MAINE

4 COMMISSIONER'S CERTIFICATION  
) OF COMPLETION OF REMEDIAL  
) ACTIONS UNDER A VOLUNTARY  
) RESPONSE ACTION PLAN

DONE AND DATED AT AUGUSTA, MAINE, THIS 13<sup>th</sup> DAY OF APRIL 2011.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

By:

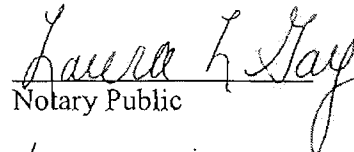
  
\_\_\_\_\_  
Ronald E. Dyer, Director, Bureau of Remediation and Waste Management

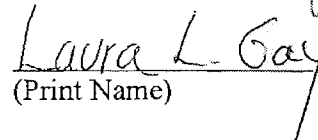
STATE OF MAINE  
KENNEBEC, ss.,

April 12<sup>th</sup>, 2011

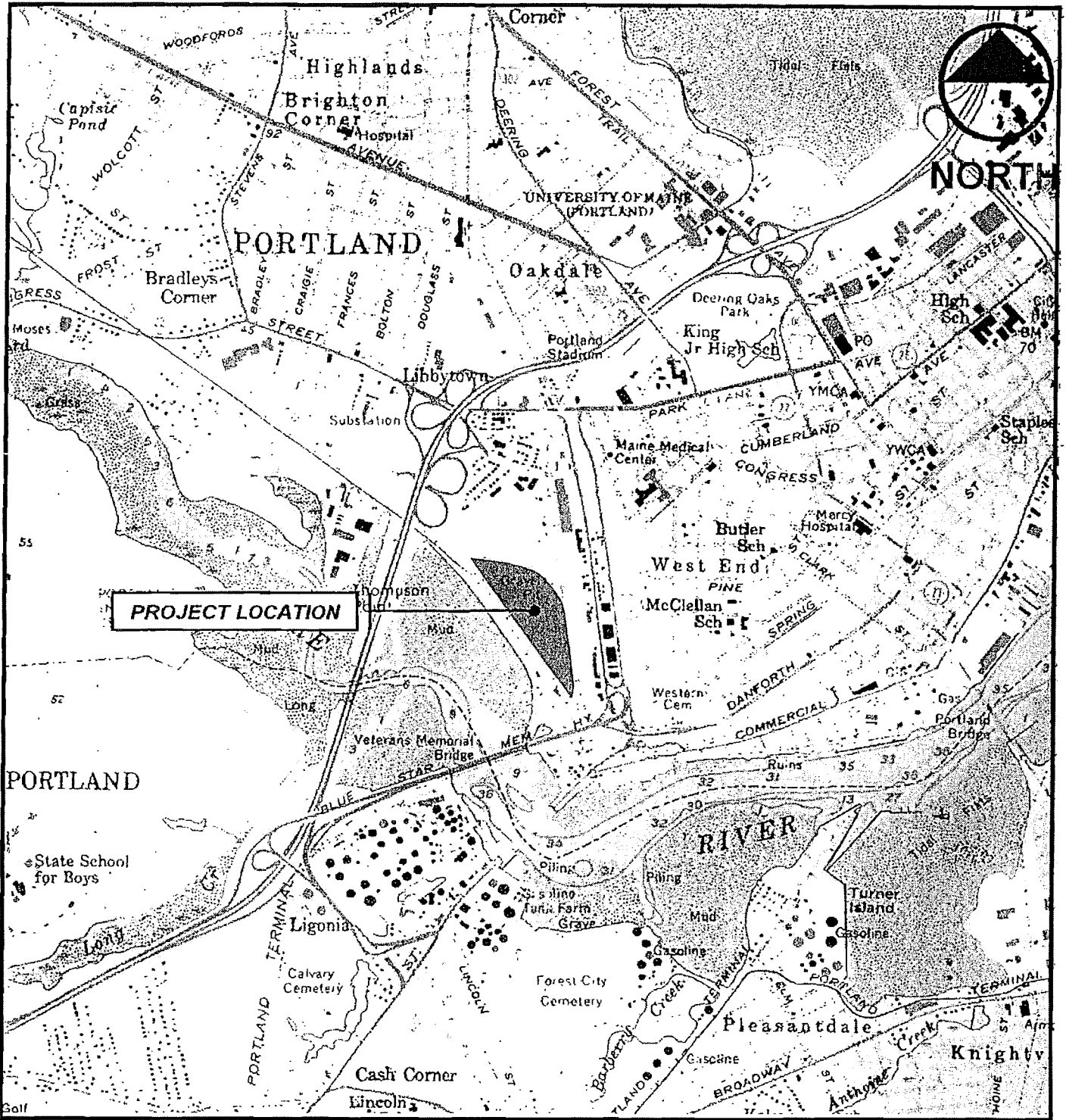
Then personally appeared the above-named Ronald E. Dyer, Director of Remediation and Waste Management, and acknowledged the foregoing instrument to be his free act and deed, and the free act and deed of the Department of Environmental Protection.

Before me,

  
\_\_\_\_\_  
Notary Public

  
\_\_\_\_\_  
(Print Name)

This order was prepared by Jean Firth, Bureau of Remediation & Waste Management.



**HEI**

HOFFMAN ENGINEERING, INC.  
 640 Ten Rod Rd.  
 North Kingstown, RI 02852

**LOCUS MAP**

MERCY HOSPITAL AT THE FORE

VRAP COMPLETION REPORT

PORTLAND, MAINE

Date: 5-7-10

By: MMA

Base USGS Quad:  
 Portland West, ME  
 NTS

*Attachment A*

**ATTACHMENT B**

**Spill Prevention and Contingency Plan**

**OIL SPILL PREVENTION, CONTROL AND COUNTERMEASURE PLAN**

**MERCY HOSPITAL  
175 FORE RIVER PARKWAY  
PORTLAND, MAINE 04102**

Prepared for:  
Mercy Hospital  
144 State Street  
Portland, Maine 04101

January 2009

## Table of Contents

|  |    |
|--|----|
| SPCC Plan Review Dates.....  | 2  |
| Management Approval of SPCC Plan.....  | 3  |
| Mercy Hospital Contact for SPCC Plan.....  | 3  |
| Professional Engineer's Certification.....   | 4  |
| Section 1: Facility Overview – 112.7(a)(3).....  | 5  |
| Section 2: SPCC Conformance/Additional Measures – 112.7(a)(1).....                       | 5  |
| Section 3: Discharge Discovery, Response and Cleanup – 112.7(a)(3).....                  | 5  |
| Section 4: Discharge Reporting Procedures and Notification List – 112.7(a)(3) & (4)..... | 5  |
| Section 5: Fault Analysis – 112.7(b).....  | 6  |
| Section 6: Secondary Containment – 112.7(c).....   | 6  |
| Section 7: Inspections, Tests and Records – 112.7(e).....                                | 7  |
| Section 8: Personnel Training and Briefings – 112.7(f).....                              | 7  |
| Section 9: Security – 112.7(g).....  | 8  |
| Section 10: Conformance with State Requirements – 112.7(j).....                          | 8  |
| Section 11: Drainage – 112.8(b).....   | 8  |
| Section 12: Bulk Storage Containers – 112.8(c).....                                      | 8  |
| Section 13: Transfer Operations – 112.8(d).....  | 9  |
| Section 14: Non-applicable regulations.....  | 10 |

### ATTACHMENTS

- Attachment A: Documentation of Five-Year Review
- Attachment B: Site Location Map and Site Plan
- Attachment C: Spill Reporting Information Form
- Attachment D: Quarterly Inspection Checklist
- Attachment E: Certification of Substantial Harm Non-Applicability

**SPCC Plan Review Dates**

**Five-year Reviews - 112.5(b)**

Mercy Hospital will review this Spill Prevention, Control & Countermeasure (SPCC) Plan at least every five years and document whether the SPCC Plan will or will not be amended as a result. Following such a review, Mercy Hospital is required to amend the SPCC Plan within six months to include more effective spill prevention technology if such technology has been field-proven and will significantly reduce the likelihood of an oil discharge at Mercy Hospital. A Registered Professional Engineer must certify any technical amendment(s) to the SPCC Plan. The amendment(s) must be implemented within six months of the SPCC Plan amendment. Mercy Hospital's periodic SPCC Plan reviews are noted in the log below. The required documentation for whether the SPCC Plan will or will not be amended following a review is contained in Attachment A to this SPCC Plan.

**SPCC Plan Amendments - 112.5(a)**

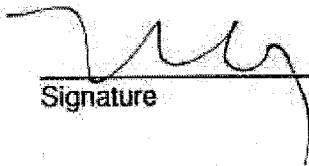
Mercy Hospital will amend this SPCC Plan within six months of a change in facility design, construction, operation or maintenance that materially affects its potential for a discharge. The amendments must be implemented within six months of the SPCC Plan amendment. Such SPCC Plan amendments must be certified by a Registered Professional Engineer. Mercy Hospital's SPCC Plan amendments are summarized in the following log.

| <b>Date</b>  | <b>Comments</b>    | <b>Mercy Hospital Representative</b> |
|--------------|--------------------|--------------------------------------|
| January 2009 | Original SPCC Plan | Michael Connolly                     |
|              |                    |                                      |
|              |                    |                                      |
|              |                    |                                      |

**Management Approval of SPCC Plan**

Mercy Hospital is committed to prevent the release of oil to the environment, and pledges to commit the resources necessary to implement this SPCC Plan.

**MICHAEL CONNOLLY, DIRECTOR OF PLANT AND ENGINEERING**  
Printed Name and Title of Management Representative



Signature

01/30/2009  
Date


**Mercy Hospital Contact for SPCC Plan**

Name: Michael Connolly  
Title: Director of Plant and Engineering  
Phone # (office): (207) 879-3574  
Phone # (cell): (207) 653-4712  
Address: 175 Fore River Parkway  
Portland, Maine 04102

**Professional Engineer's Certification**

The undersigned Registered Professional Engineer is familiar with the requirements of Chapter 40 of the Code of Federal Regulations Part 112 (40CFR112) and has inspected the above ground fuel oil storage tanks at Mercy Hospital located on the Fore River Parkway in Portland, Maine. The undersigned Registered Professional Engineer attests that this SPCC Plan has been prepared in accordance with good engineering practices including applicable industry standards, and in accordance with the requirements of 40CFR112; that procedures have been established for required inspections and testing; and that the SPCC Plan is adequate for the facility.

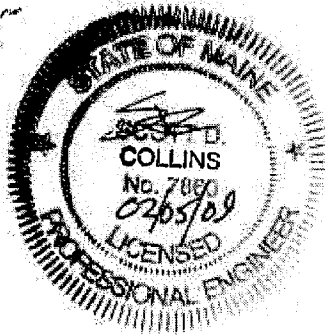
Engineer's Name and Contact Info: Scott Collins, P.E.  
St. Germain & Associates, Inc.  
846 Main Street, Suite 3  
Westbrook, ME 04092  
Phone: (207) 591-7000

  
Signature

02/05/09  
Date

7860/Maine  
Registration #/State

Stamp or Seal:





**Section 1: Facility Overview – 112.7(a)(3)**

Mercy Hospital is located on the Fore River Parkway in Portland, Maine (see Site Location Map, in Attachment B). Mercy Hospital's oil storage capacity exceeds the SPCC applicability threshold of 1,320 gallons. Therefore, this SPCC Plan has been prepared to comply with EPA's Oil SPCC Regulations contained in 40CFR112, as amended through February 26, 2007.

The term "oil" is defined in 40CFR112 broadly and includes such materials as gasoline, waste oil, non-petroleum oil and oily sludge. The oil handling and storage equipment addressed in this SPCC Plan are:

- One 30,000-gallon No. 2 fuel oil storage tank
- One 7,000-gallon diesel fuel storage tank

The 30,000-gallon No. 2 fuel oil tank is located northeast of the main hospital building, and is used to store fuel oil for the hospital's main boiler. The tank is cylindrical, horizontal and manufactured of double-wall steel. The 7,000 diesel fuel tank is located beneath the generator, and is used to store fuel for the generator. This tank is manufactured of double-wall steel. The tank locations are shown on the Site Plan in Attachment B. Three oil-filled transformers (owned by others) are also shown on the Site Plan.

Storm water catch basins located on the Mercy Hospital property drain to the Fore River.

**Section 2: SPCC Conformance/Additional Measures – 112.7(a)(1)**

Mercy Hospital's oil storage is in compliance with all applicable regulations required by the SPCC rule. If changes or modifications are made to the tanks at the hospital that would require additional measures, a Registered Professional Engineer will inspect the tanks and re-certify the SPCC Plan accordingly.

**Section 3: Discharge Discovery, Response and Cleanup – 112.7(a)(3)**

Regarding initial response actions, the emergency contacts (listed in the following section) will make the initial discharge assessments and direct any Mercy Hospital response actions. Mercy Hospital personnel are capable of responding to and cleaning up certain small spills and/or leaks. In the event of a large spill and/or leak, Mercy Hospital's emergency contact person will contact an off-site spill response company for assistance. The name and phone number of a selected organization is listed in the following section. Contaminated cleanup materials will be handled and disposed of in accordance with applicable state and federal requirements.

**Section 4: Discharge Reporting Procedures and Notification List – 112.7(a)(3) & (4)**

Should a release of oil at Mercy Hospital result in free oil or sheen upon navigable water, 40CFR112.7(a)(3) & (4) requires that Mercy Hospital personnel collect certain information regarding the release in order to provide for effective communication to federal, state and local agencies. Attachment C contains a spill reporting information form that should be filled out prior to reporting such a release to public agencies.

In the event of a spill and/or leakage of oil at Mercy Hospital, the following individuals and/or agencies should be contacted as indicated.

**For all oil spills, leaks and discharges:**

Mercy Hospital's emergency contacts:

| Name  | Office Phone   | Cell Phone     | Pager          |
|---|----------------|----------------|----------------|
| <b>(Primary)</b><br>Director of Plant and Engineering     | (207) 879-3574 | (207) 653-4712 | (207) 741-1196 |
| <b>(Alternate)</b><br>Supervisor of Plant and Engineering | (207) 822-2455 | (207) 317-1398 | (207) 741-0527 |

Maine DEP Spill Hotline: 1-800-482-0777

**For conditions posing a potential fire/safety hazard:**

Fire Department and Police: 911

**For any spills or leaks causing free oil or sheen on navigable water:**

National Response Center: 1-800-424-8802

**For spills/leaks requiring an off-site response contractor:**

Clean Harbors Environmental Services, Inc. (South Portland, ME): 1-800-526-9191

**Section 5: Fault Analysis – 112.7(b)**

As required by 40CFR112.7(b), this section provides information on possible major failures that could conceivably cause an oil discharge to navigable waters. All predictions are worst-case scenarios.

| Tank(s)        | Quantity    | Location                            | Containment | Potential Spill Pathway   |
|----------------|-------------|-------------------------------------|-------------|---|
| No. 2 Fuel Oil | 30,000 gals | Northeast of main hospital building | Double wall | A rupture of the tank would release fuel oil onto the ground. The fuel oil would then likely flow in a westerly direction towards catch basins that discharge to the Fore River.            |
| Diesel Fuel    | 7,000 gals  | Southeast of main hospital building | Double wall | A rupture of the tank would release diesel fuel onto the ground. The diesel fuel would then likely flow in a southwesterly direction towards catch basins that discharge to the Fore River. |

**Section 6: Secondary Containment – 112.7(c)**

The 30,000-gallon fuel oil tank is a double-wall tank located on a concrete pad. There is no secondary containment provided for the tank. The tank is equipped, however, with the following equipment/controls to prevent the release of fuel oil:

- i) a direct reading product level clock gauge;
- ii) a locking 13 gallon overfill spill containment box;
- iii) a check valve and ball valve on fill pipe to prevent the release of fuel from the tank by siphon flow;
- iv) audible/visual overfill alarm that sounds when tank reaches 90 percent of its capacity and an automatic shutoff that automatically closes when the tank reaches 95 percent of its capacity;
- v) a 4-inch normal vent and a 10-inch emergency vent (mounted in manway cover);

- vi) all piping connections to the tank are located above the normal maximum liquid level; and
- vii) metal guard rails (to be installed by July 24, 2008) on the south side of the tank to protect the tank from impact from vehicles.

The secondary leak tank for the 30,000-gallon tank is equipped with a 2-inch annular space monitoring tube, a 2-inch normal vent, and an 8-inch emergency vent.

The 7,000-gallon fuel oil tank is a double-wall tank located on a concrete pad beneath the generator. There is no secondary containment provided for the tank. The tank is equipped, however, with the following equipment to prevent the release of fuel oil:

- i) a locking 5 gallon overfill spill containment box
- ii) a 2-inch audible vent alarm, and an 8-inch emergency vent;
- iii) a 7,700-gallon rupture basin with a "rupture" alarm; and
- iv) all piping connections to the tank are located above the normal maximum liquid level;

#### **Section 7: Inspections, Tests and Records – 112.7(e)**

Mercy Hospital has developed an inspection checklist that includes all of the quarterly inspections required by 40CFR112.7(e). Mercy Hospital's inspection checklist is included in Attachment D. A written record of each inspection, including the signature of the inspector, will be kept with the SPCC Plan for at least three years from the date of the inspection.

#### **Section 8: Personnel Training and Briefings – 112.7(f)**

##### **Training – 112.7(f)(1)**

Mercy Hospital personnel involved with the direct handling of oil will receive training on the following topics:

- proper operation and maintenance of equipment to prevent discharges;
- emergency procedures in the event of a spill or leak;
- applicable pollution control laws and regulations;
- general boiler room and generator operation; and
- the general contents of this SPCC Plan.

##### **Responsible Individual for SPCC – 112.7(f)(2)**

The Director of Plant and Engineering is the primary individual responsible for implementation of the SPCC Plan.

##### **Briefings – 112.7(f)(3)**

The Director of Plant and Engineering will conduct oil spill prevention briefings for oil-handling personnel on at least an annual basis. The briefings will include a review of any recent oil discharges at the Mercy Hospital and how to prevent re-occurrence, and identification of any current malfunctioning equipment and associated precautionary measures.

**Section 9: Security – 112.7(g)**

Fencing – 112.7(g)(1)

The tanks are located within separate totally enclosed fenced in areas with gated access (see Site Plan in Attachment B). The gates are locked at all times.

Lighting – 112.7(g)(5)

The areas surrounding the tanks are provided with adequate lighting to deter vandalism and to allow Mercy Hospital personnel to identify a significant spill during hours of darkness.

**Section 10: Conformance with State Requirements – 112.7(j)**

The State of Maine currently does not have regulations pertaining specifically to spill prevention and control for aboveground oil storage facilities. In 2002, the Maine Legislature passed a law (38 M.R.S.A. Section 570-K) that gave the Maine Department of Environmental Protection the authority to oversee compliance with EPA's Oil SPCC Regulations for facilities used to market and distribute oil to others. Mercy Hospital does not market or distribute oil to others.

**Section 11: Drainage – 112.8(b)**

Drainage Control in Undiked Areas – 112.8(b)(3) & (4)

In the event of an oil spill or leak in undiked areas, Mercy Hospital personnel will use absorbent materials to prevent oil from reaching navigable waters. Spill cleanup materials are located in the boiler room.

**Section 12: Bulk Storage Containers – 112.8(c)**

The following provisions apply to each of the tanks addressed in this SPCC Plan.

Compatible Material and Construction – 112.8(c)(1)

The 30,000 and 7,000 gallon fuel oil tanks are constructed of welded steel (UL-142 and UL-2085). The tanks are compatible with the oil being stored.

Secondary Containment for Bulk Storage Containers – 112.8(c)(2)

Secondary containment is discussed in Section 6 of this SPCC Plan.

Integrity Testing – 112.8(c)(6)

40CFR112(c)(6) requires that bulk storage tanks be tested for integrity on a regular schedule, and that the testing consist of visual inspections combined with another testing technique. Under current EPA policy, the sole use of visual inspections is considered equivalent environmental protection for well-designed shop-built tanks having a capacity of less than 30,000 gallons, and installed in one of the following two configurations:

- Tank is elevated in a manner that prevents direct contact with soil and allows for all sides, including the bottom, to be visible during inspections (e.g., horizontal tanks mounted on saddles or supports); or

- Placement of a barrier between the tank and the ground, and designed and operated to immediately detect leaks (e.g., vertical tanks installed on a synthetic liner).

According to EPA, the above policy is not appropriate in situations where a tank is currently in direct contact with the ground, or has been managed in a way that presents risks for corrosion, or that currently shows signs of corrosion.

The tanks meet the requirements above. Therefore, quarterly visual inspections will be performed on the tanks. Certified tank inspections will be performed every ten years and/or when visual observations indicate a potential problem with their condition.

#### Overfill Protection – 112.8(c)(8)

The 30,000 gallon fuel oil tank is equipped with a direct reading product level clock gauge. The tank is equipped with an audible/visual overfill alarm which activates when tank contents reaches 90% of the tank capacity. The monitoring panel is located in the boiler room, and provides a high level alarm signal to an alarm box located at one end of the tank. A sign is also mounted near the alarm box, which reads **“CAUTION WHEN ALARM BELL SOUNDS OIL TANK FILLED TO CAPACITY DO NOT OVERFILL”** The tank is also equipped with an electronic level gauge and leak detection sensors. The leak sensors are mounted in the annular space within the tank.

The 7,000 gallon diesel fuel tank is equipped with an audible vent alarm.

#### Prompt Equipment Repairs and Oil Removal – 112.8(c)(10)

Any visible oil leaks from either a tank or piping should immediately be reported to Mercy Hospital's emergency contact. Steps will be taken to eliminate or reduce further leaking. Any leaked material will be cleaned up promptly.

#### Secondary Containment for Portable and Mobile Containers – 112.8(c)(11)

Any portable oil storage containers (i.e., 55-gallon drums) brought to Mercy Hospital will be located in an area provided with secondary containment.

### **Section 13: Transfer Operations – 112.8(d)**

#### Corrosion Protection for Buried Piping – 112.8(d)(1)

30,000 gallon fuel oil tank: all underground piping (supply and return) is flexible double-wall located within HDPE jack pipe that pitches to the containment sump located outside the boiler room. This sump is equipped with a leak detection sensor, as well as, the two sumps (supply and return) at the tank.

Pipe Supports – 112.8(d)(3)

30,000 gallon fuel oil tank: transfer piping inside the building is steel and is supported by clamps attached to the walls and ceiling in the boiler room.

Inspection and Testing – 112.8(d)(4)

All above ground piping/hosing, valves and appurtenances will be inspected on a quarterly basis for signs of leakage (see Attachment D).

**Section 14: Non-applicable regulations**

The following regulations do not apply to Mercy Hospital:

Contingency Planning – 112.7(d): Mercy Hospital will comply with containment provisions.

Master Flow and Drain Valves – 112.7(g)(2): no master flow or drain valves are present.

Out-of-Service Piping – 112.7(g)(4) & 112.8(d)(2): no out-of-service piping present.

Oil Pump Starter Controls – 112.7(g)(3): no oil pump starter controls present.

Tank Truck Loading/Unloading – 112.7(h): no loading/unloading racks present.

Brittle Fracture Evaluation for Field-Constructed Tanks – 112.7(i): no such tanks present.

Drainage from Diked Areas – 112.8(b)(1)(2): no containment dikes present.

Redundancy for Continuous Treatment Units – 112.8(b)(5): no such equipment present.

Buried Metallic Storage Tanks – 112.8(c)(4) & (5): no such tanks are present.

Internal Heating Coils – 112.8(c)(7): none present.

Effluent Treatment Facilities – 112.8(c)(9): none present.

Warning Signs for Vehicular Traffic – 112.8(d)(5): no traffic present in vicinity of tanks.

**SECTION 16**

**WATER SUPPLY**

**16.0 Overview**

The proposed Mercy Hospital Phase II Relocation Project will continue to be served by the Portland Water District's municipal water system. A new water main extension was previously installed to serve the site. The new water main connects to an existing 12" water line originating south of the site and to an existing 16" water line originating from County Way. This provides a looped system for improved flow and pressure and also allows redundancy in the event of a main break or service needs. Public water is anticipated to be used for the following purposes:

- Domestic uses
- Mechanical uses
- Fire protection
- Irrigation

**16.1 Usage**

Mercy Hospital has provided the following water and wastewater flows for the Phase 1 Fore River Hospital site:

| <u>Year</u>    | <u>Avg Daily Water Use (GPD)</u> | <u>Avg. Daily Wastewater Flow (GPD)</u> |
|----------------|----------------------------------|---|
| 2009           | 20,974                           | 17,884                                  |
| 2010           | 21,526                           | 17,164                                  |
| 2011           | 18,066                           | 12,157                                  |
| Year to Date*  | <u>12,713</u>                    | <u>12,152</u>                           |
| <b>Average</b> | <b>18,319 GPD</b>                | <b>14,839 GPD</b>                       |

\*thru April 2012

The following domestic water use projections are provided based on the existing water use records and Maine State Plumbing Code:

| <b>User</b>         | <b>Number of Users</b> | <b>Rate Per User</b> | <b>Avg. Daily Flows</b> |
|---------------------|------------------------|----------------------|-------------------------|
| Hospital (Existing) | Per Records            | 0.13 gals/SF         | 18,319 GPD              |
| Hospital (Phase 2)  | 250,000 SF             | 0.13 gals/SF         | 32,500 GPD              |
| ACC                 | 60 Medical Staff       | 80 gals/day          | 4,800 GPD               |
|                     | 400 Patients           | 5 gals/day           | 2,000 GPD               |
|                     | 20 Office Staff        | 15 gals/day          | 300 GPD                 |
| Future MOB          | 60 Medical Staff       | 15 gals/day          | 900 GPD                 |
|                     | 200 Patients           | 5 gals/day           | 1,000 GPD               |
|                     | 20 Office Staff        | 15 gals/day          | 300 GPD                 |
| Future MOB          | 100 Medical Staff      | 15 gals/day          | 1,500 GPD               |
|                     | 400 Patients           | 5 gals/day           | 2,000 GPD               |
|                     | 20 Office Staff        | 15 gals/day          | 300 GPD                 |
| <b>TOTAL</b>        |                        |                      | <b>63,919 GPD</b>       |

**16.2 Ability to Serve**

The Portland Water District has been provided a letter requesting an updated letter concerning their ability to serve the project. Their response will be provided upon receipt.

**16.4 Attachments**

Attachment A Letter from DeLuca-Hoffman Associates, Inc. to the Portland Water District requesting affirmation of their ability to serve the project.

Attachment B Letter from the Portland Water District to DeLuca-Hoffman Associates, Inc. confirming their ability to serve the project. (To be provided upon receipt.)

Attachment C Mercy Hospital Daily Water Flow Summary



**ATTACHMENT A**

**Letter from DeLuca-Hoffman Associates, Inc.  
to the Portland Water District  
requesting affirmation of their ability to serve the project**



DeLUCA-HOFFMAN ASSOCIATES, INC.  
CONSULTING ENGINEERS

778 MAIN STREET  
SUITE 8  
SOUTH PORTLAND, MAINE 04106  
TEL. 207 775 1121  
FAX 207 879 0896

- SITE PLANNING AND DESIGN
- ROADWAY DESIGN
- ENVIRONMENTAL ENGINEERING
- PERMITTING
- AIRPORT ENGINEERING
- CONSTRUCTION ADMINISTRATION

July 11, 2012

Mr. Rico Spugnardi, Means Coordination  
Portland Water District  
225 Douglass Street  
PO Box 3553  
Portland, Maine 04104-3553

**Subject: Proposed Phase 2 Mercy Hospital Relocation Project  
Portland, Maine  
Request for Ability to Serve Letter**

Dear Mr. Spugnardi:

Our office has been retained by Mercy Hospital to prepare site plans and assist with permitting for the proposed Phase 2 Mercy Hospital relocation project at the Fore River campus. On behalf of Mercy Hospital, we are requesting a letter reaffirming the ability of the Portland Water District to provide continued water service to the proposed facility.

The project will consist of the Phase 2 relocation of Mercy Hospital from their State Street facility to the Fore River campus. The site already is served by a water supply system installed in 2006-08. Based on preliminary design, we anticipate the need for some water main relocations and new service extensions as build out proceeds.

The project will consist of the Phase 2 relocation of Mercy Hospital from their State Street facility to the Fore River campus.

Mercy Hospital has provided the following water and wastewater flows for the Phase 1 Fore River Hospital site:

| Year           | Avg. Daily Water Use<br>(GPD) | Avg. Daily Wastewater Flow<br>(GPD) |
|----------------|-------------------------------|-------------------------------------|
| 2009           | 20,974                        | 17,884                              |
| 2010           | 21,526                        | 17,164                              |
| 2011           | 18,066                        | 12,157                              |
| Year to Date*  | 12,713                        | 12,152                              |
| <b>Average</b> | <b>18,319</b>                 | <b>14,839</b>                       |

\*Thru April 2012

Mr. Rico Spugnardi  
July 11, 2012  
Page 2

The following domestic water use projections are provided based on the existing water use records and Maine State Plumbing Code:

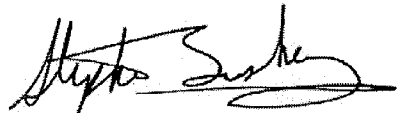
| User                | Number of Users   | Rate Per User | Avg. Daily Flows (GPD) |
|---------------------|-------------------|---------------|------------------------|
| Hospital (Existing) | Per Records       | 0.13 gals/SF  | 18,319                 |
| Hospital (Phase 2)  | 250,000 SF        | 0.13 gals/SF  | 32,500                 |
| ACC                 | 60 Medical Staff  | 80 gals/day   | 4,800                  |
|                     | 400 Patients      | 5 gals/day    | 2,000                  |
|                     | 20 Office Staff   | 15 gals/day   | 300                    |
| Future MOB          | 60 Medical Staff  | 15 gals/day   | 900                    |
|                     | 200 Patients      | 5 gals/day    | 1,000                  |
|                     | 20 Office Staff   | 15 gals/day   | 300                    |
| Future MOB          | 100 Medical Staff | 15 gals/day   | 1,500                  |
|                     | 400 Patients      | 5 gals/day    | 2,000                  |
|                     | 20 Office Staff   | 15 gals/day   | 300                    |
| <b>TOTAL</b>        |                   |               | <b>63,919</b>          |

Based on the aforementioned flows we request your review and written assessment of the District's ability to provide continued service for the development. This information will be passed onto the Maine Department of Environmental Protection as part of a Site Location of Development amendment review.

If you have any questions concerning this request, please contact me.

Sincerely,

DeLUCA-HOFFMAN ASSOCIATES, INC.



Stephen Bushey, P.E.  
Senior Engineer

SRB/cmd

Enclosure: Utility plan

**ATTACHMENT B**

**Letter from the Portland Water District to  
DeLuca-Hoffman Associates, Inc.  
Confirming Their Ability to Serve the Project**

**(To Be Provided Upon Receipt)**

**ATTACHMENT C**

**Mercy Hospital Daily Water Flow Summary**

**MERCY HOSPITAL'S  
DAILY WATER FLOW AT 175 FORE RIVER MERCY HOSPITAL  
2008-PRESENT**

| DATE         | Water hcp/ month | Water gal/month | Water gal/day | Water hcf/month | Waste gal/month | Waste hcf/month | Waste gal/day | Days | AVERAGE WASTE WATER/DAY | Cooling Tower Use/mo. | Cooling Tower Use/day |
|--------------|------------------|-----------------|---------------|-----------------|-----------------|-----------------|---------------|------|-------------------------|-----------------------|-----------------------|
| December-12  | 0                | 0               | 0             | 0               | 0               | 0               | 0             | 0    | #DIV/0!                 | 0                     | #DIV/0!               |
| November-12  | 0                | 0               | 0             | 0               | 0               | 0               | 0             | 0    | #DIV/0!                 | 0                     | #DIV/0!               |
| October-12   | 0                | 0               | 0             | 0               | 0               | 0               | 0             | 0    | #DIV/0!                 | 0                     | #DIV/0!               |
| September-12 | 0                | 0               | 0             | 0               | 0               | 0               | 0             | 0    | #DIV/0!                 | 0                     | #DIV/0!               |
| August-12    | 0                | 0               | 0             | 0               | 0               | 0               | 0             | 0    | #DIV/0!                 | 0                     | #DIV/0!               |
| July-12      | 0                | 0               | 0             | 0               | 0               | 0               | 0             | 0    | #DIV/0!                 | 0                     | #DIV/0!               |
| June-12      | 0                | 0               | 0             | 0               | 0               | 0               | 0             | 0    | #DIV/0!                 | 0                     | #DIV/0!               |
| May-12       | 0                | 0               | 0             | 0               | 0               | 0               | 0             | 0    | #DIV/0!                 | 0                     | #DIV/0!               |
| April-12     | 550              | 411,400         | 14,186        | 499             | 373,252         | 29              | 12,871        | 30   | 12,871                  | 38,148                | 1,315                 |
| March-12     | 506              | 378,488         | 12,616        | 506             | 378,488         | 30              | 12,616        | 30   | 12,616                  | 0                     | 0                     |
| February-12  | 497              | 371,756         | 11,265        | 495             | 370,260         | 33              | 11,220        | 33   | 11,220                  | 1,496                 | 45                    |
| January-12   | 564              | 421,872         | 12,784        | 525             | 392,700         | 33              | 11,900        | 33   | 11,900                  | 29,172                | 884                   |
| December-11  | 570              | 426,360         | 14,212        | 466             | 348,568         | 30              | 11,619        | 30   | 11,619                  | 77,792                | 2,593                 |
| November-11  | 761              | 589,228         | 18,974        | 447             | 334,356         | 30              | 11,145        | 30   | 11,145                  | 234,872               | 7,829                 |
| October-11   | 901              | 673,948         | 21,061        | 401             | 299,948         | 32              | 9,373         | 32   | 9,373                   | 374,000               | 11,688                |
| September-11 | 918              | 686,664         | 24,524        | 396             | 296,208         | 28              | 10,579        | 28   | 10,579                  | 390,456               | 13,945                |
| August-11    | 1215             | 908,820         | 29,317        | 359             | 268,532         | 31              | 8,662         | 31   | 8,662                   | 640,288               | 20,654                |
| July-11      | 854              | 638,792         | 19,962        | 462             | 345,576         | 32              | 10,799        | 32   | 10,799                  | 293,216               | 9,163                 |
| June-11      | 663              | 495,924         | 17,101        | 501             | 374,748         | 29              | 12,922        | 29   | 12,922                  | 121,176               | 4,176                 |
| May-11       | 560              | 418,860         | 13,963        | 543             | 406,164         | 30              | 13,539        | 30   | 13,539                  | 12,716                | 424                   |
| April-11     | 584              | 436,832         | 13,651        | 570             | 426,360         | 32              | 13,324        | 32   | 13,324                  | 10,472                | 327                   |
| March-11     | 545              | 407,660         | 15,099        | 545             | 407,660         | 27              | 15,099        | 27   | 15,099                  | 0                     | 0                     |
| February-11  | 616              | 460,768         | 14,399        | 616             | 460,768         | 32              | 14,399        | 32   | 14,399                  | 0                     | 0                     |
| January-11   | 602              | 450,296         | 14,526        | 598             | 447,304         | 31              | 14,429        | 31   | 14,429                  | 2,992                 | 97                    |
| December-10  | 635              | 474,960         | 15,833        | 595             | 445,060         | 30              | 14,835        | 30   | 14,835                  | 29,920                | 997                   |
| November-10  | 795              | 594,660         | 19,822        | 593             | 443,564         | 30              | 14,785        | 30   | 14,785                  | 151,096               | 5,037                 |
| October-10   | 1242             | 929,016         | 29,032        | 819             | 612,612         | 32              | 19,144        | 32   | 19,144                  | 316,404               | 9,888                 |
| September-10 | 1081             | 808,588         | 33,691        | 650             | 486,200         | 24              | 20,258        | 24   | 20,258                  | 322,388               | 13,433                |
| August-10    | 1498             | 1,120,504       | 32,074        | 1006            | 752,468         | 35              | 21,500        | 35   | 21,500                  | 366,016               | 10,515                |
| July-10      | 1001             | 748,748         | 23,398        | 658             | 492,184         | 32              | 15,381        | 32   | 15,381                  | 256,564               | 8,018                 |
| June-10      | 664              | 496,672         | 17,127        | 572             | 427,856         | 29              | 14,754        | 29   | 14,754                  | 68,816                | 2,373                 |
| May-10       | 652              | 487,696         | 16,257        | 613             | 458,524         | 30              | 15,284        | 30   | 15,284                  | 29,172                | 972                   |
| April-10     | 688              | 514,624         | 16,601        | 653             | 488,444         | 31              | 15,756        | 31   | 15,756                  | 26,180                | 845                   |
| March-10     | 745              | 587,260         | 16,887        | 745             | 587,260         | 33              | 16,887        | 33   | 16,887                  | 0                     | 0                     |
| February-10  | 701              | 524,348         | 15,889        | 701             | 524,348         | 33              | 15,889        | 33   | 15,889                  | 0                     | 0                     |
| January-10   | 902              | 674,696         | 21,764        | 891             | 666,468         | 31              | 21,499        | 31   | 21,499                  | 8,228                 | 265                   |
| December-09  | 636              | 475,728         | 16,404        | 614             | 459,272         | 29              | 15,837        | 29   | 15,837                  | 16,456                | 567                   |
| November-09  | 1209             | 904,332         | 27,404        | 1051            | 786,148         | 33              | 23,823        | 33   | 23,823                  | 118,184               | 3,981                 |
| October-09   | 1140             | 852,720         | 28,424        | 791             | 591,668         | 30              | 19,722        | 30   | 19,722                  | 261,052               | 8,702                 |
| September-09 | 1125             | 841,500         | 28,050        | 720             | 538,560         | 30              | 17,952        | 30   | 17,952                  | 302,940               | 10,098                |
| August-09    | 1640             | 1,226,720       | 42,301        | 1297            | 970,156         | 29              | 33,454        | 29   | 33,454                  | 256,564               | 8,847                 |
| July-09      | 356              | 266,288         | 8,069         | 211             | 157,928         | 33              | 4,763         | 33   | 4,763                   | 108,460               | 3,287                 |
| June-09      | 816              | 610,368         | 17,439        | 747             | 558,756         | 35              | 15,964        | 35   | 15,964                  | 51,612                | 1,475                 |
| May-09       | 631              | 471,988         | 16,857        | 613             | 458,524         | 28              | 16,376        | 28   | 16,376                  | 13,464                | 481                   |
| April-09     | 674              | 504,152         | 16,805        | 674             | 504,152         | 30              | 16,805        | 30   | 16,805                  | 0                     | 0                     |
| March-09     | 1225             | 916,300         | 35,242        | 1225            | 916,300         | 26              | 35,242        | 26   | 35,242                  | 0                     | 0                     |
| February-09  | 11               | 8,228           | 235           | 11              | 8,228           | 35              | 235           | 35   | 235                     | 0                     | 0                     |
| January-09   | 666              | 520,608         | 14,461        | 694             | 519,112         | 36              | 14,420        | 36   | 14,420                  | 1,496                 | 42                    |
| December-08  | 649              | 485,452         | 16,740        | 601             | 449,548         | 29              | 15,502        | 29   | 15,502                  | 35,904                | 1,238                 |
| November-08  | 802              | 599,896         | 18,179        | 577             | 431,596         | 33              | 13,079        | 33   | 13,079                  | 168,300               | 5,100                 |
| October-08   | 593              | 443,564         | 15,842        | 254             | 189,992         | 28              | 6,785         | 28   | 6,785                   | 253,572               | 9,056                 |
| September-08 | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 310,420               | 10,704                |
| August-08    | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 509,762               | 10,563                |
| July-08      | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 2,039,048             | 1,270,852             |
| June-08      | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| May-08       | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| April-08     | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| March-08     | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| February-08  | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| January-08   | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| December-07  | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| November-07  | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| October-07   | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| September-07 | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| August-07    | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| July-07      | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| June-07      | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| May-07       | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| April-07     | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| March-07     | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| February-07  | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| January-07   | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| December-06  | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| November-06  | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| October-06   | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| September-06 | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| August-06    | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| July-06      | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| June-06      | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| May-06       | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| April-06     | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| March-06     | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| February-06  | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| January-06   | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| December-05  | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| November-05  | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| October-05   | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| September-05 | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| August-05    | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| July-05      | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| June-05      | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| May-05       | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| April-05     | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| March-05     | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| February-05  | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| January-05   | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| December-04  | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| November-04  | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| October-04   | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| September-04 | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| August-04    | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| July-04      | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| June-04      | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| May-04       | 682              | 510,136         | 17,591        | 267             | 199,716         | 29              | 6,887         | 29   | 6,887                   | 10,563                | 327                   |
| April-04     | 682              | 510             |               |                 |                 |                 |               |      |                         |                       |                       |

## SECTION 17

### MUNICIPAL FACILITY WASTEWATER DISPOSAL

#### **17.0 Overview**

The proposed Mercy Hospital Phase II Relocation Project continues to be served by the City of Portland's 42" gravity sewer main known as the Fore River Interceptor. The sewer main runs in a north to south direction along the eastern perimeter of the project site. Wastewater flows from the development will enter the existing gravity sewer main and be transported to the City's wastewater treatment plant on the east end of the Peninsula. The treatment plant has the capacity to collect and treat the wastewater flows.

#### **17.1 Estimated Wastewater Use**

The estimated wastewater flow from the proposed Mercy Hospital Phase II Relocation Project has been estimated from Mercy's Phase 1 Hospital records and the Maine State Plumbing Code as follows:

| <b>User</b>         | <b>Number of Users</b> | <b>Rate Per User</b> | <b>Avg. Daily Flows</b> |
|---------------------|------------------------|----------------------|-------------------------|
| Hospital (Existing) | Per Records            | 0.11 gals/SF         | 14,839 GPD              |
| Hospital (Phase 2)  | 250,000 SF             | 0.11 gals/SF         | 27,500 GPD              |
| ACC                 | 60 Medical Staff       | 80 gals/day          | 4,800 GPD               |
|                     | 400 Patients           | 5 gals/day           | 2,000 GPD               |
|                     | 20 Office Staff        | 15 gals/day          | 300 GPD                 |
| Future MOB          | 60 Medical Staff       | 15 gals/day          | 900 GPD                 |
|                     | 200 Patients           | 5 gals/day           | 1,000 GPD               |
|                     | 20 Office Staff        | 15 gals/day          | 300 GPD                 |
| Future MOB          | 100 Medical Staff      | 15 gals/day          | 1,500 GPD               |
|                     | 400 Patients           | 5 gals/day           | 2,000 GPD               |
|                     | 20 Office Staff        | 15 gals/day          | 300 GPD                 |
| <b>TOTAL</b>        |                        |                      | <b>55,439 GPD</b>       |

A significant portion of these flows already exist at the Hospital location on State Street. The existing Hospital facility monitors the wastewater flows and provides pretreatment prior to discharge to the City system. Pretreatment monitoring will be maintained as part of the new development and as required by the City of Portland.

#### **17.2 Ability to Serve**

The City of Portland Public Works Department's ability to serve the project and related information will be provided upon receipt from the City. The preliminary utility plans and details for the project show the wastewater system which will serve the project.

**17.4 Attachments**

- Attachment A Letter from DeLuca-Hoffman Associates, Inc. to the City of Portland Public Works Department requesting affirmation of their ability to provide sewer service to the project
- Attachment B Letter from the City of Portland Public Works Department to DeLuca-Hoffman Associates, Inc. confirming their ability to serve the project (to be provided upon receipt)



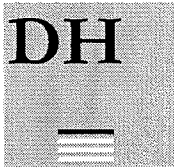
**ATTACHMENT A**

**Letter from DeLuca-Hoffman Associates, Inc. to the  
City of Portland Public Works Department requesting  
affirmation of their ability to serve the project**

**ATTACHMENT B**

**Letter from the City of Portland Public Works Department to  
DeLuca-Hoffman Associates, Inc.  
confirming their ability to serve the project**

**(To be provided upon receipt)**



DeLUCA-HOFFMAN ASSOCIATES, INC.  
CONSULTING ENGINEERS

778 MAIN STREET  
SUITE 8  
SOUTH PORTLAND, MAINE 04106  
TEL. 207 775 1121  
FAX 207 879 0896

- SITE PLANNING AND DESIGN
- ROADWAY DESIGN
- ENVIRONMENTAL ENGINEERING
- PERMITTING
- AIRPORT ENGINEERING
- CONSTRUCTION ADMINISTRATION

July 11, 2012

Mr. Frank Brancely  
City of Portland  
55 Portland Street  
Portland, Maine 04101

**Subject: Proposed Phase 2 Mercy Hospital Relocation Project  
Portland, Maine  
Request for Ability to Serve Letter**

Dear Mr. Frank:

Our office has been retained by Mercy Hospital to prepare site plans and assist with permitting for the proposed Phase 2 Mercy Hospital Relocation Project. On behalf of Mercy Hospital, we are requesting a letter reaffirming that the proposed project can continue to be served by the municipal sewer system.

The project will consist of the Phase 2 relocation of Mercy Hospital from their State Street facility to the Fore River campus. Based on preliminary design, sewer lines from the Hospital, Ambulatory Care Unit and Medical Offices will be connected to the municipal sewer at the existing 42" Lower Fore River Interceptor. Potential connection points are shown on the attached plan.

Mercy Hospital has provided the following water and wastewater flows for the Phase 1 Fore River Hospital site:

| Year           | Avg. Daily Water Use (GPD) | Avg. Daily Wastewater Flow (GPD) |
|----------------|----------------------------|----------------------------------|
| 2009           | 20,974                     | 17,884                           |
| 2010           | 21,526                     | 17,164                           |
| 2011           | 18,066                     | 12,157                           |
| Year to Date*  | 12,713                     | 12,152                           |
| <b>Average</b> | <b>18,319</b>              | <b>14,839</b>                    |

\*Thru April 2012

The following domestic water use projections are provided based on the existing water use records and Maine State Plumbing Code:

Mr. Frank Brancely  
July 11, 2012  
Page 2

| User                | Number of Users   | Rate Per User | Avg. Daily Flows (GPD) |
|---------------------|-------------------|---------------|------------------------|
| Hospital (Existing) | Per Records       | 0.13 gals/SF  | 18,319                 |
| Hospital (Phase 2)  | 250,000 SF        | 0.13 gals/SF  | 32,500                 |
| ACC                 | 60 Medical Staff  | 80 gals/day   | 4,800                  |
|                     | 400 Patients      | 5 gals/day    | 2,000                  |
|                     | 20 Office Staff   | 15 gals/day   | 300                    |
| Future MOB          | 60 Medical Staff  | 15 gals/day   | 900                    |
|                     | 200 Patients      | 5 gals/day    | 1,000                  |
|                     | 20 Office Staff   | 15 gals/day   | 300                    |
| Future MOB          | 100 Medical Staff | 15 gals/day   | 1,500                  |
|                     | 400 Patients      | 5 gals/day    | 2,000                  |
|                     | 20 Office Staff   | 15 gals/day   | 300                    |
| <b>TOTAL</b>        |                   |               | <b>63,919</b>          |

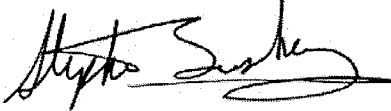
DeLuca-Hoffman Associates, Inc. will coordinate with the City of Portland Industrial Pretreatment Program for information regarding proper location of control manholes for sampling, as the design of the project progresses.

Based on the aforementioned flows we request your review and written assessment of the City's ability to provide continued service for the development. This information will be passed onto the Maine Department of Environmental Protection as part of a Site Location of Development amendment review.

If you have any questions concerning this request, please contact me.

Sincerely,

DeLUCA-HOFFMAN ASSOCIATES, INC.



Stephen Bushey, P.E.  
Senior Engineer

SRB/cmd

Enc: Utility Plan

## SECTION 18

### SOLID WASTE

#### **18.0 Overview**

This section of the application provides the estimates, the use of recycling, and the transport and disposal of solid wastes that will be generated by construction of the Mercy Hospital Phase II Expansion at the Fore River Campus. This section also provides information on the disposition of solid wastes generated during operation of the hospital facilities.

#### **18.1 Solid Wastes Generated During Construction of the Site**

The solid waste generated during the site work portion of the project is expected to consist of a limited amount of clearing waste. Previous site development activities included removal and disposal of a significant amount of misc. solid wastes.

No special wastes are expected to be removed; however, if encountered, petroleum-saturated soils will be excavated and delivered to a recycling facility such as Commercial Paving in Scarborough, Maine.

Old railroad ties, if encountered, will be salvaged to the extent practicable; otherwise they will be disposed of at Commercial Recycling in Scarborough, Maine.

Stumps and wood waste generated by the tree clearing will be chipped on site and the biomass used for erosion control.

The Applicant is participating in the MeDEP Voluntary Response Action Plan (VRAP) that addresses site contaminants including coal ash that has been left in place or excavated where necessary and placed as fill into low areas where it has been capped with clean fill and/or a bituminous asphalt surface.

The coal ash has been covered over by use of the following methods:

- Place 24" of clean fill over it
- Place 8" clean loam underlain by geotextile fabric
- Cover with paved or hard surfaces

Other solid waste will be minor. Some cardboard or kraft wrapping is anticipated for the building construction. Other solid waste could include various containers, short lengths of pipe, or conduit. Additionally, the construction workers may generate other solid wastes. The construction contract will require the Contractor to attempt a recycling level of 75%. Materials not recycled will be required to be disposed of at the locations specified in Section 18.2.

The volume of solid waste related to the site work and debris cleanup that will be hauled for disposal is estimated by DeLuca-Hoffman Associates, Inc. to be less than 50 cubic yards, based simply on our visual reconnaissance. The estimated amount of stumps, brush, soil, rock and other earthwork waste is approximately 1,000 cubic yards. This

material will be removed from the site and disposed of at a licensed facility or recycling area.

**18.2 Solid Waste Generated During the Construction of the Buildings**

The building construction will generate wastes during construction that include excess building materials such as metals, plastic, glass and synthetic materials. Approximately 3,267 cubic yards of solid waste are estimated.

The computed solid waste, which will be generated during construction of the buildings, is as follows:

- Construction Debris and Waste: 817 c.y. after recycling
- The contract will provide a goal for recycling of solid waste of 75%.
- The contract will require a plan for recycling and the location of recycling facilities to be identified prior to any solid wastes removal from the site.
- Unless otherwise changed by a MeDEP permit modification, the waste stream will be transported and disposed of at the following locations:

|   |  |
|---|--|
| Asbestos and Mixed Construction Material: | Sawyer Landfill in Hampden (Contractor option)   |
| Separated Wood Construction Debris:       | KTI Wood Recycling Facility in Lewiston, Maine or Riverside Recycling in Portland, Maine                     |
| Separated Metal/Ferrous Material:         | One Steel Recycling in Arundel or Oakland, ME or Riverside Recycling in Portland, Maine (Contractor option). |
| Masonry Debris:                           | Shaw Brothers – H – PIT, Gorham, Maine   |

- The collection, transfer, disposal, and payment of all fees for solid wastes shall be the responsibility of the Contractor.

**18.3 Solid Waste Generated from the Operation of the Hospital**

The Mercy Hospital Plant & Engineering Department provided information concerning the collection, transport, and disposal of solid wastes generated from the facilities operations. The waste from the existing Hospital operations is disposed of as follows:

| Type             | Disposal Facility/Hauler    |
|------------------|-----------------------------|
| Biomedical Waste | Stericycle in Massachusetts |
| Regular Trash    | Waste Management            |
| Recyclables      | Wm. Goodman & Sons          |
| Chemical Waste   | Clean Harbors               |

Copies of commitment letters from each waste facility or handler will be provided to the MeDEP during the application review.

#### **18.4 Hazardous and Special Wastes**

The Hospital has also summarized their anticipated use of cleaners, solvents, etc. as stated in Attachment B. Biomedical waste is segregated at the point of generation to prevent entrance into the non-infectious waste stream. Mercy Hospital maintains a Biomedical Waste Generator Registration (Reg. #0457) that will continue to apply with the proposed facility. Management of all hazardous chemical wastes shall be in accordance with the State of Maine Hazardous Waste Management Rules as adopted pursuant to 30 M.R.S.A. Section 1301 et. Seq. The Maine Hazardous Waste, Septage and Solid Waste Management Act, March, 1987.

The Hospital may maintain a nuclear medicine department. The current procedures will be maintained in the new hospital expansion. These include the storage of materials in a lead-lined, secure cabinet. Hazardous materials associated with the nuclear medicine procedures have a short shelf life and are rendered to bio-medical solid waste normally within one month of use, after which they are disposed of with the ordinary bio-medical waste. The Hospital currently does not require removal of radioactive materials and does not anticipate such in the current proposal.

#### **18.5 Attachments**

- Attachment A Computations of Types and Volumes of Solid Wastes for Construction Project.
- Attachment B Information Pertaining to Solid Waste Generation, Collection and Disposal, including contract with Waste Management.

**ATTACHMENT A**

**Computations of Types and Volumes of Solid Wastes  
For the Construction Project**



## SOLID WASTES COMPUTATIONS AND DISPOSAL

### Wood Wastes from Clearing Operations:

The basis for the quantity computations assumes that there will be an estimated 200 cubic yards of stumps per acre.

| Location     | Area to be Cleared | Rate per Acre     | Yield                    |
|--------------|--------------------|-------------------|--------------------------|
| Pasture      | N/A                | 0 c.y. per acre   | 0 cubic yards            |
| Wooded Area  | 4 Acres            | 400 c.y. per acre | 1,600 cubic yards        |
| <b>Total</b> |                    |                   | <b>1,600 cubic yards</b> |

### Wastes Associated with Other Site Construction:

These wastes are such things as cardboard from packaging, short lengths of pipe or conduit, etc. The quantities of this should be limited. Construction documents will require a recycling program with a specified goal of 75% recycling.

### New Building Construction:

Basis of Estimate: 10 cubic yards per 1,500 square feet of finished space (excludes parking garage).

#### Areas:

Medical Office: 168,000 +/- square feet  
Ambulatory Care: 72,000 +/- square feet  
Hospital: 250,000 +/- square feet  
Total: 490,000 +/- square feet

Solid Waste: 2,900 cubic yards

Set a goal in the construction documents to require segregation of cardboard and paper with a goal of 75%.

Total: 3,267 cubic yards before recycling

Net: 817 cubic yards if 75% of material is recycled

Require Contractor to: Provide two (2) 30 c.y. dumpsters for solid waste and recyclables. Haul to facilities identified in Section 18.2 with shipping manifest. The contractor should identify recycling methods and sites prior to construction.

## SOLID WASTES COMPUTATIONS AND DISPOSAL

### Wood Wastes from Clearing Operations:

The basis for the quantity computations assumes that there will be an estimated 200 cubic yards of stumps per acre.

| Location     | Area to be Cleared | Rate per Acre     | Yield                    |
|--------------|--------------------|-------------------|--------------------------|
| Pasture      | N/A                | 0 c.y. per acre   | 0 cubic yards            |
| Wooded Area  | 4 Acres            | 400 c.y. per acre | 1,600 cubic yards        |
| <b>Total</b> |                    |                   | <b>1,600 cubic yards</b> |

### Wastes Associated with Other Site Construction:

These wastes are such things as cardboard from packaging, short lengths of pipe or conduit, etc. The quantities of this should be limited. Construction documents will require a recycling program with a specified goal of 75% recycling.

### New Building Construction:

Basis of Estimate: 10 cubic yards per 1,500 square feet of finished space (excludes parking garage).

#### Areas:

Medical Office: 168,000 +/- square feet  
Ambulatory Care: 72,000 +/- square feet  
Hospital: 250,000 +/- square feet  
Total: 490,000 +/- square feet

Solid Waste: 2,900 cubic yards

Set a goal in the construction documents to require segregation of cardboard and paper with a goal of 75%.

Total: 3,267 cubic yards before recycling

Net: 817 cubic yards if 75% of material is recycled

Require Contractor to: Provide two (2) 30 c.y. dumpsters for solid waste and recyclables. Haul to facilities identified in Section 18.2 with shipping manifest. The contractor should identify recycling methods and sites prior to construction.

**ATTACHMENT B**

**Information Pertaining to Solid Waste Generation, Collection,  
and Disposal, including Contract with Waste Management**





**SERVICE AGREEMENT  
NON-HAZARDOUS WASTES**  
Commercial Service Agreement Terms and Conditions

**1. SERVICES RENDERED; WASTE MATERIALS.** Customer grants to Company the exclusive right, and Company shall furnish equipment and services, to collect and dispose of and/or recycle all of Customer's Waste Materials. Customer represents and warrants that the materials to be collected under this Agreement shall be only "Waste Materials" as defined herein. For purposes of this Agreement, "Waste Materials" means all non-hazardous solid waste and Recyclable Materials generated by Customer or all Customer's Service Address. Waste Materials include Special Waste, such as industrial process wastes, asbestos-containing material, petroleum contaminated soils, treated/bleach-characterized wastes, and demolition debris, but Customer shall complete a Waste Profile for each Special Waste which has been approved by Company in writing. Recyclable Materials shall include any type of material that can be recycled or recovered whether separated or not separated from other Waste Materials prior to collection. Waste Materials specifically excludes, and Customer agrees not to deposit or permit the deposit for collection of, any waste tires, radioactive, volatile, corrosive, flammable, explosive, biomedical, infectious, biohazardous, regulated medical or hazardous waste, toxic substance or material, as defined by, characterized or listed under applicable federal, state, or local laws or regulations, or Special Waste not approved in writing by Company (collectively, "Excluded Materials"). Title in and liability for Excluded Materials shall remain with Customer at all times. Title to Waste Materials provided by Customer to Company is transferred to Company upon Company's receipt or collection unless otherwise provided in this Agreement or applicable law.

**2. TERM.** The term ("Term") of this Agreement is thirty-six (36) months from the Effective Date and four (4) years ("Initial Term"), unless terminated by either party. *AW* The party which notifies of termination for any reason shall be deemed to have accepted the other party's notice of termination for any reason. Company shall notify Customer by mail (business day) 90 and ninety (90) days prior to termination of the existing Initial or Renewal Term. If Customer does not, within sixty (60) days of receipt of such notification, notify the Company of its intention to terminate, then this Agreement will automatically renew thereafter until one party properly notifies the other of its intent to terminate. Company may terminate this Agreement by giving the Customer notice of termination at least ninety (90) days but not more than one hundred and eighty (180) days prior to the termination of the then-existing term.

**3. SERVICE GUARANTY; CUSTOMER TERMINATION.** If the Company fails to perform the services described within five business days of its receipt of a written demand from Customer (See Section 4(e)), Customer may terminate this Agreement with the payment of all monies due through the termination date. If Company increases the Charges payable by Customer hereunder for reasons other than as set forth in Section 4 below, Customer shall have the right to terminate this Agreement by written notice to the Company no later than thirty (30) days after Company notifies Customer of such increase in Charges in writing. If Customer notifies Company of its termination of this Agreement, such termination shall be effective and binding if Company withdraws or removes such services within thirty (30) days after Customer provides timely notification of termination. Actions such as termination of the increased Charges shall be binding and enforceable against Customer under this Agreement for the remaining Term.

**4. CHARGES; PAYMENTS; ADJUSTMENTS.** Upon receipt of an invoice, Customer shall pay for the services and/or equipment (excluding repair and maintenance) furnished by Company in accordance with the Charges on the first page. An item may be adjusted over the term of this Agreement as noted herein (the "Charges"). Company reserves the right to increase the Charges payable by Customer during the Term: (a) for any changes or modifications to, or differences between, the actual equipment and services provided by Company to Customer and the agreed upon Equipment/Service specifications on the first page; (b) any change in the composition of the Waste Materials or if the average weight per yard of Customer's Waste Materials exceeds the amount specified on the first page; (c) for any increase in or other modification to its fuel or environmental cost recovery charges; (d) to cover any increases in disposal and/or third party transportation costs; (e) to cover increased costs due to uncontrollable circumstances, including, without limitation, changes in local, state or federal laws or regulations, imposition on taxes, fees or surcharges or acts of God such as floods, fires, hurricanes and natural disasters; and (f) no more than three percent annually from the Effective Date (or if specified on the first page, Customer's Last API Date) for increases in the Consumer Price Index plus four percent of the then current Charges. Any increase in Charges enumerated in clauses (a) through (f) above may include an amount for Company's operating or gross profit margin. Company also reserves the right to charge Customer additional fees if the following additional services are provided to Customer: Enclosure Charge, Services on High Demand Days, Pull/Out Services, Dumpster Relocation Fee, or Seasonal Permit Fee. In the event Company adjusts the Charges as provided in this Section 4, Customer and Company agree that this Agreement in its adjusted will continue in full force and effect for the remaining Term.

Any customer invoice balance not paid within thirty (30) days of the date of invoice is subject to a late fee, and any Customer checks returned for insufficient funds is subject to a NSF fee, both to the maximum extent allowed by applicable law. In the event that payment is not made when due, Company retains the right to suspend service until the past due balance is paid in full, in the event that service is suspended in excess of fifteen (15) days, Company may terminate this Agreement for such default and recover any equipment.

**5. CHANGES.** Changes in the frequency of collection service, schedule, number, capacity and/or type of equipment, may be agreed to orally, in writing, by payment of the invoice or by the actions and practices of the parties. If Customer changes the Service Address during the Term, this Agreement shall remain valid and enforceable with respect to services rendered at Customer's new service location if such location is within Company's service area.

**6. EQUIPMENT, ACCESS.** All equipment furnished by Company shall remain the property of Company; however, Customer shall have care, custody and control of the equipment and shall bear responsibility and liability for all loss or damage to the equipment and for its contents while at Customer's location. Customer shall not overload, move or alter the equipment and shall use the equipment only for its intended purpose. At the termination of this Agreement, Customer shall return the equipment to Company in the condition in which it was provided, normal wear and tear excepted. Customer shall provide unobstructed access to the equipment on the scheduled collection day. Customer shall pay, if charged by Company, an additional fee for any service modifications caused by or resulting from Customer's failure to provide access. Customer warrants that Customer's property is sufficient to bear the weight of Company's equipment and vehicles and that Company shall not be responsible for any damage to the Customer's property resulting from the provision of services.

**7. LIQUIDATED DAMAGES.** In the event Customer terminates this Agreement prior to the expiration of the Term for any reason other than a default by Company, or in the event Company terminates this Agreement for Customer's default, Customer shall pay the following liquidated damages in addition to the Company's legal fees in an amount equal to (a) most recent monthly charges multiplied by three (3). Customer acknowledges that the actual damages to Company in the event of termination is difficult to prove, and the foregoing liquidated damages amount is reasonable and commensurate with the anticipated loss to Company resulting from such termination and is agreed upon in full and is not imposed as a penalty. Customer shall pay liquidated damages of \$100 for every Customer waste bin that is found at the disposal facility.

**8. INDEMNITY.** The Company agrees to indemnify, defend and save Customer harmless from and against any and all liability which Customer may be responsible for or pay out as a result of bodily injuries (including death), property damage, or any violation or alleged violation of law, to the extent caused by any negligent act, negligent omission or willful misconduct of the Company or its employees, which occurs (a) during the collection or transportation of Customer's Waste Materials, or (b) as a result of the disposal of Customer Waste Materials in a facility owned by the Company or subsidiary of Waste Management, Inc., provided that the Company's indemnification obligations will not apply to occurrences involving Excluded Materials.

Customer agrees to indemnify, defend and save the Company harmless from and against any and all liability which the Company may be responsible for or pay out as a result of bodily injuries (including death), property damage, or any violation or alleged violation of law to the extent caused by Customer's breach of the Agreement or by any negligent act, negligent omission or willful misconduct of the Customer or its employees, agents or contractors in the performance of this Agreement or Customer's use, operation or possession of any equipment furnished by the Company. Neither party shall be liable to the other for consequential, incidental or punitive damages arising out of the performance of this Agreement.

**9. MISCELLANEOUS.** (a) Except for the obligation to make payments hereunder, neither party shall be in default for its failure to perform or delay in performance caused by events or significant threats of events beyond its reasonable control, whether or not foreseeable, including, but not limited to, strikes, labor troubles, riots, imposition of laws or governmental orders, fires, acts of war or terrorism, acts of God, and the inability to obtain equipment, and the affected party shall be excused from performance during the occurrence of such events. (b) This Agreement shall be binding on and shall inure to the benefit of the parties hereto and their respective successors and assigns. (c) This Agreement represents the entire agreement between the parties and supersedes any and all other agreements, whether written or oral, that may exist between the parties. (d) This Agreement shall be construed in accordance with the law of the state in which the services are provided. (e) All written notification to Company required by this Agreement shall be by Certified Mail, Return Receipt Requested. (f) Any blank or unlined or unmarked boxes or spaces on this first page shall be deemed to be inapplicable and not affect the validity of this Agreement. (g) If any provision of this Agreement is declared invalid or unenforceable, then such provision shall be severed from and shall not affect the remainder of this Agreement; however, the parties shall amend this Agreement to give effect to the maximum extent allowed, to the intent and meaning of the severed provision. (h) In the event the Company successfully enforces its rights against Customer hereunder, the Customer shall be required to pay the Company's attorney's fees and court costs.



Roll Off
SERVICE AGREEMENT
NON-HAZARDOUS WASTES

Waste Management of Maine, Inc.
WM Portland Maine (2080)
26 Patriots Place Suite 300
Foxboro, MA 02035
Telephone: Fax:

CUSTOMER ACCOUNT # 186-26727
SIC CODE GENERAL MEDICAL AND SURGICAL HOSPITALS
MAP GRID
EFFECTIVE DATE 11/1/2011
LAST API DATE

Account Name: MERCY HOSPITAL - FORE RIVER 35 YD COMP -MSW
Service Address: 175 FORE RIVER PARKWAY
Address #2:
City, State, Zip: PORTLAND, ME 04102
Phone/Fax: 207-879-3488
Contact: JEFF BENNETT
E-Mail: BENNETT@MERCYME.COM
Mobile Phone:
County:

Billing Name: MERCY HOSPITAL
Billing Address: PO BOX 356
Address #2:
City, State, Zip: NEWTOWN SQUARE, PA 19079-0356
Phone/Fax: 207-879-3488
Contact: JEFF BENNETT
E-Mail: BENNETT@MERCYME.COM
Mobile Phone:
County:

Are the Service and Billing addresses the same?

Table with columns: Reason, Qty, Size, Waste Type, Lids, Locks, Wheels, Ownership, Freq, M, T, W, TH, F, S, Extra Pickup Rate, Charge(s). Includes sections for New Service and Old Service.

Total \$ 595.12 per Month

Container pull/push out required?
Container behind gate or enclosure?
Customer's waste materials does not exceed an average weight of 100 lbs/yd

SPECIAL INSTRUCTIONS/CONTAINER PLACEMENT
DRAINING DIRECTIONS

Form with fields: Term (36 months), Renewable (No), PO Number, Job Number, Taxable, Disposal Site, Parent Origin ID.

SCHEDULE OF CHARGES AS REQUIRED table with columns: Description, Amount, Unit. Includes Container Usage Fee, Delivery Charge, Relocation Charge, etc.

THE UNDERSIGNED INDIVIDUAL SIGNING THIS AGREEMENT ON BEHALF OF CUSTOMER ACKNOWLEDGES THAT HE/SHE HAS READ AND UNDERSTANDS THE TERMS AND CONDITIONS OF THIS AGREEMENT, ON THE SECOND PAGE, AND THAT HE/SHE HAS THE AUTHORITY TO SIGN ON BEHALF OF THE CUSTOMER.

TERMS: DUE UPON RECEIPT

Customer: MERCY HOSPITAL - FORE RIVER 35 YD COMP -MSW
Authorized Signature: EUGEN F. SKINNER
Title: CEO
Date: 12/2/11
NAME (Print or Type): EUGEN F. SKINNER

Waste Management of Maine, Inc.
Authorized Signature: JOSEPH P QUINN
Sales Person Name: JOSEPH P QUINN
Date: 11/22/11
(Paperwork Completed By)



**SERVICE AGREEMENT  
NON-HAZARDOUS WASTES**  
Commercial Service Agreement Terms and Conditions

**1. SERVICES RENDERED; WASTE MATERIALS.** Customer grants to Company the exclusive right, and Company shall furnish equipment and services, to collect and dispose of and/or recycle all of Customer's Waste Materials. Customer represents and warrants that the materials to be collected under this Agreement shall be only "Waste Materials" as defined herein. For purposes of this Agreement, "Waste Materials" means all non-hazardous solid waste and Recyclable Materials generated by Customer at Customer's Service Address. Waste Materials includes Special Waste, such as industrial process wastes, asbestos-containing material, petroleum contaminated soils, treated/dis-characterized wastes, and demolition debris, but Customer shall complete a Waste Profile for such Special Waste which has been approved by Company in writing. Recyclable Materials shall include any type of material that can be recycled or recovered whether separately or not separated from other Waste Materials prior to collection. Waste Materials specifically excludes, and Customer agrees not to deposit or permit the deposit for collection of, any waste listed, including but not limited to, flammable, explosive, biomedical, infectious, biohazardous, volatile, corrosive, flammable, toxic substance or material, as defined by and listed under applicable federal, state, or local laws or regulations, or Special Waste not approved in writing by Company collectively, "Excluded Materials". Title to and liability for Excluded Materials shall remain with Customer at all times. Title to Waste Materials provided by Customer to Company is transferred to Company upon Company's receipt or collection unless otherwise provided in this Agreement or applicable law.

**2. TERM.** The term ("Term") of this Agreement is thirty-six (36) months from the Effective Date set forth above ("Initial Term"), which shall automatically renew thereafter for additional terms of thirty-six (36) months each ("Renewal Term") unless either party gives to the other party written notice of termination by any reasonable method, including mail, electronically transmitted facsimile, email as follows. Company shall notify Customer by mail by no later than sixty (60) and ninety (90) days prior to termination of the existing Initial or Renewal Term. If Customer does not, within sixty days of receipt of such notification, notify the Company of its intention to terminate, then this Agreement will automatically renew thereafter until one party properly notifies the other of its intent to terminate. Company may terminate this Agreement by giving the Customer notice of termination at least ninety (90) days but not more than one hundred and eighty (180) days prior to the termination of the then-existing term.

**3. SERVICE GUARANTY; CUSTOMER TERMINATION.** If the Company fails to perform the services described within five business days of its receipt of a written demand from Customer (See Section 9(e)), Customer may terminate this Agreement with the payment of all monies due through the termination date. If Company increases the Charges payable by Customer hereunder for reasons other than as set forth in Section 4 below, Customer shall have the right to terminate this Agreement by written notice to the Company no later than thirty (30) days after Company notifies Customer of such increases in Charges in writing. If Customer so notifies Company of its termination of this Agreement, such termination shall be of no force and effect if Company withdraws or removes such increase within fifteen (15) days after Customer provides timely notification of termination. Absent such termination, the increased Charges shall be binding and enforceable against Customer under this Agreement for the remaining Term.

**4. CHARGES; PAYMENTS; ADJUSTMENTS.** Upon receipt of an invoice, Customer shall pay for the services and/or equipment (including repair and maintenance) furnished by Company in accordance with the Charges on the first page, as it may be adjusted over the term of this Agreement as noted herein (the "Charges"). Company reserves the right to increase the Charges payable by Customer during the Term: (a) for any changes or modifications to, or differences between, the actual equipment and services provided by Company to Customer and the agreed upon Equipment/Service specifications on the first page; (b) any change in the composition of the Waste Materials or if the average weight per yard of Customer's Waste Materials exceeds the amount specified on the first page; (c) for any increase in or other modification to its fuel or environmental cost recovery charges; (d) to cover any increases in disposal and/or third party transportation costs; (e) to cover increased costs due to uncontrollable circumstances, including, without limitation, changes in local, state or federal laws or regulations, imposition on taxes, fees or surcharges or acts of God such as floods, fires, hurricanes and natural disasters; and (f) no more often than annually from the Effective Date (or if specified on the first page, Customer's Last API Date) for increases in the Consumer Price Index plus four percent of the then current Charges. Any increase in Charges enumerated in clauses (a) through (e) above may include an amount for Company's operating or gross profit margin. Company also reserves the right to charge Customer additional fees if the following additional services are provided to Customer: Administrative Fee, Enclosure Charge, Services on High Demand Days, Pull/Push Out Services, Container Relocation Fee, or Seasonal Restart Fee. In the event Company adjusts the Charges as provided in this Section 4, Customer and Company agree that this Agreement as so adjusted will continue in full force and effect for the remaining Term.

Any customer invoice balance not paid within thirty (30) days of the date of invoice is subject to a late fee, and any Customer check returned for insufficient funds is subject to a NSF fee, both to the maximum extent allowed by applicable law. In the event that payment is not made when due, Company retains the right to suspend service until the past due balance is paid in full. In the event that service is suspended in excess of fifteen (15) days, Company may terminate this Agreement for such default and recover any equipment.

**5. CHANGES.** Changes in the frequency of collection service, schedule, number, capacity and/or type of equipment, may be agreed to orally, in writing, by payment of the invoice or by the actions and practices of the parties. If Customer changes its Service Address during the Term, this Agreement shall remain valid and enforceable with respect to services rendered at Customer's new service location if such location is within Company's service area.

**6. EQUIPMENT, ACCESS.** All equipment furnished by Company shall remain the property of Company; however, Customer shall have care, custody and control of the equipment and shall bear responsibility and liability for all loss or damage to the equipment and for its contents while at Customer's location. Customer shall not overload, move or alter the equipment and shall use the equipment only for its intended purpose. At the termination of this Agreement, Customer shall return the equipment to Company in the condition in which it was provided, normal wear and tear excepted. Customer shall provide unobstructed access to the equipment on the scheduled collection day. Customer shall pay, if charged by Company, an additional fee for any service modifications caused by or resulting from Customer's failure to provide access. Customer warrants that Customer's property is sufficient to bear the weight of Company's equipment and vehicles and that Company shall not be responsible for any damage to the Customer's property resulting from the provision of services.

**7. LIQUIDATED DAMAGES.** In the event Customer terminates this Agreement prior to the expiration of the Term for any reason other than a default by Company, or in the event Company terminates this Agreement for Customer's default, Customer shall pay the following liquidated damages in addition to the Company's legal fees in an amount equal to its most recent monthly charges multiplied by three (3). Customer acknowledges that the actual damage to Company in the event of termination is difficult to fix or prove, and the foregoing liquidated damages amount is reasonable and commensurate with the anticipated loss to Company resulting from such termination and is agreed upon fee and is not imposed as a penalty. Customer shall pay liquidated damages of \$100 for every Customer waste that is found at the disposal facility.

**8. INDEMNITY.** The Company agrees to indemnify, defend and save Customer harmless from and against any and all liability which Customer may be responsible for or pay out as a result of bodily injuries (including death), property damage, or any violation or alleged violation of law, to the extent caused by any negligent act, negligent omission or willful misconduct of the Company or its employees, which occurs (a) during the collection or transportation of Customer's Waste Materials, or (b) as a result of the disposal of Customer's Waste Materials in a facility owned by the Company or a subsidiary of Waste Management, Inc., provided that the Company's indemnification obligations will not apply to occurrences involving Excluded Materials.

Customer agrees to indemnify, defend and save the Company harmless from and against any and all liability which the Company may be responsible for or pay out as a result of bodily injuries (including death), property damage, or any violation or alleged violation of law to the extent caused by Customer's breach of this Agreement or by any negligent act, negligent omission or willful misconduct of the Customer or its employees, agents or contractors in the performance of this Agreement or Customer's use, operation or possession of any equipment furnished by the Company. Neither party shall be liable to the other for consequential, incidental or punitive damages arising out of the performance of this Agreement.

**9. MISCELLANEOUS.** (a) Except for the obligation to make payments hereunder, neither party shall be in default for its failure to perform or delay in performance caused by events or significant threats of events beyond its reasonable control, whether or not foreseeable, including, but not limited to, strikes, labor trouble, riots, imposition of laws or government orders, fires, acts of war or terrorism, acts of God, and the inability to obtain equipment, and the affected party shall be excused from performance during the occurrence of such events. (b) This Agreement shall be binding on and shall inure to the benefit of the parties hereto and their respective successors and assigns. (c) This Agreement represents the entire agreement between the parties and supersedes any and all other agreements, whether written or oral, that may exist between the parties. (d) This Agreement shall be construed in accordance with the law of the state in which the services are provided. (e) All written notification to Company required by this Agreement shall be by Certified Mail, Return Receipt Requested. (f) Any blanks or unfiled or unmarked boxes or spaces on this first page shall be deemed to be inapplicable and not affect the validity of this Agreement. (g) If any provision of this Agreement is declared invalid or unenforceable, then such provision shall be severed from and shall not affect the remainder of this Agreement; however, the parties shall amend this Agreement to give effect to the maximum extent allowed, to the intent and meaning of the severed provision. (h) In the event the Company successfully enforces its rights against Customer hereunder, the Customer shall be required to pay the Company's attorneys' fees and court costs.

**Mercy Hospital**

144 State St.  
 Portland, Maine 04101  
 Phone: 879-3630

Fax:

**Completed Work Order 50041**

Service CLEAN DOWNSTREAM DEFENDERS - FRH, 10/1/2011

|                            |              |                        |  |
|----------------------------|--------------|------------------------|--|
| Primary Failure            | Type         | Preventive             | Priority 2                                     |
| Secondary Failure          | Std Hours    | 1                      | <input type="checkbox"/> Shutdown              |
| Downtime Hours 0.00        | Actual Hours | 0.75                   | <input type="checkbox"/> Warranty              |
| Charge To <none>           | Requested    | 10/3/2011 10:36:42 AM  | <input checked="" type="checkbox"/> Inspection |
| Shop Safety Systems        | Issued       | 10/25/2011 1:59:03 PM  | <input type="checkbox"/> Lockout/Tagout        |
| Supervisor Brian Gay       | Due          | 10/1/2011              | <input checked="" type="checkbox"/> Safety     |
| Requestor                  | Completed    | 11/10/2011 10:54:09 AM |  |
| Phone                      | Taken By     |                        |  |
| Account <none>             | Department   |                        |  |
| Property Mercy Fore River  |              |                        |  |
| Building Mercy Fore River  |              |                        |  |
| Asset Exterior of Building |              |                        |  |

|         | Staff | Contractor | All Labor | Parts | Other | Total |
|---------|-------|------------|-----------|-------|-------|-------|
| Costs   | 0.00  | 0.00       | 0.00      | 0.00  | 0.00  | 0.00  |
| Charges | 0.00  | 0.00       | 0.00      | 0.00  | 0.00  | 0.00  |

Description S/A - SCHEDULE PM W/BLOW BROTHERS (APRIL & OCT)  
 S/A - CLEAN ALL 3 DOWN STREAM DEFENDERS  
 S/A - PROVIDE WRITTEN REPORT

contact Margie Brown 207-934-2525

(ADDITIONAL PM - ANNUAL CLEANING OF 56 BASINS)

FILE PAPERWORK (WRITTEN INSPECTION REPORT, PO & PM) WITH DEP LICENSE

| Labor/Comments | Activity | Type  | Hours | Cost | Charge Account | Category |
|----------------|----------|-------|-------|------|----------------|----------|
| Brian Gay      |          | Staff | 0.50  | 0.00 | 0.00 <none>    | <none>   |
| Brian Gay      |          | Staff | 0.25  | 0.00 | 0.00 <none>    | <none>   |

Comments: 11/24/11- Discussed schedule and PO with Margi Brown.  
 This service to clean the 3 downstream defenders is scheduled for 11/28/11 and I will file the written report when it arrives.  
 Will utilize PO3303900611-SVC for payment. BGAY

Service Completed, report will be coming by E-mail. BGAY

11/10/11- Re-opened workorder to add comments, Reviewed Downstream defender report, All ok, Will send completed work order and report to file with DEP License. BGAY



Gay, Brian

---

**From:** Blow Bros. Portable Toilets [blowbros@gwi.net]  
**Sent:** Friday, April 29, 2011 1:36 PM  
**To:** Gay, Brian  
**Subject:** Inspection Report  
**Attachments:** Mercy Hospital Inspection Report 042911 Page 2.jpg; Mercy Hospital Inspection Report 042911 Page 1.jpg

Hi Brian,

Please see attached for copies of the inspection report. If you have any questions, please call or email me.  
Thanks!

How can we be your one stop waste removal shop? Please call today regarding trash removal, roll-offs, demolition, small dumpsters, septic service, catch basin cleaning, grease removal and portable toilet needs. We handle it all!

Margi Brown  
Office Manager  
Blow Bros. Portable Toilets & Septic  
P.O. Box 221  
Old Orchard Beach, ME 04064  
Phone: 800-427-6889 ext. 103  
Fax: 207-934-1723  
Website: [www.blowbros.com](http://www.blowbros.com)  
Email: [blowbros@gwi.net](mailto:blowbros@gwi.net)

6/3/2011

### Catch Basin Inspection & Maintenance Log

| Date: 4/29/2011 |           | Job: Mercy Hospital/Catholic Health East |                  | Number of Basins Cleaned: 55 + 3 Basins |              |
|-----------------|-----------|--|------------------|---|--------------|
| CB#             | Condition | Depth from Base to Drain                 | Sediment Buildup | Comments                                | Service Tech |
| 52              | Good      | 2'                                       | 8"               |   | Jeff Dobson  |
| 53              | Good      | 3'                                       | 10"              |   | Jeff Dobson  |
| 54              | Good      | 4'                                       | 8"               |   | Jeff Dobson  |
| 55              | Good      | 3'                                       | 8"               |   | Wayne Winn   |
| 56              | Good      | 3'                                       | 2"               |   | Wayne Winn   |
| XX              | Good      | 1'                                       | 1'               | At Maint. Building                      | Wayne Winn   |
| XX              | Good      | 1'                                       | 1'               | At Maint. Building                      | Wayne Winn   |
| XX              | Good      | 1'                                       | 1'               | At Maint. Building                      | Wayne Winn   |
| DD#1            | Good      | 5'                                       | 1' 6"            |   | Wayne Winn   |
| DD#2            | Good      | 2'                                       | 5"               |   | Jeff Dobson  |
| DD#3            | Good      | 5'                                       | 1' 6"            |   | Jeff Dobson  |



### Catch Basin Inspection & Maintenance Log

| Date: 4/25/2011 |           | Job: Mercy Hospital/Catholic Health East |                  | Number of Basins Cleaned: 55 + 3 Basins |              |
|-----------------|-----------|--|------------------|---|--------------|
| CB#             | Condition | Depth from Base to Drain                 | Sediment Buildup | Comments                                | Service Tech |
| 1               | Good      | 4' 6"                                    | 5"               |   | Jeff Dobson  |
| 2               | Good      | 4' 6"                                    | 10"              |   | Jeff Dobson  |
| 3               | Good      | 3'                                       | 6"               | 2 chunks of tar in base                 | Jeff Dobson  |
| 4               | Good      | 3' 6"                                    | 5"               |   | Jeff Dobson  |
| 5               | Good      | 4'                                       | 8"               |   | Jeff Dobson  |
| 6               | Good      | 4'                                       | 8"               |   | Jeff Dobson  |
| 7               | Good      | 4'                                       | 10"              |   | Jeff Dobson  |
| 8               | Good      | 4'                                       | 10"              |   | Jeff Dobson  |
| 9               | Good      | 2'                                       | 10"              |   | Jeff Dobson  |
| 10              | Good      | 1' 6"                                    | 8"               |   | Jeff Dobson  |
| 11              | Good      | 3'                                       | 8"               |   | Jeff Dobson  |
| 12              | Good      | 2' 9"                                    | 8"               |   | Jeff Dobson  |
| 13              | Good      | 4'                                       | 5"               |   | Jeff Dobson  |
| 14              | Good      | 4'                                       | 3"               |   | Jeff Dobson  |
| 15              | Good      | 3'                                       | 5"               |   | Jeff Dobson  |
| 16              | Good      | 3'                                       | 10"              |   | Jeff Dobson  |
| 17              | Good      | 3' 6"                                    | 2"               |   | Wayne Winn   |
| 18              | Good      | 3'                                       | 5"               |   | Wayne Winn   |
| 19              | Good      | 3' 8"                                    | 3"               |   | Jeff Dobson  |
| 20              | Good      | 3'                                       | 1'               |   | Jeff Dobson  |
| 21              | Good      | 4'                                       | 1"               |   | Jeff Dobson  |
| 22              | Good      | 3'                                       | 1'               |   | Jeff Dobson  |
| 23              | Deleted   |  |                  |   |              |
| 24              | Good      | 3'                                       | 10"              |   | Jeff Dobson  |
| 25              | Good      | 3'                                       | 1'               |   | Jeff Dobson  |
| 26              | Good      | 3'                                       | 4"               |   | Wayne Winn   |
| 27              | Good      | 3'                                       | 6"               |   | Wayne Winn   |
| 28              | Deleted   |  |                  |   |              |
| 29              | Good      | 3'                                       | 4"               |   | Wayne Winn   |
| 30              | Good      | 2'                                       | 6"               |   | Wayne Winn   |
| 31              | Good      | 3'                                       | 6"               |   | Wayne Winn   |
| 32              | Good      | 3'                                       | 8"               |   | Wayne Winn   |
| 33              | Good      | 3'                                       | 8"               |   | Wayne Winn   |
| 34              | Good      | 3'                                       | 1'               |   | Wayne Winn   |
| 35              | Deleted   |  |                  |   |              |
| 36              | Good      | 4'                                       | 3"               |   | Wayne Winn   |
| 37              | Good      | 1'                                       | 1"               |   | Wayne Winn   |
| 38              | Good      | 3'                                       | 5"               |   | Jeff Dobson  |
| 39              | Good      | 3'                                       | 1'               |   | Wayne Winn   |
| 40              | Good      | 3'                                       | 4"               |   | Wayne Winn   |
| 41              | Good      | 3'                                       | 4"               |   | Wayne Winn   |
| 42              | Deleted   |  |                  |   |              |
| 43              | Good      | 3'                                       | 5"               |   | Wayne Winn   |
| 44              | Good      | 3'                                       | 5"               |   | Wayne Winn   |
| 45              | Good      | 3'                                       | 8"               |   | Wayne Winn   |
| 46              | Good      | 3'                                       | 4"               |   | Wayne Winn   |
| 47              | Good      | 3'                                       | 10"              |   | Jeff Dobson  |
| 48              | Good      | 3'                                       | 1"               |   | Jeff Dobson  |
| 49              | Good      | 3'                                       | 10"              |   | Jeff Dobson  |
| 50              | Good      | 3'                                       | 3"               |   | Jeff Dobson  |
| 51              | Good      | 3'                                       | 8"               |   | Jeff Dobson  |

## SECTION 19

### FLOODING

#### **19.0 Overview**

The development site is not located within the mapped FEMA Floodplain limits. The 100 year flood elevation along the Fore River is at elevation 10.0' (NGVD 29). Filling of the wetland pond/former gravel pit will raise the ground level grade substantially above elevation 10.0'; thus avoiding future issues.

## SECTION 21

### AIR EMISSIONS

#### 21.0 Overview

Air emissions expected to occur as a result of or within the project area are as follows:

- Emissions associated with construction vehicles and construction of the project.
- Emissions associated with vehicular travel of employees, delivery vehicles, and incoming and outgoing patients going to/from the hospital.
- Emissions associated with the heating and cooling systems for the proposed Mercy Hospital Relocation Project.

Based upon preliminary analysis of the size of the proposed facilities, the total maximum design heat input may exceed 10.0 million British Thermal Units per hour and therefore a separate Air Emissions license from the Air Bureau may be required.

An Air Emission License application was previously filed independently from this application. The Air Emission License A-912-71-A-N will be amended as necessary by Mercy Hospital and their air emissions consultant. The applicant requests that the air emissions aspects for the project be conditioned within the SLDA permit order.

## **SECTION 25**

### **NOTICES**

#### **25.0 Introduction**

The abutters to the project were identified based upon tax maps, assessor's records, and project surveys. The list of abutters is enclosed as Attachment A.

A public informational meeting was held on July 9, 2012. Abutters were notified of this meeting via certified mail. These notices were sent on or about June 26, 2012. The notice of this meeting was published in the Portland Press Herald on June 28, 2012. Copies of the notices sent to abutters and a copy of the published notice are contained in Attachment B. Our office had a preapplication meeting with Christine Woodruff and Ben Viola of MeDEP on May 9, 2012.

#### **25.1 Chapter 2 Requirements**

The Site Location of Development Amendment Application is subject to Chapter 2 of the MeDEP Permit Rules for processing the application. Specific requirements and the action of the applicant are as follows:

- **Preapplication Meeting:** Section 6 of the rules requires the applicant to have a preapplication meeting. A preapplication meeting for this project was conducted on May 9, 2012. A copy of the preapplication meeting summary is enclosed as Attachment C.
- **Public Informational Meeting:** A public informational meeting was held on June 9, 2012. Minutes of this meeting are enclosed as Attachment D. Abutters and City officials were notified more than ten days prior to the public informational meeting. The notice was published in the Portland Press Herald on June 28, 2012. A copy of the notice is enclosed in Attachment B.

#### **25.2 Copies of Notices**

Copies of the notices sent to abutters and the published advertisement are appended to this section in Attachment B.

#### **25.3 Attachments**

Attachment A – List of Abutters

Attachment B – Published Advertisement for Public Informational Meeting  
Copies of Notices Sent to Abutters

Attachment C – Pre-Application Meeting with MeDEP Summary

Attachment D – Public Informational Meeting Minutes

Attachment E – Form C of MeDEP Application

Attachment F – Public Informational Meeting Sign-In Sheet

**ATTACHMENT A**

**List of Abutters**

**Mercy Hospital Phase II Relocation Project – Abutters List**

| <u>Map</u> | <u>Lot</u>                    | <u>Owner</u>  | <u>Parcel Address</u> |
|------------|-------------------------------|---|-----------------------|
| 073        | A002001<br>A005001<br>A006001 | Barber Foods Property LLC<br>9990 Princeton Glendale Rd<br>Cincinnati, OH 45246       | 70 St. John Street    |
| 073        | B004001                       | Portland Terminal Co.<br>Iron Horse Park<br>North Billerica, MA 01862                 | 50 St. John Street    |
| 074        | A004001                       | Factors Financial FRC Inc.<br>PO Box 7002<br>Portland, ME 04112                       | 172 St. John Street   |
| 074        | A007001                       | Cowcatcher LLC<br>100 Commercial Street<br>Portland, ME 04101                         | 222 St. John Street   |
| 075        | A005001                       | Landmark Healthcare Facilities LLC<br>839 North Jefferson<br>Milwaukee, WI 53202      | 195 Fore River Pkwy   |
| 075        | A006001                       | Cowcatcher LLC<br>100 Commercial Street<br>Portland, ME 04101                         | 222 St. John Street   |
| 075        | A001001                       | Inhabitants of<br>The County of Cumberland<br>42 Federal Street<br>Portland, ME 04101 | 50 County Way         |
| 075A       | B001001                       | Inhabitants of<br>The County of Cumberland<br>42 Federal Street<br>Portland, ME 04101 | 50 County Way         |
| 076        | A019001                       | State of Maine<br>16 State House Station<br>Augusta, ME 04333                         | 0 Ogdensburg Street   |
| 076        | A039001                       | Inhabitants of<br>The County of Cumberland<br>42 Federal Street<br>Portland, ME 04101 | 50 County Way         |



**ATTACHMENT B**

**Published Advertisement for Public Informational Meeting  
Copies of Notices Sent to Abutters**

**PUBLIC NOTICE NOTICE OF PUBLIC INFORMATIONAL MEE**

PUBLIC NOTICE NOTICE OF PUBLIC INFORMATIONAL MEETING Mercy Hospital will hold a public informational meeting on July 9, 2012 at 6:00 PM at 195 Fore River Parkway in Portland, Maine, second floor meeting room. The meeting is required by Maine Revised Statutes Title 38, Chapter 3, §§ 481-490. The purpose of the meeting will be to discuss proposed expansion of the hospital's facilities and infrastructure at Mercy's Fore River Campus at 175-195 Fore River Parkway in Portland, Maine. Mercy Hospital is proposing adding a 3-story wing onto the main hospital building, building two additional parking garages, one additional medical office building and upgrading infrastructure associated with the campus. The meeting will present details of the proposed expansion for informational purposes. Mercy Hospital, 195 Fore River Parkway, Portland, Maine, Phone: 1-207-879-3895. #4626438

Appeared in: **Portland Press Herald/Maine Sunday Telegram** on Thursday, 06/28/2012

http://me.mypublicnotices.com

**ATTACHMENT C**

**Pre-Application Meeting with MeDEP Summary**

## MEETING SUMMARY

**Pre-Application Conference of May 9, 2012, 9:30 AM  
Mercy Phase II Hospital at the Fore River Site, Portland, Maine  
MDEP Southern Maine Regional Office, 312 Canco Road, Portland**

### **1. Attendees:**

- **MDEP:** Christine Woodruff, Ben Viola, John Hopeck, and Jim Dusch
- **USACOE:** Jay Clement
- **Applicant Group:** Bill Connolly, Mercy Hospital; Ellen Belknap, SMRT; Stephen Bushey and Bo Kennedy, DeLuca-Hoffman Associates; Marcia Bowen and Ian Broadwater, Normandeau Associates; John Tewhey, Tewhey Associates

### **2. Introductions, Purpose and Scope** - John Tewhey made introductions and gave an overview of Mercy's efforts to move Phase II Hospital forward, i.e.,

- Permit applications with the MDEP and USACOE;
- Securing project financing with Mercy's parent organization, Catholic Health East;
- Interactions and coordination with the City of Portland Planning Department; and
- Informational interactions with internal and external stakeholders.

**2. Mercy Fore River Phase II Plan and Proposed Sequence of Development** – Mercy described the plan for the Fore River campus, which involves the development of ambulatory care/outpatient services which were not envisioned in the original master plan. Medical office building (MOB) space is needed for hospital-employed physicians. Two parking structures plus a two-level parking platform are currently planned.

Mercy addressed the space differential of the Fore River campus versus the State Street site. In-patient use has not grown, but the space required per in-patient has grown, as has diagnostic and operating room size. The State Street site has 250,000 sq. ft. of occupied space and the Fore River hospital currently has 138,000 sq. ft. The acute care facility at Fore River will have about 200,000 sq. ft. plus 70,000 sq ft for the ambulatory care center (ACC). Hospital size is now governed by room type and regulatory size requirements.

This elevation change in the Phase II hospital and the resulting two-deck parking platform resulted from engineering and architectural requirements: (1) the need to provide space for the required storm water chambers and (2) the need to have the Phase I and Phase II hospital entrances at the same level. The upper deck is a patient parking area and will be at the same level as the hospital entrance. The lower level parking area for staff provides entry to the ground floor level. With the addition of the two-level parking deck, the number of parking structures has been reduced from three to two.

The applications will encompass the entire plan and phasing. The current and future storm water facilities will be constructed at the onset of the project. The sequencing of construction will be described in the application. The design may be altered over time, but the hospital footprint and the impervious area is likely to be stable.

The MDEP inquired about property size. Mercy purchased 85 contiguous acres at the site, half of which were mud flats. The site has been reduced by the new Parkway and Veterans Bridge. The proposed hospital will be developed on approximately 22 acres.

**4. SLOD – Storm Water Management Plans and Other Subjects** – Mercy described the storm water management layout using large-scale plans. The new treatment systems have large vertical dimensions, which drove the decision to raise the elevation of the hospital first floor. Existing treatment systems will remain in place and will be utilized. There will be a net increase of impervious area of about four acres. Four existing storm water discharge points to the Fore River will be used. No system components will be below the 100-year flood elevation (10 ft), except for the discharge pipes which operate with the tide. There are two treatment swales on the parcel. The northern swale is functional, but the southern swale has been disrupted by the bridge construction and will be revitalized in 2012. Three “defender” units will treat most of the parking lot areas.

Mercy indicated that roof runoff would be separated and would go into the ground. The details of discharge would be resolved on the basis of the clay / granular stratigraphy.

Mercy indicated that the current treatment systems were being well maintained. Parking lots and the upper decks of parking structures will be a treatment priority. The MDEP indicated that (1) the project should include containment provisions for petroleum leaks in parking areas, (2) that Mercy prioritize the dirtiest water for treatment, (3) extra treatment capacity be included for future needs, (4) tables and charts should be uncomplicated and (5) the southern maintenance building be included in the treatment system.

**Other systems** - The mechanical systems and loading dock will be relocated to the rear (eastern portion) of the site. Emergency services will be located to the rear of the building, with separate patient parking and ambulance access. The front of the building will be used exclusively for non-emergency patient and staff entry.

There are currently 400 parking spaces at the north end of the site and 350 spaces at the south end. There will be approximately 300 spaces in each of the two parking structures. There will continue to be two access points to the hospital from the Fore River Parkway.

The VRAP soil areas on the east and south portions will be undisturbed. MDEP will review the prior soil testing on the site. Haley & Aldrich will participate in determining the method(s) of filling the wetland. Additional geotechnical testing may be required.

In response to a MDEP inquiry, Mercy indicated that temporary surface parking during construction would be established in area of the wetland and would augment the soil pre-load. The initial 3 to 4 feet of wetland fill would be crushed stone, overlain by clean granular borrow, then type D gravel under the pavement. Neither Veterans Bridge nor Thompson Point fill will be used on the site. The MDEP recommended that the permit

specify the use of inert, clean materials for fill. Mercy indicated that temporary sediment sumps or a similar approach will be used to manage storm water in construction areas.

**5. Financial Capacity.** The MDEP is concerned that the Phase II hospital could be stalled after filling of the wetland. Mercy indicated that the current situation is similar to the permitting of Phase I, where permits were received prior to buying the land and initiating the Certificate of Need (CON). Catholic Health East (CHE) will not fund the initial site actions without plans to construct the entire Phase II hospital. The existing CON is for Phase I and Phase II, although the size and shape of the Phase II hospital was changed.

Mercy, CHE and the City of Portland all understand the need for this expansion/consolidation and cannot proceed further without assurance of the MDEP and ACOE permits. Mercy cannot accept the status quo and cannot accept a Phase II campus that is divided by the wetland...it would result in the "eventual death of the hospital by 1000 cuts". Mercy described the overall order of sequencing of the Phase II project as (1) MDEP and USACOE permits, (2) proceed with hospital design while securing overall commitment for financing from CHE and other funding sources, (3) fill the wetland and developing a temporary surface parking, (4) construct a parking structure on the north end of the site while (5) prepare and submit the CON to the State of Maine.

The MDEP suggested that a permit condition could allow wetland filling contingent upon Mercy receiving a financing commitment. Mercy indicated that the permits will allow CHE to offer finance commitments, which would allow the CON to move forward. Mercy indicated that the Phase II hospital was "an all or nothing project", which the MDEP found to be helpful. Mercy indicated that Phase II sequence of events would be a coordinated process, similar to the development of the Fore River parcel.

In response to an inquiry, Mercy indicated that the construction of the parking garage would not require a CON. Mercy indicated that it will take approximately 6 to 8 months and \$20 million in A/E work to prepare for the CON, followed by a 12 month process to secure the CON. Mercy indicated there are currently a number of favorable opportunities for construction projects, including low interest rates and low construction costs. Mercy would find it a great advantage to go forward with construction of those items that do not require CON approval...wetland filling and garage construction.

The MDEP offered that it was becoming evident that the parking garage and wetland fill would not get done without a commitment that the whole project would move forward. Mercy responded in the affirmative, and that the receipt of the MDEP and USACOE permits would be the optimum time for construction to begin, i.e., the pond filling and garage construction. Subsequent to receipt of the permits, CHE would sequentially approve the funding for the in-lieu fee, pond filling, storm water equipment installation and parking lot construction. However, the total project cost won't be known until the design is complete. The design represents a \$20 million investment that will proceed concurrently with the initial construction activities.

**6. NRPA – Overview of Alternatives Analysis.** The alternatives analysis will incorporate the Mercy Phase II hospital concepts from 2001 to the present, an evolution that has paralleled health care changes in terms of aging population, increased cost, and maximizing out-patient procedures while minimizing in-patient stays. The alternatives analysis follows a two step process. First, four campus configurations (no action, two campus scenarios, and a one-campus system) were examined and ranked in light of new hospital standards. The preferred configuration is a one-campus system. Secondly, eight one-campus alternatives were examined and ranked. The alternatives analysis examines how the options measure up against health care requirements, safety, efficiency, and resource impact. Spread sheets have been developed which document the current regulations on hospital sizing. The analysis examines the total build out.

**7. Wetland Compensation Plan.** There have been three minor changes to the wetland compensation plan: (1) a turtle relocation plan will be included in the SLOD and NRPA applications; (2) a construction plan will minimize disruption of shorebird migration; and (3) the DIFW and MDEP did not see a need to add wildlife buffers along the Fore River. Also, the estimated in lieu fee was slightly modified, as recommended by MDEP.

**8. Discussion of Other Subjects and Anticipated Schedule of Environmental Applications.** Mercy indicated that the project will request a summer pre-submission meeting with the MDEP and the USACOE. The following is a list of the additional sections of Site Law that will be included in the submission:

Financial Capacity - As discussed above

Technical Ability

Visual quality: Mercy will present a concept plan that will include buffering. The MDEP requested that we provide what we can at the time of application submittal and provide a final landscaping plan when it is available in the future.

Wildlife and Fisheries- This section will include turtle relocation

Soils- There will be discussion on VRAP, soil handling and any new geotechnical work.

Stormwater- As discussed above

Basic standards

Groundwater

Wastewater- Mercy will get a letter from City of Portland to assure that there is sufficient capacity. Lines were already appropriately sized. Emergency power facilities will include propane, natural gas and diesel and will be located on the eastern portion of the hospital.

Solid waste- Mercy will provide an update for both construction and hospital operations.

Flooding- Flood elevation is 10 ft and all facilities / operations will be above that level.

Air – A new air license will be required and will be applied for separately.

Public Meeting – The usual notices will be required. A public information meeting will be required because (1) it is a major amendment and (2) falls under Tier 3 of NRPA. The fee for SLOD (medical) is half the usual. NRPA fee is based on square footage of impacts. The MDEP indicated that the application would be turned around as quickly as possible... 185 days, or less. The MDEP reminded Mercy to stamp and fold the application so as to measure 8.5 X 11. The MDEP offered to look at sections in advance.

**ATTACHMENT D**

**Public Informational Meeting Minutes**



## **Mercy Hospital Public Informational Meeting, July 9, 2012**

The public informational meeting was held on July 9, 2012 at 6:00 pm at Mercy Hospital's Fore River campus. One member of the public attended. A sign-in sheet is attached.

John Tewhey, Tewhey Associates, led the discussion and introduced the project team: Bill Connolly, Mercy Hospital; Steve Bushey, DeLuca Hoffman; and Marcia Bowen, Normandeau Associates. John indicated that the purpose of the meeting was to describe the project and answer questions, fulfilling the requirements of Maine's Natural Resource Protection Act's Tier 3 permit application. This application along with a Site Location of Development amendment, will be submitted in mid-July. The need for consolidation of Mercy Hospital facilities was discussed along with the rationale for selecting the Fore River site. Current high costs of operating dual facilities have prompted Mercy Hospital to move forward with the second phase of consolidation. Since the original construction in 2002, hospital design standards and health care operations have changed substantially. Project architects have been unable to meet current design standards and avoid the centrally-located wetland on the site. Therefore, the project is requesting a Natural Resource Protection Act permit from the Maine Department of Environmental Protection to fill the wetland for Phase 2 construction. Wetland impacts will be mitigated through the Maine Department of Environmental Protection's in lieu fee program. John described project phasing, which will begin with fill of the wetland to allow settlement and construction of a temporary parking facility, allowing for construction of a new parking garage, followed by construction of the new hospital. Final design and application for the necessary Certificate of Need will proceed in parallel with the initial construction, likely to begin in late 2013 or 2014.

A member of the audience asked about the cost of running two facilities. John answered it was \$10 million annually a combination of duplicated services and facilities.

A member of the audience asked if it was Mercy's original intent to open the Fore River campus and close State St. John answered yes. The economy prevented Mercy from moving forward sooner, but now it is essential in order for Mercy to stay in business.

**ATTACHMENT E**

**Form C of MeDEP Application**

## PUBLIC NOTICE FILING AND CERTIFICATION

The DEP Rules, Chapter 2, require an applicant to provide public notice for all Site Location projects with the exception of minor revisions and condition compliance applications. In the notice, the applicant must describe the proposed activity and where it is located. "Abutter" for the purposes of the notice provision means any person who owns property that is BOTH (1) adjoining and (2) within one mile of the delineated project boundary, including owners of property directly across a public or private right of way.

1. **Newspaper:** You must publish the Notice of Intent to File in a newspaper circulated in the area where the activity is located. The notice must appear in the newspaper within 30 days prior to the filing of the application with the Department. You may use the attached Notice of Intent to File form, or one containing identical information, for newspaper publication and certified mailing.
2. **Abutting Property Owners:** You must send a copy of the Notice of Intent to File by certified mail to the owners of the property abutting the activity. Their names and addresses can be obtained from the town tax maps or local officials. They must receive notice within 30 days prior to the filing of the application with the Department.
3. **Municipal Office:** You must send a copy of the Notice of Intent to File and a **duplicate of the entire application** to the Municipal Office.

**ATTACH a list of the names and addresses of the owners of abutting property.**

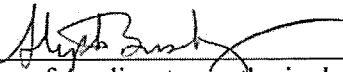
### CERTIFICATION

By signing below, the applicant or authorized agent certifies that:

1. A Notice of Intent to File was published in a newspaper circulated in the area where the project site is located within 30 days prior to filing the application;
2. A certified mailing of the Notice of Intent to File was sent to all abutters within 30 days of the filing of the application;
3. A certified mailing of the Notice of Intent to File, and a duplicate copy of the application was sent to the town office of the municipality in which the project is located; and
4. Provided notice of, if required, and held a public informational meeting in accordance with Chapter 2, Rules Concerning the Processing of Applications, Section 14, prior to filing the application. Notice of the meeting was sent by certified mail to abutters and to the town office of the municipality in which the project is located at least ten days prior to the meeting. Notice of the meeting was also published once in a newspaper circulated in the area where the project site is located at least seven days prior to the meeting.

The Public Informational Meeting was held on July 9, 2012  
Date

Approximately 1 members of the public attended the Public Informational Meeting.

  
Signature of Applicant or authorized agent

July 10, 2012  
Date

**PUBLIC NOTICE NOTICE OF INTENT TO FILE PLEASE**

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 #4626424

Appeared in: **Portland Press Herald/Maine Sunday Telegram** on Thursday, 06/28/2012

## PUBLIC NOTICE FILING AND CERTIFICATION

The DEP Rules, Chapter 2, require an applicant to provide public notice for all Site Location projects with the exception of minor revisions and condition compliance applications. In the notice, the applicant must describe the proposed activity and where it is located. "Abutter" for the purposes of the notice provision means any person who owns property that is BOTH (1) adjoining and (2) within one mile of the delineated project boundary, including owners of property directly across a public or private right of way.

1. **Newspaper:** You must publish the Notice of Intent to File in a newspaper circulated in the area where the activity is located. The notice must appear in the newspaper within 30 days prior to the filing of the application with the Department. You may use the attached Notice of Intent to File form, or one containing identical information, for newspaper publication and certified mailing.
2. **Abutting Property Owners:** You must send a copy of the Notice of Intent to File by certified mail to the owners of the property abutting the activity. Their names and addresses can be obtained from the town tax maps or local officials. They must receive notice within 30 days prior to the filing of the application with the Department.
3. **Municipal Office:** You must send a copy of the Notice of Intent to File and a duplicate of the entire application to the Municipal Office.

**ATTACH a list of the names and addresses of the owners of abutting property.**

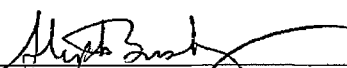
### CERTIFICATION

By signing below, the applicant or authorized agent certifies that:

1. A Notice of Intent to File was published in a newspaper circulated in the area where the project site is located within 30 days prior to filing the application;
2. A certified mailing of the Notice of Intent to File was sent to all abutters within 30 days of the filing of the application;
3. A certified mailing of the Notice of Intent to File, and a duplicate copy of the application was sent to the town office of the municipality in which the project is located; and
4. Provided notice of, if required, and held a public informational meeting in accordance with Chapter 2, Rules Concerning the Processing of Applications, Section 14, prior to filing the application. Notice of the meeting was sent by certified mail to abutters and to the town office of the municipality in which the project is located at least ten days prior to the meeting. Notice of the meeting was also published once in a newspaper circulated in the area where the project site is located at least seven days prior to the meeting.

The Public Informational Meeting was held on July 9, 2012  
Date

Approximately 1 members of the public attended the Public Informational Meeting.

  
Signature of Applicant or authorized agent

July 10, 2012  
Date

**ATTACHMENT F**

**Public Informational Meeting Sign-In Sheet**

PLEASE SIGN IN  
Mersey Hospital Public Informational Meeting 7/9/2012

NAME

PHONE

EMAIL

1. Dang Moore

207-679-7234

dmoore@clm-ho.com

2.

3.

4.

5.

6.

7.

8.

9.

10.

11.

12.

13.

14.

15.

16.

17.

18.

19.

20.

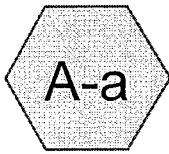
21.

22.

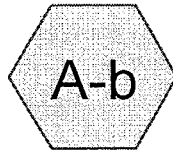
23.

24.

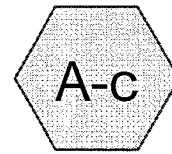
25.



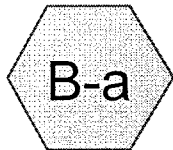
Treatment Area A-a



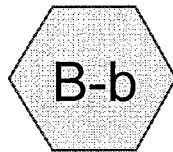
Treatment Area A-b



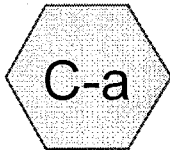
Treatment Area A-c



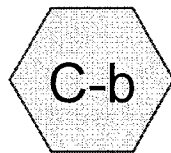
Treatment Area B-b



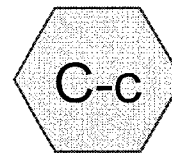
Treatment Area B-c



Treatment Zone C-a



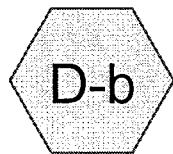
Treatment Zone C-b



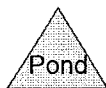
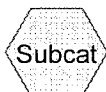
Treatment Zone C-c



Treatment Zone D-a



Treatment Zone D-b





# Treat BMP 1 Yr Flows

Prepared by {enter your company name here}  
HydroCAD® 8.50 s/n 000734 © 2007 HydroCAD Software Solutions LLC

Printed 7/11/2012

Page 2

## Area Listing (all nodes)

| Area<br>(acres) | CN | Description<br>(subcatchment-numbers)                           |
|-----------------|----|---|
| 3.071           | 74 | >75% Grass cover, Good, HSG C (A-a,A-b,A-c,B-a,B-b,C-a,D-a,D-b) |
| 5.835           | 98 | Paved parking (C-a,D-a,D-b)                                     |
| 1.514           | 98 | Paved parking & roofs (A-a,A-b,A-c,B-a,B-b)                     |
| 2.514           | 98 | roofs (C-b,C-c,D-a)   |
| <b>12.934</b>   |    | <b>TOTAL AREA</b>   |

# Treat BMP 1 Yr Flows

Type III 24-hr 1 yr Rainfall=2.50"

Prepared by {enter your company name here}

Printed 7/11/2012

HydroCAD® 8.50 s/n 000734 © 2007 HydroCAD Software Solutions LLC

Page 4

Time span=0.00-29.00 hrs, dt=0.05 hrs, 581 points  
Runoff by SCS TR-20 method, UH=SCS  
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

|   |  |
|---|--|
| <b>Subcatchment A-a: Treatment Area A-a</b> | Runoff Area=10,966 sf 69.31% Impervious Runoff Depth=1.61"<br>Tc=6.0 min CN=91 Runoff=0.46 cfs 0.034 af  |
| <b>Subcatchment A-b: Treatment Area A-b</b> | Runoff Area=20,405 sf 75.61% Impervious Runoff Depth=1.69"<br>Tc=6.0 min CN=92 Runoff=0.90 cfs 0.066 af  |
| <b>Subcatchment A-c: Treatment Area A-c</b> | Runoff Area=22,308 sf 68.37% Impervious Runoff Depth=1.53"<br>Tc=6.0 min CN=90 Runoff=0.90 cfs 0.065 af  |
| <b>Subcatchment B-a: Treatment Area B-b</b> | Runoff Area=27,071 sf 87.83% Impervious Runoff Depth=1.96"<br>Tc=6.0 min CN=95 Runoff=1.34 cfs 0.102 af  |
| <b>Subcatchment B-b: Treatment Area B-c</b> | Runoff Area=22,099 sf 17.60% Impervious Runoff Depth=0.79"<br>Tc=6.0 min CN=78 Runoff=0.43 cfs 0.033 af  |
| <b>Subcatchment C-a: Treatment Zone C-a</b> | Runoff Area=94,840 sf 93.68% Impervious Runoff Depth=2.06"<br>Tc=6.0 min CN=96 Runoff=4.87 cfs 0.374 af  |
| <b>Subcatchment C-b: Treatment Zone C-b</b> | Runoff Area=48,000 sf 100.00% Impervious Runoff Depth=2.27"<br>Tc=6.0 min CN=98 Runoff=2.59 cfs 0.209 af |
| <b>Subcatchment C-c: Treatment Zone C-c</b> | Runoff Area=21,800 sf 100.00% Impervious Runoff Depth=2.27"<br>Tc=6.0 min CN=98 Runoff=1.18 cfs 0.095 af |
| <b>Subcatchment D-a: Treatment Zone D-a</b> | Runoff Area=190,130 sf 67.78% Impervious Runoff Depth=1.53"<br>Tc=6.0 min CN=90 Runoff=7.66 cfs 0.557 af |
| <b>Subcatchment D-b: Treatment Zone D-b</b> | Runoff Area=105,781 sf 71.98% Impervious Runoff Depth=1.61"<br>Tc=6.0 min CN=91 Runoff=4.46 cfs 0.326 af |

**Total Runoff Area = 12.934 ac Runoff Volume = 1.860 af Average Runoff Depth = 1.73"**  
**23.75% Pervious = 3.071 ac 76.25% Impervious = 9.862 ac**

**Treat BMP 1 Yr Flows**

Type III 24-hr 1 yr Rainfall=2.50"

Prepared by {enter your company name here}

Printed 7/11/2012

HydroCAD® 8.50 s/n 000734 © 2007 HydroCAD Software Solutions LLC

Page 6

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

**Summary for Subcatchment B-a: Treatment Area B-b**

Runoff = 1.34 cfs @ 12.09 hrs, Volume= 0.102 af, Depth= 1.96"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-29.00 hrs, dt= 0.05 hrs  
Type III 24-hr 1 yr Rainfall=2.50"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 3,294     | 74 | >75% Grass cover, Good, HSG C |
| 23,777    | 98 | Paved parking & roofs         |
| 27,071    | 95 | Weighted Average              |
| 3,294     |    | Pervious Area                 |
| 23,777    |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

**Summary for Subcatchment B-b: Treatment Area B-c**

Runoff = 0.43 cfs @ 12.10 hrs, Volume= 0.033 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-29.00 hrs, dt= 0.05 hrs  
Type III 24-hr 1 yr Rainfall=2.50"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 18,210    | 74 | >75% Grass cover, Good, HSG C |
| 3,889     | 98 | Paved parking & roofs         |
| 22,099    | 78 | Weighted Average              |
| 18,210    |    | Pervious Area                 |
| 3,889     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

**Summary for Subcatchment C-a: Treatment Zone C-a**

Runoff = 4.87 cfs @ 12.09 hrs, Volume= 0.374 af, Depth= 2.06"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-29.00 hrs, dt= 0.05 hrs  
Type III 24-hr 1 yr Rainfall=2.50"

**Treat BMP 1 Yr Flows**

Type III 24-hr 1 yr Rainfall=2.50"

Prepared by {enter your company name here}

Printed 7/11/2012

HydroCAD® 8.50 s/n 000734 © 2007 HydroCAD Software Solutions LLC

Page 8

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 61,251    | 74 | >75% Grass cover, Good, HSG C |
| 39,703    | 98 | roofs                         |
| 89,176    | 98 | Paved parking                 |
| 190,130   | 90 | Weighted Average              |
| 61,251    |    | Pervious Area                 |
| 128,879   |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

**Summary for Subcatchment D-b: Treatment Zone D-b**

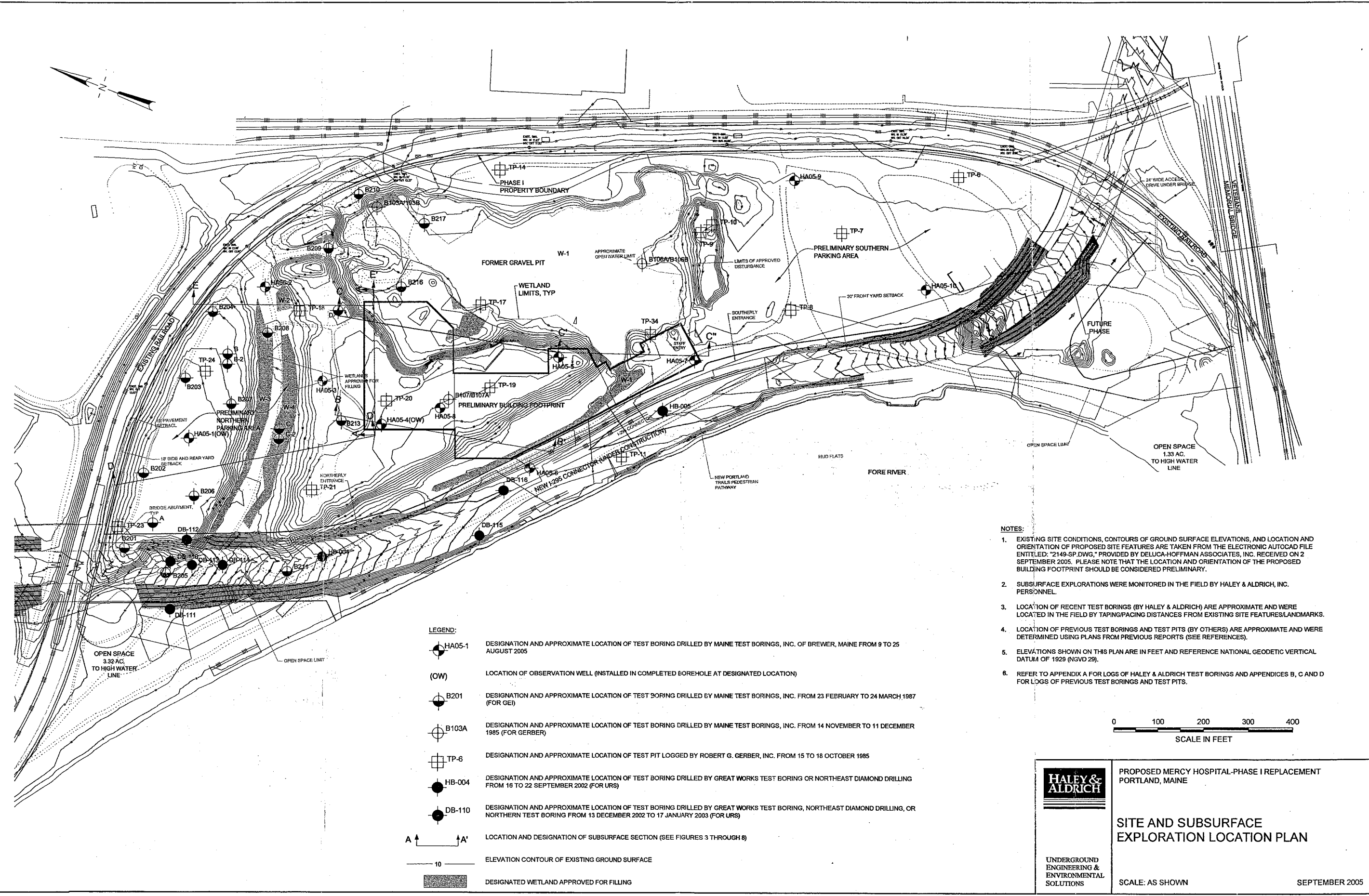
Runoff = 4.46 cfs @ 12.09 hrs, Volume= 0.326 af, Depth= 1.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-29.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 1 yr Rainfall=2.50"

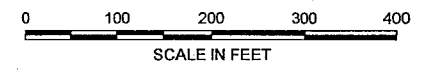
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 29,640    | 74 | >75% Grass cover, Good, HSG C |
| 76,141    | 98 | Paved parking                 |
| 105,781   | 91 | Weighted Average              |
| 29,640    |    | Pervious Area                 |
| 76,141    |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

FILE NO. 31807-001



- NOTES:**
- EXISTING SITE CONDITIONS, CONTOURS OF GROUND SURFACE ELEVATIONS, AND LOCATION AND ORIENTATION OF PROPOSED SITE FEATURES ARE TAKEN FROM THE ELECTRONIC AUTOCAD FILE ENTITLED: "2149-SP.DWG," PROVIDED BY DELUCA-HOFFMAN ASSOCIATES, INC. RECEIVED ON 2 SEPTEMBER 2005. PLEASE NOTE THAT THE LOCATION AND ORIENTATION OF THE PROPOSED BUILDING FOOTPRINT SHOULD BE CONSIDERED PRELIMINARY.
  - SUBSURFACE EXPLORATIONS WERE MONITORED IN THE FIELD BY HALEY & ALDRICH, INC. PERSONNEL.
  - LOCATION OF RECENT TEST BORINGS (BY HALEY & ALDRICH) ARE APPROXIMATE AND WERE LOCATED IN THE FIELD BY TAPING/PACING DISTANCES FROM EXISTING SITE FEATURES/LANDMARKS.
  - LOCATION OF PREVIOUS TEST BORINGS AND TEST PITS (BY OTHERS) ARE APPROXIMATE AND WERE DETERMINED USING PLANS FROM PREVIOUS REPORTS (SEE REFERENCES).
  - ELEVATIONS SHOWN ON THIS PLAN ARE IN FEET AND REFERENCE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29).
  - REFER TO APPENDIX A FOR LOGS OF HALEY & ALDRICH TEST BORINGS AND APPENDICES B, C AND D FOR LOGS OF PREVIOUS TEST BORINGS AND TEST PITS.



**LEGEND:**

|  |        |  |
|--|--------|--|
|  | HA05-1 | DESIGNATION AND APPROXIMATE LOCATION OF TEST BORING DRILLED BY MAINE TEST BORINGS, INC. OF BREWER, MAINE FROM 9 TO 25 AUGUST 2005  |
|  | (OW)   | LOCATION OF OBSERVATION WELL (INSTALLED IN COMPLETED BOREHOLE AT DESIGNATED LOCATION)  |
|  | B201   | DESIGNATION AND APPROXIMATE LOCATION OF TEST BORING DRILLED BY MAINE TEST BORINGS, INC. FROM 23 FEBRUARY TO 24 MARCH 1987 (FOR GE)   |
|  | B103A  | DESIGNATION AND APPROXIMATE LOCATION OF TEST BORING DRILLED BY MAINE TEST BORINGS, INC. FROM 14 NOVEMBER TO 11 DECEMBER 1985 (FOR GERBER)  |
|  | TP-6   | DESIGNATION AND APPROXIMATE LOCATION OF TEST PIT LOGGED BY ROBERT G. GERBER, INC. FROM 15 TO 18 OCTOBER 1985   |
|  | HB-004 | DESIGNATION AND APPROXIMATE LOCATION OF TEST BORING DRILLED BY GREAT WORKS TEST BORING OR NORTHEAST DIAMOND DRILLING FROM 16 TO 22 SEPTEMBER 2002 (FOR URS)                                    |
|  | DB-110 | DESIGNATION AND APPROXIMATE LOCATION OF TEST BORING DRILLED BY GREAT WORKS TEST BORING, NORTHEAST DIAMOND DRILLING, OR NORTHERN TEST BORING FROM 13 DECEMBER 2002 TO 17 JANUARY 2003 (FOR URS) |
|  | A — A' | LOCATION AND DESIGNATION OF SUBSURFACE SECTION (SEE FIGURES 3 THROUGH 8)   |
|  | 10     | ELEVATION CONTOUR OF EXISTING GROUND SURFACE   |
|  |        | DESIGNATED WETLAND APPROVED FOR FILLING  |

**HALEY & ALDRICH**

UNDERGROUND  
ENGINEERING &  
ENVIRONMENTAL  
SOLUTIONS

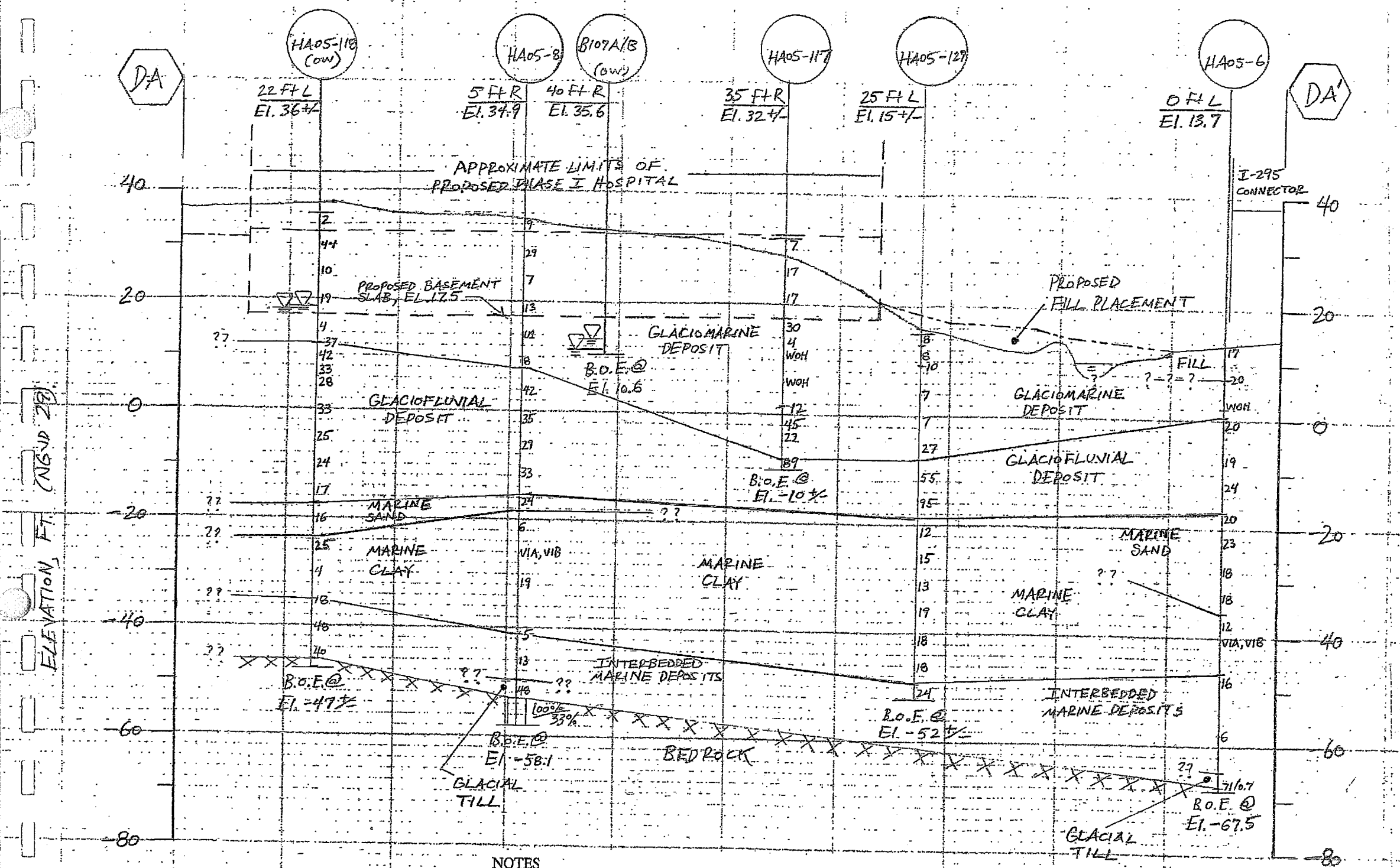
PROPOSED MERCY HOSPITAL-PHASE I REPLACEMENT  
PORTLAND, MAINE

**SITE AND SUBSURFACE  
EXPLORATION LOCATION PLAN**

SCALE: AS SHOWN

SEPTEMBER 2005

FIGURE 2



- LEGEND**
- HA05-6 TEST BORING DESIGNATION
  - DISTANCE AND DIRECTION OF TRANSLATION
  - 0 FT L / El. 13.7 EXISTING GRADE
  - TOP OF TEST BORING
  - 17 SPT N-VALUE AT ELEV.
  - VIA IN-SITU VANE SHEAR AT ELEV.
  - 100% CORE (% RECOVERY / % RQD)
  - 33% CORE (% RECOVERY / % RQD)
  - BOTTOM OF TEST BORING
  - ▽ GROUNDWATER MEASUREMENT IN OBSERVATION WELL
  - INFERRED STRATA INTERFACE (W/ DATA)
  - ??- ASSUMED STRATA INTERFACE (NO DATA)
  - XX INFERRED BEDROCK SURFACE
  - B.O.E. BOTTOM OF EXPLORATION

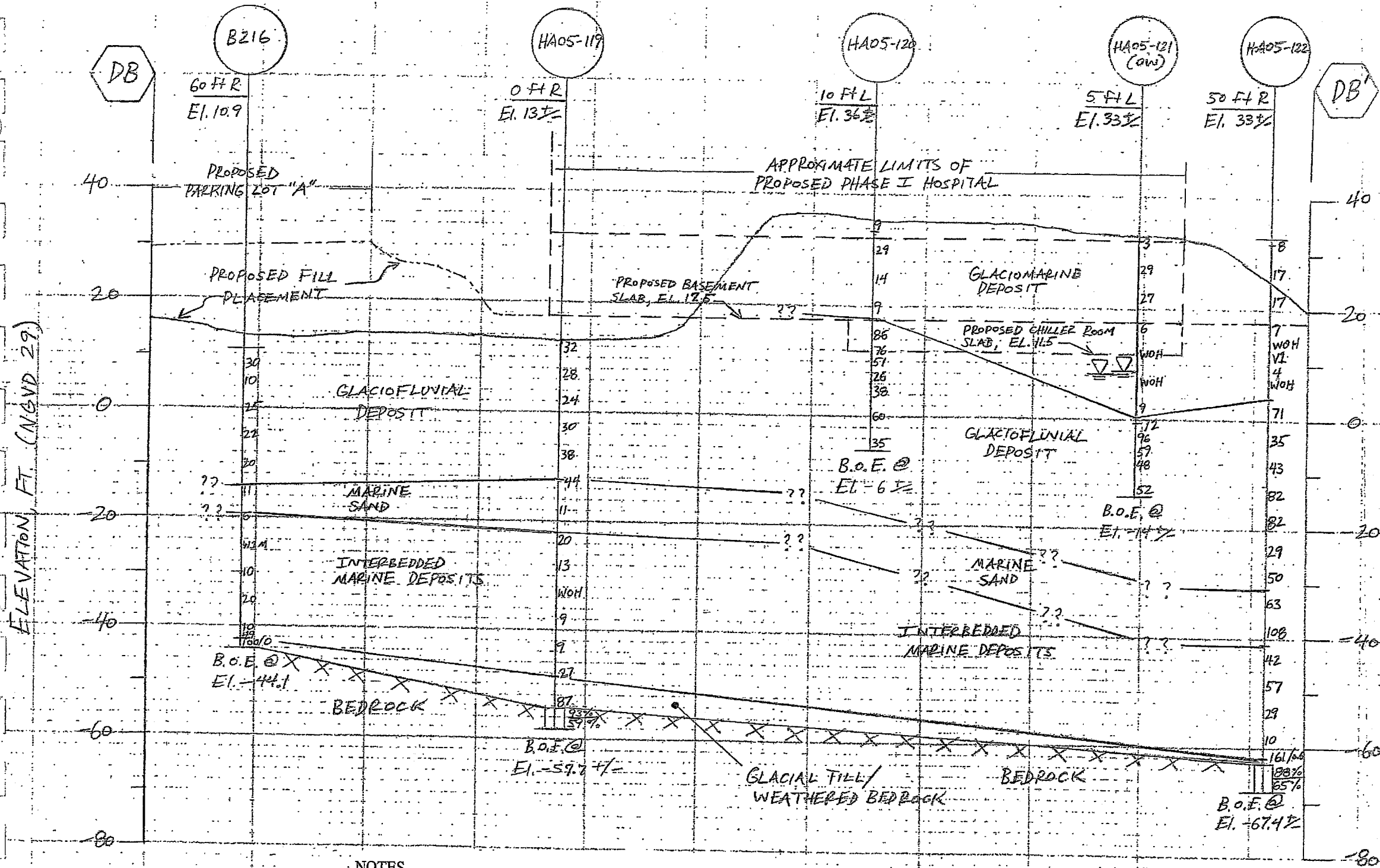
- NOTES**
1. PROFILE LOCATIONS ARE SHOWN IN PLAN ON FIGURE 2.
  2. OFFSET DISTANCES AND DIRECTIONS FROM SECTION ARE AS SHOWN.
  3. EXPLORATION LOCATIONS AND ELEVATIONS FROM PREVIOUS INVESTIGATIONS WERE DETERMINED FROM EXISTING MAPS.
  4. LOCATIONS OF THE "HA05-1" AND "HA05-100" SERIES OF EXPLORATIONS WERE DETERMINED BY OWEN HASKELL, INC. USING GPS EQUIPMENT.
  5. ELEVATIONS FOR THE "HA05-1" SERIES OF EXPLORATIONS WERE DETERMINED BY OWEN HASKELL, INC. USING GPS METHODS, AND ELEVATIONS FOR THE "HA05-100" SERIES OF EXPLORATIONS WERE ESTIMATED USING CONTOUR DATA FROM THE SITE TOPOGRAPHIC PLAN.
  6. ALL ELEVATIONS ARE MEASURED IN FEET IN REFERENCE TO NGVD 29 DATUM.
  7. THE PROFILE PRESENTED ABOVE IS BASED ON WIDELY SPACED DATA POINTS; ACTUAL SUBSURFACE CONDITIONS MAY VARY.

HALEY & ALDRICH, INC.  
 PHASE I HOSPITAL  
 MERCY AT THE FORE DEVELOPMENT  
 PORTLAND, MAINE

SUBSURFACE PROFILE DA-DA'

SCALE: AS SHOWN JANUARY 2006

FIGURE 3



**LEGEND**

- HA05-6 TEST BORING DESIGNATION
- DISTANCE AND DIRECTION OF TRANSLATION
- 0 FT L**  
El. 13.7 EXISTING GRADE
- TOP OF TEST BORING
- 17 SPT N-VALUE AT ELEV.
- VIA IN-SITU VANE SHEAR AT ELEV.
- LOCATION OF ROCK CORE (% RECOVERY/ % RQD)
- 100%  
33% BOTTOM OF TEST BORING
- ∇ GROUNDWATER MEASUREMENT IN OBSERVATION WELL
- INFERRED STRATA INTERFACE (WI DATA)
- ??- ASSUMED STRATA INTERFACE (NO DATA)
- X X INFERRED BEDROCK SURFACE
- B.O.E. BOTTOM OF EXPLORATION

- NOTES**
1. PROFILE LOCATIONS ARE SHOWN IN PLAN ON FIGURE 2.
  2. OFFSET DISTANCES AND DIRECTIONS FROM SECTION ARE AS SHOWN.
  3. EXPLORATION LOCATIONS AND ELEVATIONS FROM PREVIOUS INVESTIGATIONS WERE DETERMINED FROM EXISTING MAPS.
  4. LOCATIONS OF THE "HA05-1" AND "HA05-100" SERIES OF EXPLORATIONS WERE DETERMINED BY OWEN HASKELL, INC. USING GPS EQUIPMENT.
  5. ELEVATIONS FOR THE "HA05-1" SERIES OF EXPLORATIONS WERE DETERMINED BY OWEN HASKELL, INC. USING GPS METHODS, AND ELEVATIONS FOR THE "HA05-100" SERIES OF EXPLORATIONS WERE ESTIMATED USING CONTOUR DATA FROM THE SITE TOPOGRAPHIC PLAN.
  6. ALL ELEVATIONS ARE MEASURED IN FEET IN REFERENCE TO NGVD 29 DATUM.
  7. THE PROFILE PRESENTED ABOVE IS BASED ON WIDELY SPACED DATA POINTS; ACTUAL SUBSURFACE CONDITIONS MAY VARY.

HADLEY & ALDRICH, INC.  
 PHASE I HOSPITAL  
 MERCY AT THE FORE DEVELOPMENT  
 PORTLAND, MAINE

**SUBSURFACE PROFILE DB-DB'**

SCALE: AS SHOWN JANUARY 2006

FIGURE 4



LEASE PARCEL

PARCEL A

A certain parcel of land, together with any improvements thereon, situated easterly of the I-295 Connector as shown on a plan entitled "Plan of Proposed Lease Parcel off I-295 Connector, Portland, Maine for Mercy Hospital" dated September 20, 2006 by Owen Haskell, Inc., in the City of Portland, County of Cumberland, State of Maine being bounded and described as follows:

Commencing on the easterly sideline of the I-295 Connector and the southerly sideline of land now or formerly of the Portland Terminal Company; Thence S 85° 15' 34" E along said land of the Portland Terminal Company a distance of 172.55 feet to the Point of Beginning; Thence continuing S 85° 15' 34" E along said land a distance of 43.64 feet; Thence easterly along said land and along a curve concave to the right having a radius of 922.37 feet an arc distance of 194.67 feet, said curve having a chord which bears S 79° 12' 42" E a distance of 194.37 feet; Thence S 27° 46' 25" W a distance of 276.95 feet; Thence S 62° 13' 35" E a distance of 33.00 feet; Thence continuing S 62° 13' 35" E a distance of 24.00 feet; Thence N 27° 46' 25" E a distance of 25.00 feet; Thence continuing N 27° 46' 25" E a distance of 210.00 feet; Thence S 62° 13' 35" E a distance of 186.00 feet; Thence S 27° 46' 25" W a distance of 210.00 feet; Thence continuing S 27° 46' 25" W a distance of 25.00 feet; Thence S 62° 13' 35" E a distance of 22.00 feet; Thence S 27° 46' 25" W a distance of 112.90 feet; Thence S 15° 58' 01" E a distance of 67.46 feet; Thence S 62° 13' 35" E a distance of 3.66 feet; Thence S 27° 46' 25" W a distance of 20.00 feet; Thence N 62° 13' 35" W a distance of 12.14 feet; Thence N 15° 58' 01" W a distance of 55.74 feet; Thence S 27° 46' 25" W a distance of 13.49 feet; Thence N 62° 13' 35" W a distance of 232.00 feet; Thence continuing N 62° 13' 35" W a distance of 33.00 feet; Thence S 27° 46' 25" W a distance of 17.43 feet; Thence N 62° 13' 35" W a distance of 90.00 feet; Thence N 11° 13' 39" W a distance of 218.11 feet; Thence N 27° 46' 25" E a distance of 207.26 feet to the point of beginning.

PARCEL B

Together with nonexclusive easement rights as set out in Access Easement Agreement from Mercy Hospital to Fore River Medical Complex, LLC dated November 7, 2006 and recorded in the Cumberland County Registry of Deeds in Book 246589, Page 159, as affected by amended and Restated Access Easement Agreement dated March 28, 2007 and recorded in Book 246691, Page 25.

UTILITY AREA 1 OVER LAND OF THE PORTLAND TERMINAL COMPANY

A CERTAIN LOT OR PARCEL OF LAND WITH THE BUILDINGS THEREON SITUATED NORTHERLY 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 SCALE: 1:100" DATED JUNE 29, 2001" BY OWEN HASKELL, INC., BEING BOUNDED AND DESCRIBED AS FOLLOWS:

COMMENCING AT A ROD MARKING A POINT 50.00 FEET WESTERLY OF AND AT RIGHT ANGLES TO THE CENTER LINE OF THE MAIN TRACK MARKING A P.C. STATION OF 23 + 11.35 FEET 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 FEET WESTERLY OF THE CENTERLINE OF SAID MAIN TRACK, N 10° 46' 21" W A DISTANCE OF 482.85 FEET TO A ROD OPPOSITE STATION 18 + 38.42; THENCE CONTINUING ALONG LAND OF PORTLAND TERMINAL COMPANY AND BEING 50.00 FEET WESTERLY OF THE CENTERLINE OF SAID MAIN TRACK N 10° 47' 14" W A DISTANCE OF 230.08 FEET TO A ROD OPPOSITE STATION 15 + 38.42; THENCE CONTINUING ALONG LAND OF PORTLAND TERMINAL COMPANY N 9° 28' 58" W A DISTANCE OF 197.09 FEET TO A ROD MARKING THE WESTERLY RIGHT OF WAY LINE FOR THE EXISTING SPUR TRACK AND BEING 33.00 FEET WESTERLY AND OPPOSITE P.C. STATION 2 + 00.64 AS SHOWN ON SAID RAILROAD PLAN AND THE POINT OF BEGINNING; 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 FEET AN ARC DISTANCE OF 384.91 FEET, SAID CURVE HAVING A CHORD OF N 28° 44' 49" W AND 382.12 FEET; THENCE N 49° 17' 54" E ON A RADIAL LINE CROSSING SAID LAND OF PORTLAND TERMINAL COMPANY 88.00 FEET TO LAND NOW OR FORMERLY OF THE INHABITANTS OF CUMBERLAND COUNTY, STATE OF MAINE, REFERENCE BOOK 9382 PAGE 61; THENCE SOUTHEASTERLY ALONG SAID LAND AND ALONG A CURVE CONCAVE TO THE RIGHT HAVING A RADIUS OF 888.37 FEET AN ARC DISTANCE OF 176.13 FEET, SAID CURVE HAVING A CHORD OF S 35° 35' 48" E AND 175.90 FEET; THENCE N 78° 55' 54" E CROSSING SAID LAND OF PORTLAND TERMINAL COMPANY 67.78 FEET TO LAND NOW OR FORMERLY OF UNION STATION LIMITED PARTNERSHIP, REFERENCE BOOK 10144 PAGE 23; THENCE S 11° 03' 06" E IN A LINE AND ALWAYS PARALLEL TO AND LYING TWENTY (20) FEET EASTERLY FROM AS MEASURED NORMAL TO THE CENTERLINE OF THE MOST EASTERLY RAILROAD TRACK 68.50 FEET TO LAND NOW OR FORMERLY OF ST. JOHN STREET REALTY, REFERENCE BOOK 6864 PAGE 210; THENCE S 11° 04' 37" E ALONG SAID LAND AND ON A LINE PARALLEL WITH AND ALWAYS LYING TWENTY (20) FEET FROM AND EASTERLY OF THE CENTERLINE OF THE PRESENT MAINE CENTRAL RAILROAD TRACK 150.16 FEET; THENCE S 78° 55' 23" W CROSSING LAND OF PORTLAND TERMINAL COMPANY 82.13 FEET TO THE POINT OF BEGINNING.

UTILITY AREA 2 OVER LAND OF THE PORTLAND TERMINAL COMPANY

A CERTAIN LOT OR PARCEL OF LAND WITH THE BUILDINGS THEREON SITUATED NORTHERLY 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 SCALE: 1:100" DATED JUNE 29, 2001" BY OWEN HASKELL, INC., BEING BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT A ROD MARKING A POINT 50.00 FEET WESTERLY OF AND AT RIGHT ANGLES TO THE CENTER LINE OF THE MAIN TRACK MARKING A P.C. STATION OF 23 + 11.35 FEET 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 N 10° 46' 21" W 482.85 FEET; THENCE N 79° 02' 06" E CROSSING LAND OF THE GRANTOR 88.25 FEET TO LAND NOW OR FORMERLY OF ST. JOHN STREET REALTY, REFERENCE BOOK 6864 PAGE 210; THENCE S 11° 04' 37" E ALONG SAID LAND AND ON A LINE PARALLEL WITH AND ALWAYS LYING TWENTY (20) FEET FROM AND EASTERLY OF THE CENTERLINE OF THE PRESENT MAINE CENTRAL RAILROAD TRACK 463.25 FEET; THENCE S 4° 43' 00" E ON A LINE PARALLEL WITH AND ALWAYS LYING TWENTY (20) FEET FROM AND EASTERLY OF THE CENTERLINE OF THE PRESENT MAINE CENTRAL RAILROAD TRACK A DISTANCE OF 279.90 FEET; THENCE SOUTHERLY ALONG A CURVE CONCAVE TO THE LEFT HAVING A RADIUS OF 651.41 FEET ON A LINE PARALLEL WITH AND ALWAYS LYING TWENTY (20) FEET FROM AND EASTERLY OF THE CENTERLINE OF THE PRESENT MAINE CENTRAL RAILROAD TRACK AN ARC DISTANCE OF 377.16 FEET TO LAND NOW OR FORMERLY OF THE STATE OF MAINE, SAID CURVE HAVING A CHORD OF S 21° 16' 08" E AND 371.81 FEET; THENCE S 20° 13' 31" E ALONG SAID LAND 29.25 FEET; THENCE S 68° 58' 22" W ALONG SAID LAND 101.55 FEET; THENCE S 71° 56' 20" W ALONG SAID LAND 509.73 FEET; THENCE NORTHERLY ALONG A CURVE CONCAVE TO THE LEFT HAVING A RADIUS OF 831.94 FEET AN ARC DISTANCE OF 920.00 FEET TO THE POINT OF BEGINNING, SAID CURVE HAVING A CHORD OF N 21° 53' 18" E AND 873.83 FEET.

WATER LINE EASEMENT

A CERTAIN LOT OR PARCEL OF LAND SITUATED NORTHERLY 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 "ALTA/ACSM LAND TITLE SURVEY ON I-295 CONNECTOR, PORTLAND, MAINE MADE FOR LANDMARK HEALTHCARE FACILITIES, LLC" DATED JANUARY 16, 2007 BY OWEN HASKELL, INC., BEING BOUNDED AND DESCRIBED AS FOLLOWS:

COMMENCING AT A ROD MARKING A POINT 50.00 FEET WESTERLY OF AND AT RIGHT ANGLES TO THE CENTER LINE OF THE MAIN TRACK MARKING A P.C. STATION OF 23 + 11.35 FEET 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 S 7° 14' 40" W A DISTANCE OF 143.52 FEET TO THE POINT OF BEGINNING; THENCE N 10° 49' 14" W A DISTANCE OF 456.60 FEET; THENCE N 24° 19' 14" W A DISTANCE OF 92.96 FEET; THENCE N 20° 40' 48" E A DISTANCE OF 91.30 FEET; THENCE N 10° 49' 14" W A DISTANCE OF 452.68 FEET; THENCE NORTHERLY ALONG A CURVE CONCAVE TO THE LEFT HAVING A RADIUS OF 662.00 FEET AN ARC DISTANCE OF 142.60 FEET, SAID CURVE HAVING A CHORD WHICH BEARS N 16° 43' 26" W A DISTANCE OF 142.36 FEET; THENCE N 65° 42' 54" E A DISTANCE OF 17.63 FEET TO LAND NOW OR FORMERLY OF THE PORTLAND TERMINAL COMPANY; THENCE NORTHWESTERLY ALONG SAID LAND AND ALONG A CURVE CONCAVE TO THE LEFT HAVING A RADIUS OF 922.37 FEET AN ARC DISTANCE OF 31.24 FEET, SAID CURVE HAVING A CHORD WHICH BEARS N 25° 15' 20" W A DISTANCE OF 31.24 FEET; THENCE S 63° 46' 28" W A DISTANCE OF 16.90 FEET; THENCE NORTHWESTERLY ALONG A CURVE CONCAVE TO THE LEFT HAVING A RADIUS OF 692.00 FEET AN ARC DISTANCE OF 27.88 FEET, SAID CURVE HAVING A CHORD WHICH BEARS N 28° 19' 10" W A DISTANCE OF 27.85 FEET; THENCE S 62° 31' 36" W A DISTANCE OF 30.00 FEET; THENCE SOUTHEASTERLY ALONG A CURVE CONCAVE TO THE RIGHT HAVING A RADIUS OF 662.00 FEET AN ARC DISTANCE OF 192.40 FEET, SAID CURVE HAVING A CHORD WHICH BEARS S 15° 08' 47" E A DISTANCE OF 191.72 FEET; THENCE S 10° 49' 14" E A DISTANCE OF 444.22 FEET; THENCE S 20° 40' 48" W A DISTANCE OF 95.26 FEET; THENCE S 24° 19' 14" E A DISTANCE OF 101.64 FEET; THENCE S 10° 49' 14" E A DISTANCE OF 452.17 FEET; THENCE S 00° 10' 13" W A DISTANCE OF 113.60 FEET; THENCE S 10° 04' 51" W A DISTANCE OF 116.44 FEET; THENCE S 18° 11' 27" W A DISTANCE OF 16.03 FEET TO THE NORTHERLY SIDELINE OF THE I-295 CONNECTOR; THENCE EASTERLY ALONG SAID SIDELINE AND ALONG A CURVE CONCAVE TO THE LEFT HAVING A RADIUS OF 462.50 FEET AN ARC DISTANCE OF 23.07 FEET, SAID CURVE HAVING A CHORD WHICH BEARS S 60° 16' 38" E A DISTANCE OF 23.07 FEET; THENCE S 81° 42' 20" E ALONG SAID SIDELINE A DISTANCE OF 7.30 FEET; THENCE N 18° 11' 27" E A DISTANCE OF 13.51 FEET; THENCE N 10° 04' 51" E A DISTANCE OF 121.19 FEET; THENCE N 00° 10' 13" E A DISTANCE OF 119.09 FEET TO THE POINT OF BEGINNING.

UNDERGROUND UTILITY LINE EASEMENT - MAIN LINE

A CERTAIN LOT OR PARCEL OF LAND, BEING TWENTY (20) FEET WIDE, SITUATED NORTHERLY 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 "ALTA/ACSM LAND TITLE SURVEY ON I-295 CONNECTOR, PORTLAND, MAINE MADE FOR LANDMARK HEALTHCARE FACILITIES, LLC" DATED JANUARY 16, 2007 BY OWEN HASKELL, INC., THE CENTERLINE OF WHICH IS BOUNDED AND DESCRIBED AS FOLLOWS:

COMMENCING AT A ROD MARKING A POINT 50.00 FEET WESTERLY OF AND AT RIGHT ANGLES TO THE CENTER LINE OF THE MAIN TRACK MARKING A P.C. STATION OF 23 + 11.35 FEET 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 N 10° 46' 21" E A DISTANCE OF 400.04 FEET TO THE POINT OF BEGINNING; THENCE N 84° 13' 14" W A DISTANCE OF 32.20 FEET; THENCE N 10° 49' 14" W A DISTANCE OF 532.84 FEET; THENCE NORTHERLY ALONG A CURVE CONCAVE TO THE LEFT HAVING A RADIUS OF 675.00 FEET AN ARC DISTANCE OF 243.79 FEET, SAID CURVE HAVING A CHORD WHICH BEARS N 21° 05' 25" W A DISTANCE OF 242.47 FEET; THENCE NORTHWESTERLY ALONG A CURVE CONCAVE TO THE LEFT HAVING A RADIUS OF 884.50 FEET AN ARC DISTANCE OF 286.56 FEET, SAID CURVE HAVING A CHORD WHICH BEARS N 40° 38' 29" W A DISTANCE OF 285.31 FEET; THENCE WESTERLY ALONG A CURVE CONCAVE TO THE LEFT HAVING A RADIUS OF 60.00 FEET AN ARC DISTANCE OF 107.13 FEET, SAID CURVE HAVING A CHORD WHICH BEARS S 78° 55' 31" W A DISTANCE OF 93.46 FEET; THENCE S 27° 46' 24" W A DISTANCE OF 181.19 FEET; THENCE WESTERLY ALONG A CURVE CONCAVE TO THE RIGHT HAVING A RADIUS OF 30.00 FEET AN ARC DISTANCE OF 47.12 FEET, SAID CURVE HAVING A CHORD WHICH BEARS S 72° 48' 29" W A DISTANCE OF 42.43 FEET; THENCE N 62° 13' 35" W A DISTANCE OF 6.58 FEET TO A PROPOSED TRANSFORMER.

UNDERGROUND UTILITY LINE EASEMENT - SPUR

A CERTAIN LOT OR PARCEL OF LAND, BEING TWENTY (20) FEET WIDE, SITUATED NORTHERLY 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 "ALTA/ACSM LAND TITLE SURVEY ON I-295 CONNECTOR, PORTLAND, MAINE MADE FOR LANDMARK HEALTHCARE FACILITIES, LLC" DATED JANUARY 16, 2007 BY OWEN HASKELL, INC., THE CENTERLINE OF WHICH IS BOUNDED AND DESCRIBED AS FOLLOWS:

COMMENCING AT A ROD MARKING A POINT 50.00 FEET WESTERLY OF AND AT RIGHT ANGLES TO THE CENTER LINE OF THE MAIN TRACK MARKING A P.C. STATION OF 23 + 11.35 FEET 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 N 10° 46' 21" E A DISTANCE OF 400.04 FEET; THENCE N 84° 13' 14" W A DISTANCE OF 32.20 FEET; THENCE N 10° 49' 14" W A DISTANCE OF 533.84 FEET; THENCE NORTHERLY ALONG A CURVE CONCAVE TO THE LEFT HAVING A RADIUS OF 675.00 FEET AN ARC DISTANCE OF 243.79 FEET, SAID CURVE HAVING A CHORD WHICH BEARS N 21° 05' 25" W A DISTANCE OF 242.47 FEET; THENCE NORTHWESTERLY ALONG A CURVE CONCAVE TO THE LEFT HAVING A RADIUS OF 884.50 FEET AN ARC DISTANCE OF 286.56 FEET TO THE POINT OF BEGINNING, SAID CURVE HAVING A CHORD WHICH BEARS N 32° 05' 17" W A DISTANCE OF 283.00 FEET; THENCE N 88° 12' 21" W A DISTANCE OF 27.88 FEET; THENCE WESTERLY ALONG A CURVE CONCAVE TO THE LEFT HAVING A RADIUS OF 60.00 FEET AN ARC DISTANCE OF 46.32 FEET, SAID CURVE HAVING A CHORD WHICH BEARS S 89° 40' 38" W A DISTANCE OF 45.18 FEET; THENCE WESTERLY ALONG A CURVE CONCAVE TO THE LEFT HAVING A RADIUS OF 584.00 FEET AN ARC DISTANCE OF 172.39 FEET, SAID CURVE HAVING A CHORD WHICH BEARS S 36° 08' 07" W A DISTANCE OF 171.76 FEET; THENCE S 27° 54' 48" W A DISTANCE OF 300.50 FEET; THENCE SOUTHERLY ALONG A CURVE CONCAVE TO THE LEFT HAVING A RADIUS OF 10.00 FEET AN ARC DISTANCE OF 12.21 FEET, SAID CURVE HAVING A CHORD WHICH BEARS S 7° 11' 17" E A DISTANCE OF 11.48 FEET; THENCE S 42° 08' 19" E A DISTANCE OF 4.10 FEET TO A PROPOSED TRANSFORMER.

OPEN SPACE PARCEL - SOUTH

A CERTAIN PARCEL OF LAND SITUATED ON THE NORTHERLY SIDE OF U.S. ROUTE ONE ALSO KNOWN AS THE "VETERAN'S MEMORIAL BRIDGE" AS SHOWN ON A PLAN ENTITLED "EXISTING CONDITIONS PLAN OFF CONGRESS STREET, PORTLAND, MAINE MADE FOR MERCY HOSPITAL" DATED SEPT. 18, 2001 BY OWEN HASKELL, INC., IN THE CITY OF PORTLAND, COUNTY OF CUMBERLAND, STATE OF MAINE BEING BOUNDED AND DESCRIBED AS FOLLOWS:

COMMENCING ON THE NORTHERLY SIDELINE OF SAID U.S. ROUTE ONE AT LAND NOW OR FORMERLY OF PORTLAND TERMINAL COMPANY; THENCE S 71° 58' 20" W ALONG SAID SIDELINE 88.70 FEET; THENCE N 18° 31' 37" W 58.00 FEET TO THE POINT OF BEGINNING; THENCE NORTHERLY, NORTHWESTERLY, SOUTHWESTERLY AND NORTHERLY ALONG SAID HIGH WATER LINE 825 FEET, MORE OR LESS; THENCE S 87° 24' 51" E 10 FEET, MORE OR LESS TO A TIE POINT, SAID TIE POINT BEING N 10° 58' 07" W 453.57 FEET FROM THE POINT OF BEGINNING; THENCE CONTINUING S 87° 24' 51" E 50.00 FEET; THENCE S 2° 35' 09" W 298.12 FEET; THENCE S 18° 31' 37" E 156.31 FEET TO THE POINT OF BEGINNING CONTAINING 1.33 ACRES, MORE OR LESS.

OPEN SPACE PARCEL - NORTH

A CERTAIN PARCEL OF LAND SITUATED OFF, BUT NOT ADJACENT TO, CONGRESS STREET, AS SHOWN ON A PLAN ENTITLED "EXISTING CONDITIONS PLAN OFF CONGRESS STREET, PORTLAND, MAINE MADE FOR MERCY HOSPITAL" DATED SEPT. 18, 2001 BY OWEN HASKELL, INC., IN THE CITY OF PORTLAND, COUNTY OF CUMBERLAND, STATE OF MAINE BEING BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING ON THE SOUTHERLY SIDELINE OF LAND NOW OR FORMERLY OF PORTLAND TERMINAL COMPANY AT A POINT OPPOSITE OF AND NORMAL TO STATION 7+81.53; THENCE S 85° 15' 34" E ALONG SAID SIDELINE 85.00 FEET; THENCE S 10° 37' 11" E 582.47 FEET; THENCE S 53° 48' 44" W 40.00 FEET TO A TIE POINT; THENCE CONTINUING S 53° 48' 44" W 10 FEET, MORE OR LESS, TO THE HIGH WATER LINE OF THE FORE RIVER; THENCE NORTHWESTERLY, ALONG SAID HIGH WATER LINE, 1110 FEET, MORE OR LESS, TO LAND NOW OR FORMERLY OF THE STATE OF MAINE, KNOWN AS "ROUTE 295"; THENCE N 50° 25' 55" E ALONG SAID LAND 15 FEET, MORE OR LESS, TO A POINT TO WHICH A TIE FROM THE PREVIOUSLY STATED TIE POINT BEARS N 42° 18' 23" W 1111.83 FEET; THENCE EASTERLY, ALONG SAID LAND AND ALONG A CURVE TO THE LEFT, HAVING A RADIUS OF 375.00 FEET, AN ARC DISTANCE OF 7.14 FEET, WHICH CURVE HAS A CHORD OF S 64° 55' 24" E 7.14 FEET, TO LAND OF SAID PORTLAND TERMINAL COMPANY; THENCE S 54° 28' 52" E ALONG SAID LAND 116.36 FEET; THENCE EASTERLY ALONG SAID LAND AND ALONG A CURVE CONCAVE TO THE LEFT HAVING A RADIUS OF 988.37 FEET AN ARC DISTANCE OF 630.37 FEET, WHICH CURVE HAS A CHORD OF S 69° 52' 08" E 524.02 FEET TO THE POINT OF BEGINNING CONTAINING 3.32 ACRES, MORE OR LESS.

PLAN REFERENCES

- 1. STANDARD BOUNDARY SURVEY ROUTE 1 BLUE STAR MEMORIAL HIGHWAY PORTLAND, MAINE PORTLAND TERMINAL COMPANY TO MERRILL INDUSTRIES, INC. DATED MAY 19, 1988 BY OWEN HASKELL, INC.
2. TOPOGRAPHIC AND SITE CONDITIONS PLAN PORTLAND: RAIL UNDERPASS; VETERANS MEMORIAL BRIDGE DATED FEB. 28, 1998 BY OWEN HASKELL, INC.
3. RECORDING PLAN FOR CUMBERLAND COUNTY COMMISSIONERS . . . CUMBERLAND COUNTY JAIL DATED 11-08-90 BY SNRT RECORDED IN PLAN BOOK 191 PAGE 200.
4. PLAN OF PROPERTY IN PORTLAND MAINE MADE FOR PORTLAND CARGO ASSOCIATES DATED 4-28-88 BY HI & EC JORDAN.
5. PLAN OF PROPERTY IN PORTLAND MAINE MADE FOR MERRILL INDUSTRIES, INC. DATED FEB. 11, 1987 BY HI & EC JORDAN.
6. MAINE STATE HIGHWAY COMMISSION RIGHT OF WAY MAP STATE HIGH 295 SHC FILE NO. 3-185 DATED MAY 1987.
7. RIGHT OF WAY AND TRACK MAP PORTLAND TERMINAL COMPANY OPERATED BY THE PORTLAND TERMINAL COMPANY DATED JUNE 30, 1916 DWG V-1-D/1.
8. PLAN OF PROPERTY IN PORTLAND AND DEERING MAINE AT LIBBYS CORNER SURVEYED FOR JAMES H. SMITH DATED SEPT 1886 BY HI & EC JORDAN.
9. PLAN OF AREA CLAIMED BY J.F. PROCTOR ON FILE AT OWEN HASKELL, INC. (ECJ FILE # 331).
10. THE PORTLAND AND OGDENSBURG RAILWAY PLAN OF LOCATION OF BRANCH RAILROAD TRACK TO PORTLAND UNION RAILWAY STATION PORTLAND MAINE DATED JULY 16, 1905.
11. PLAN OF PART OF CITY FARM AND ADJACENT STREETS DATED AUGUST 1878 BY WILLIAM A. GOODWIN C.C.E. RECORDED IN PLAN BOOK 4 PAGE 16.
12. PLAN OF PROPERTY BOUGHT OF J.B. BROWN BY THE BOSTON & MAINE RAILROAD PORTLAND DATED MARCH 15, 1873 RECORDED IN PLAN BOOK 3 PAGES 38 & 39.
13. PLAN OF PROPERTY IN PORTLAND MAINE MADE FOR PORTLAND WATER DISTRICT - EASEMENT PLAN FORE RIVER FORCE MAIN DATED 5-4-1970 BY HI & EC JORDAN.
14. RIGHT OF WAY MAP STATE HIGHWAY 10, CITY OF PORTLAND DATED SEPTEMBER 2002 DOT FILE NO. 3-483.
15. LAND TITLE SURVEY OFF CONGRESS STREET, PORTLAND, MAINE MADE FOR MERCY HOSPITAL DATED JUNE 29, 2002 BY OWEN HASKELL, INC.
16. RIGHT OF WAY AND TRACK MAP THE PORTLAND AND OGDENSBURG RY. OWNED AND OPERATED BY THE PORTLAND TERMINAL COMPANY DATED JUNE 30, 1916 DWG V-2/2.
17. RIGHT OF WAY AND TRACK MAP THE PORTLAND AND OGDENSBURG RY. OWNED AND OPERATED BY THE PORTLAND TERMINAL COMPANY DATED JUNE 30, 1916 DWG V-2/1.
18. RIGHT OF WAY AND TRACK MAP THE PORTLAND AND OGDENSBURG RY. OWNED AND OPERATED BY THE PORTLAND TERMINAL COMPANY DATED JUNE 30, 1916 DWG V-1-D/1-A.
19. AS-BUILT ACSM LAND TITLE SURVEY ON I-295 CONNECTOR, PORTLAND, MAINE MADE FOR LANDMARK HEALTHCARE FACILITIES, LLC DATED SEPTEMBER 8, 2009 BY OWEN HASKELL, INC.

3/20/11 10:11:15 Mercy Hospital.dwg 3077

Survey Prepared By: Owen Haskell, Inc. 390 U.S. Route One, Unit 10 Falmouth, Maine 04105 Phone: (207) 774-0424 Fax: Site No. 2011-115P

Table with 4 columns: Client (Fore River Medical Complex, LLC), Sheet (Sheet 2 of 2), Corporate Headquarters (1742 Georgetown Road, Suite H Hudson, Ohio 44226), and Website (www.MILLMANLAND.com) with contact info.



millmanland National Road Estate Due Diligence





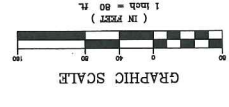
| REVISIONS  |          |
|--|----------|
| REV.   | DATE     |
| 1.   | 02.12.17 |
| SUBMITTED TO MEP- WITH MAJOR SITE PLAN AMENDMENT APPLICATION |          |
| P.E. STEPHEN R. BUSHEY                                       |          |
| LIC # 7403   |          |

|                |                      |
|----------------|----------------------|
| PROJECT        | MERCY AT THE FORE    |
| SHEET TITLE    | MASTER PLAN          |
| CLIENT         | OVERALL UTILITY PLAN |
| MERCY HOSPITAL |                      |

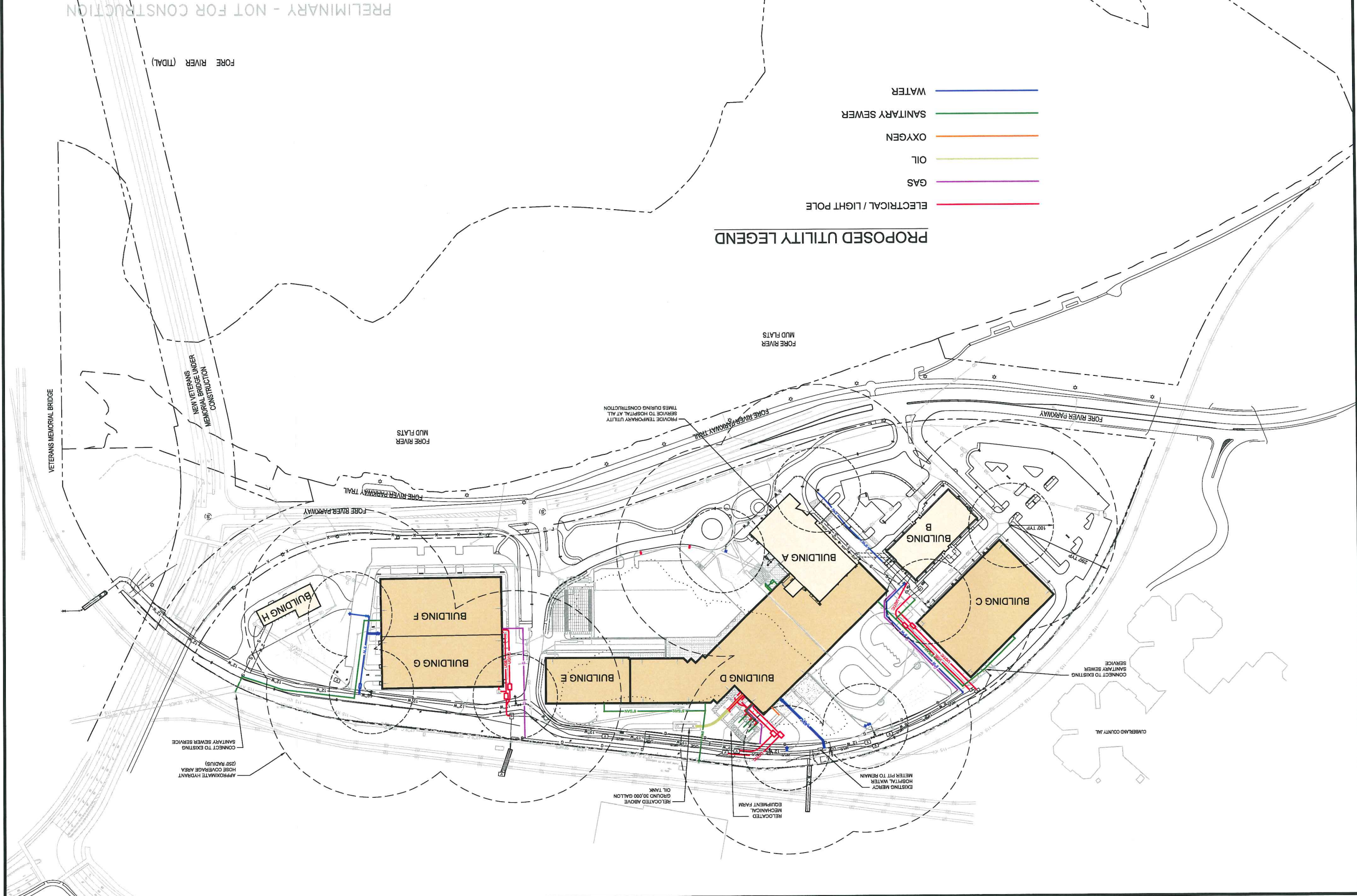
  

|           |               |          |
|-----------|---------------|----------|
| DRAMA     | DATE          | SCALE    |
| DESIGNED  | 11.08.17      | 1" = 80' |
| CHECKED   | 12.08.17      |          |
| FILE NAME | 21493.UTILITY |          |
| SHEET     |               |          |
| PLATE 4   |               |          |



**PROPOSED UTILITY LEGEND**

- WATER
- SANITARY SEWER
- OXYGEN
- OIL
- GAS
- ELECTRICAL / LIGHT POLE



PRELIMINARY - NOT FOR CONSTRUCTION

DATE PLOTTED: 11/28/17 11:53 AM









**ZONING SPACE AND BULK SUMMARY**

| YARD DIMENSIONS                 | REQUIREMENT | PROVIDED |
|---------------------------------|-------------|----------|
| FRONT SETBACK                   | 20 FT       | -- FT    |
| SIDE SETBACK                    | 10 FT       | 10 FT    |
| REAR SETBACK                    | 10 FT       | 10 FT    |
| MAXIMUM IMPERVIOUS LOT COVERAGE | 80%         | 66.40%   |
| MAXIMUM BUILDING HEIGHT         | 80 FT       | TBD      |

**PARKING SUMMARY**

| PARKING REQUIREMENTS          |         |
|-------------------------------|---------|
| HOSPITAL - 1 SPACE / 500 S.F. |         |
| HOSPITAL - 1 SPACE / 400 S.F. |         |
| GROSS AREA                    | 387,832 |
| REQUIRED SPACES               | 800     |
| HOSPITAL                      | 778     |
| MEDICAL                       | 320,000 |
| TOTAL                         | 707,832 |
| PROVIDED SPACES               | 1578    |
| AREA                          |         |
| NORTH                         | 443     |
| SOUTH                         | 310     |
| TOTAL                         | 753     |

**BUILDING SUMMARY**

| BUILDING | USE  | GROSS S.F. | FOOTPRINT S.F. |
|----------|--|------------|----------------|
| A        | EXISTING HOSPITAL                                | 137,832    | 37,568         |
| B        | EXISTING MEDICAL OFFICE BUILDING                 | 80,000     | 20,014         |
| C        | FUTURE PARKING GARAGE                            | N/A        |                |
| D        | FUTURE HOSPITAL LABORATORY CARE CENTER EXPANSION | 322,000    | 118,800        |
| E        | FUTURE MEDICAL OFFICE BUILDING                   | 80,000     | 15,000         |
| F        | FUTURE MEDICAL OFFICE BUILDING                   | 108,000    | 40,000         |
| G        | FUTURE PARKING GARAGE                            | N/A        |                |
| H        | EXISTING MAINTENANCE FACILITY                    | 7,016      | 7,016          |

PLAN REFERENCES:  
 1. OWEN HASKELL SURVEY DATED JUNE 28, 2001  
 2. PHASE 1 PLANS BY DELUCA-HOFFMAN ASSOCIATES DATED SEPTEMBER 2008  
 3. VETERANS MEMORIAL BRIDGE PLANS BY T.T. LIN DATED 2010

PRELIMINARY - NOT FOR CONSTRUCTION



**REVISIONS**

| REV | DATE | DESCRIPTION |
|-----|------|-------------|
| 1   |      |             |

**CLIENT**  
 MERCY HOSPITAL

**SHEET TITLE**  
 OVERALL SITE PLAN

**PROJECT**  
 MERCY AT THE FORE

**DESIGNED BY**  
 DELUCA-HOFFMAN ASSOCIATES, INC.

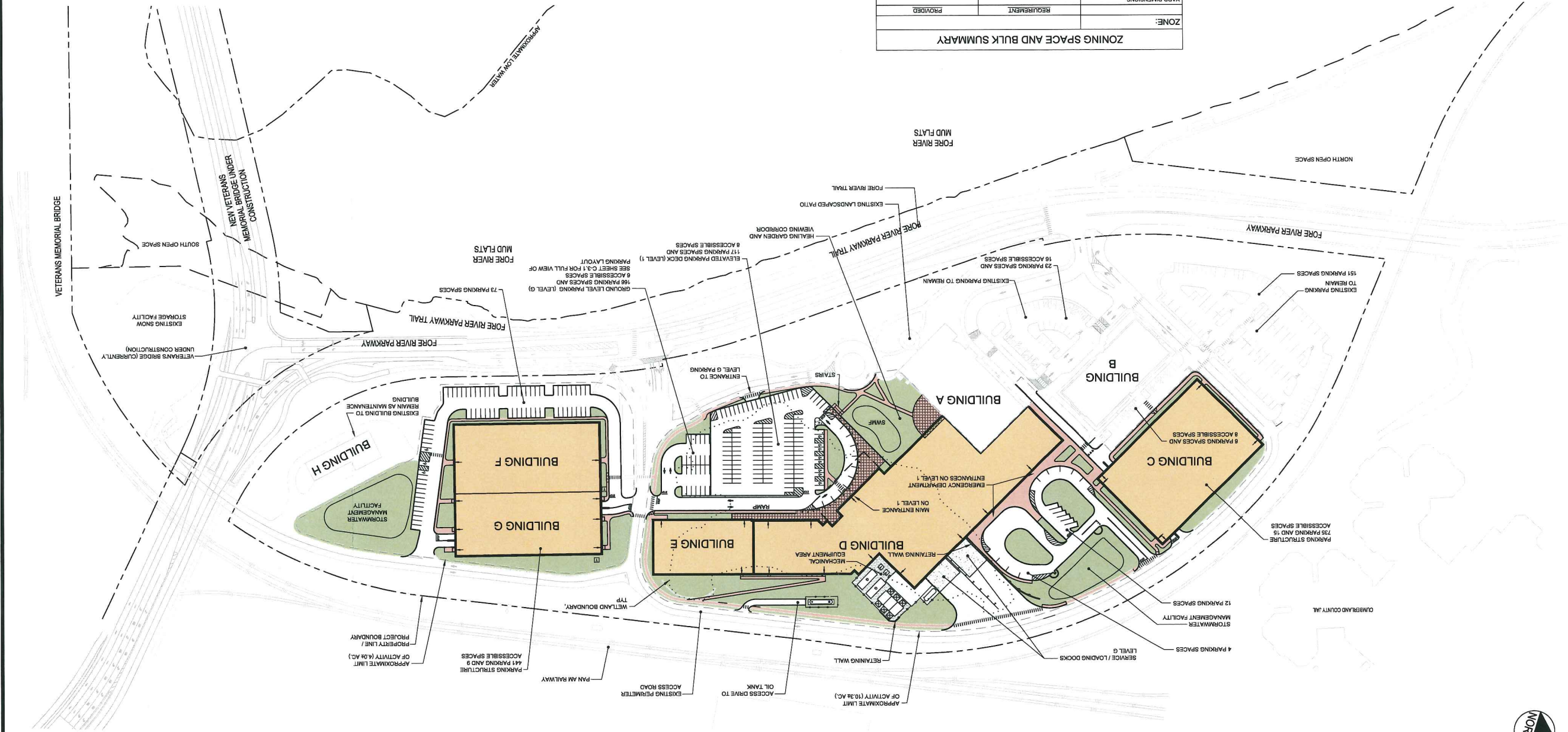
**DATE**  
 MAY 2012

**SCALE**  
 1" = 80'

**NO. OF SHEETS**  
 24 OF 28

**FILE NAME**  
 214103 SITE LAYOUT

**SHEET**  
 PLATE 2





NOTE  
INFORMATION ON THIS PLAN WAS COMPILED OF SEVERAL DOCUMENTS.  
AS-BUILT PLANS BY SHAW BROS., DATED 2008, SURVEY PLAN PREPARED BY  
OWEN HASKELL DATED 2001, CONSTRUCTION PLANS PREPARED BY  
DELUCA-HOFFMAN ASSOCIATES DATED SEPTEMBER 2006. EXACT LOCATION  
OF UTILITIES SHALL BE FIELD VERIFIED PRIOR TO ANY CONSTRUCTION.



| REV                            | DATE     | DESCRIPTION |
|--------------------------------|----------|-------------|
| 1                              | 02.13.12 | REVISIONS   |
| L.C. # 1212                    |          |             |
| CLIENT: P.E. STEPHEN R. RUSHEY |          |             |

|                      |                   |
|----------------------|-------------------|
| PROJECT:             | MERCY AT THE FORE |
| SHEET TITLE:         | MASTER PLAN       |
| CLIENT:              | MERCY HOSPITAL    |
| EXISTING CONDITIONS: |                   |

|                  |   |
|------------------|---|
| SHEET            |   |
| FILE NAME:       | 210806.DWG  |
| CHECKED:         | SHB   |
| DESIGNED:        | BEK   |
| DATE:            | MAY 2012  |
| SCALE:           | 1" = 80'  |
| DATE:            | MAY 2012  |
| PROJECT:         | MERCY AT THE FORE   |
| ASSOCIATES, INC. | 77 MAIN STREET, SUITE 8<br>SOUTH PORTLAND, ME 04106<br>WWW.DELUCA-HOFFMAN.COM |
| DELUCA-HOFFMAN   |   |

PRELIMINARY - NOT FOR CONSTRUCTION



CUMBERLAND COUNTY, ME

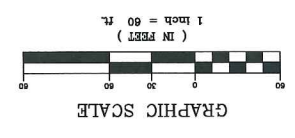


DED DATE: 11.01.01  
 DESIGNED: SRB SCALE: 1"=60'  
 CHECKED: SRB JOB NO. 2149.01  
 FILE NAME: 2149.01-MP3  
 SHEET FIGURE 1  
 DE LUCA-HOFFMAN ASSOCIATES, INC.  
 778 MAIN STREET, SUITE 8  
 SOUTH PORTLAND, ME 04108  
 (207) 725-1121  
 WWW.DELUCAHOFFMAN.COM

PROJECT: MERCY AT THE FORE  
 SHEET TITLE: OVERALL PLAN  
 CLIENT: MERCY HOSPITAL

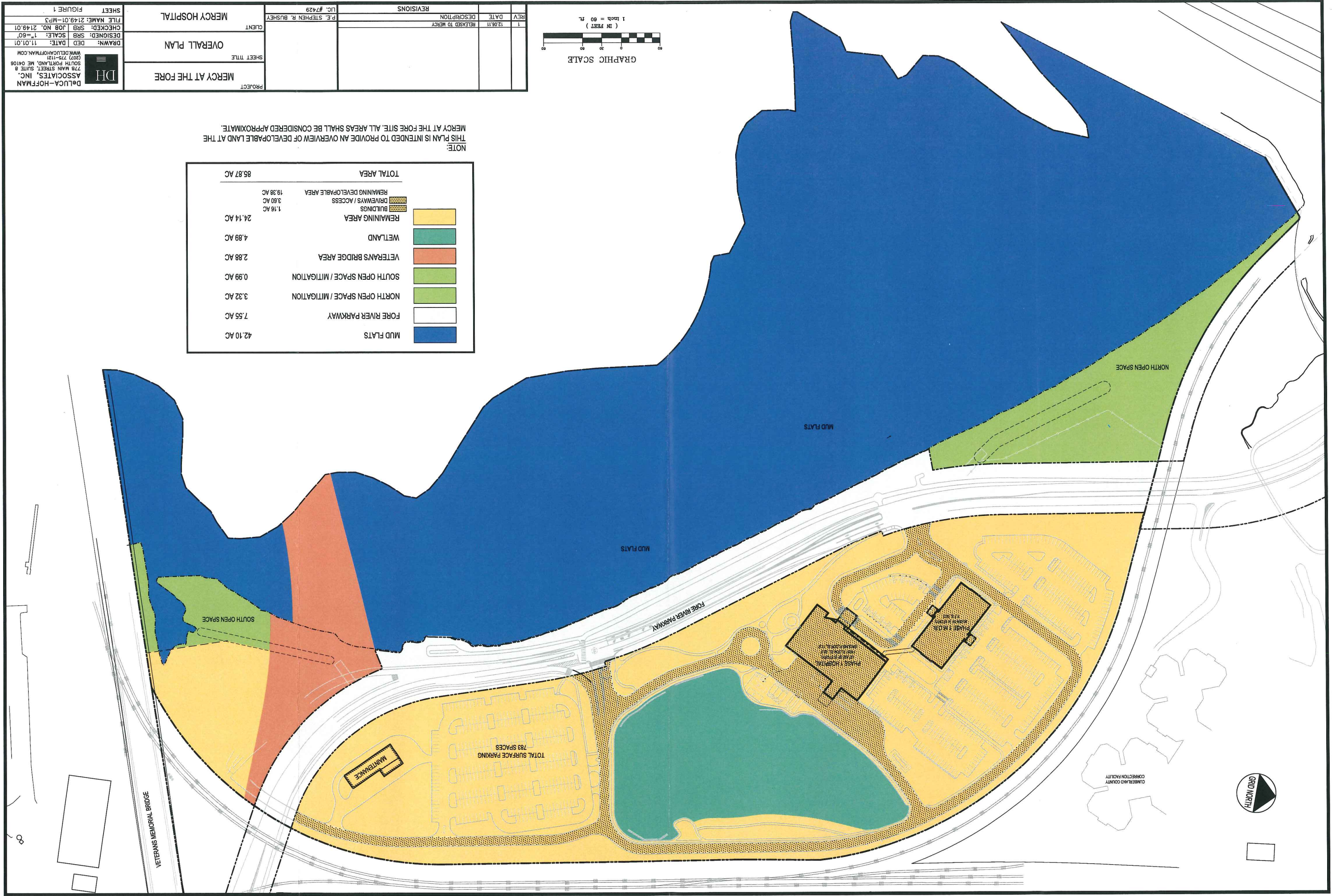
| REV | DATE     | DESCRIPTION       |
|-----|----------|-------------------|
| 1   | 12.06.11 | RELEASED TO MERCY |

P.E. STEPHEN R. BUSHEY  
 LIC. #17429



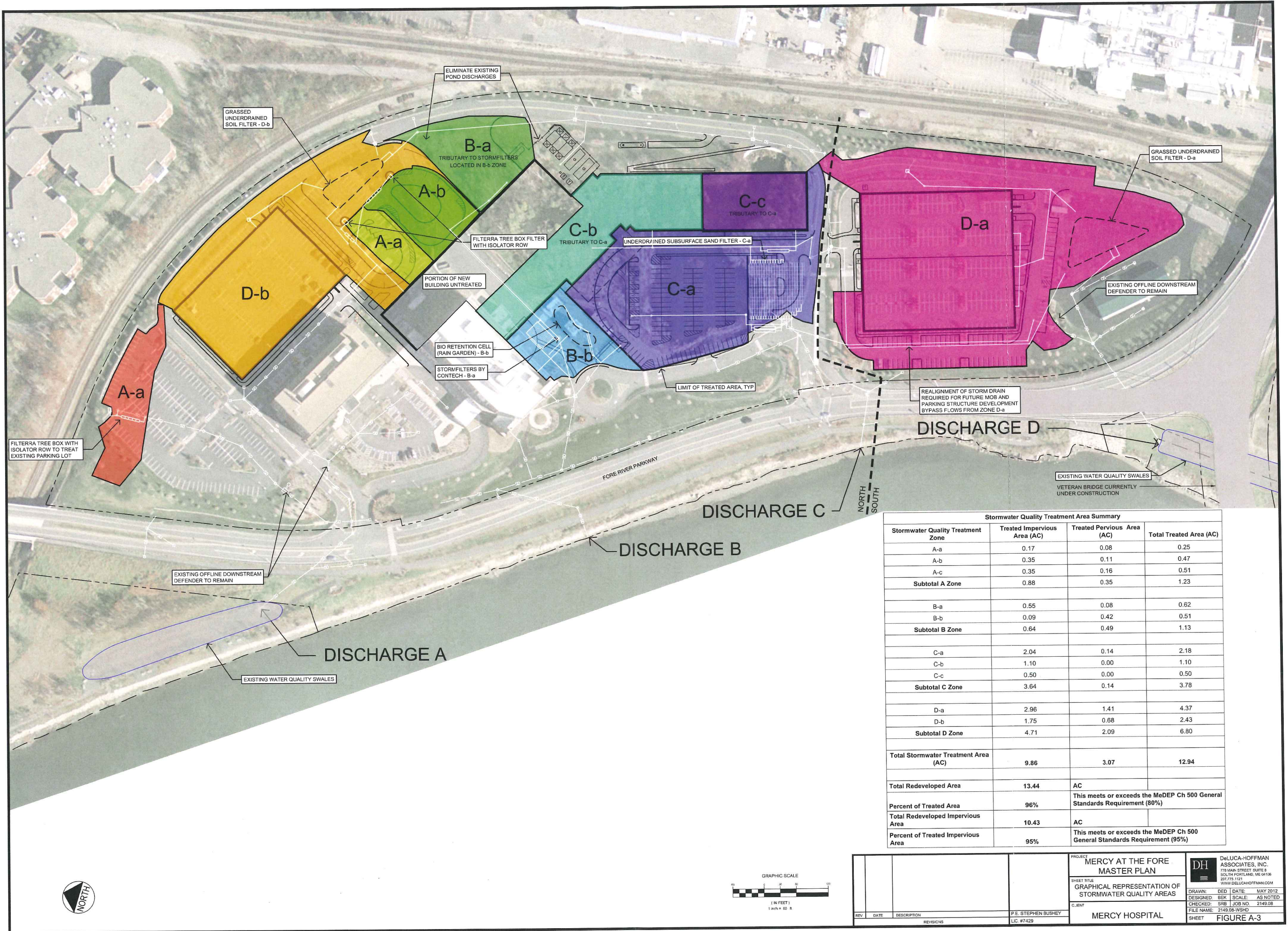
NOTE:  
 THIS PLAN IS INTENDED TO PROVIDE AN OVERVIEW OF DEVELOPABLE LAND AT THE MERCY AT THE FORE SITE. ALL AREAS SHALL BE CONSIDERED APPROXIMATE.

| TOTAL AREA                    |          | 85.87 AC |
|-------------------------------|----------|----------|
| MUD FLATS                     | 42.10 AC |          |
| FORE RIVER PARKWAY            | 7.55 AC  |          |
| NORTH OPEN SPACE / MITIGATION | 3.32 AC  |          |
| SOUTH OPEN SPACE / MITIGATION | 0.99 AC  |          |
| VETERANS BRIDGE AREA          | 2.88 AC  |          |
| WETLAND                       | 4.89 AC  |          |
| REMAINING AREA                | 24.14 AC |          |
| BUILDINGS                     | 1.16 AC  |          |
| DRIVEWAYS / ACCESS            | 3.60 AC  |          |
| REMAINING DEVELOPABLE AREA    | 19.38 AC |          |



CAMBERLAND COUNTY CORRECTION FACILITY

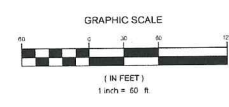




**Stormwater Quality Treatment Area Summary**

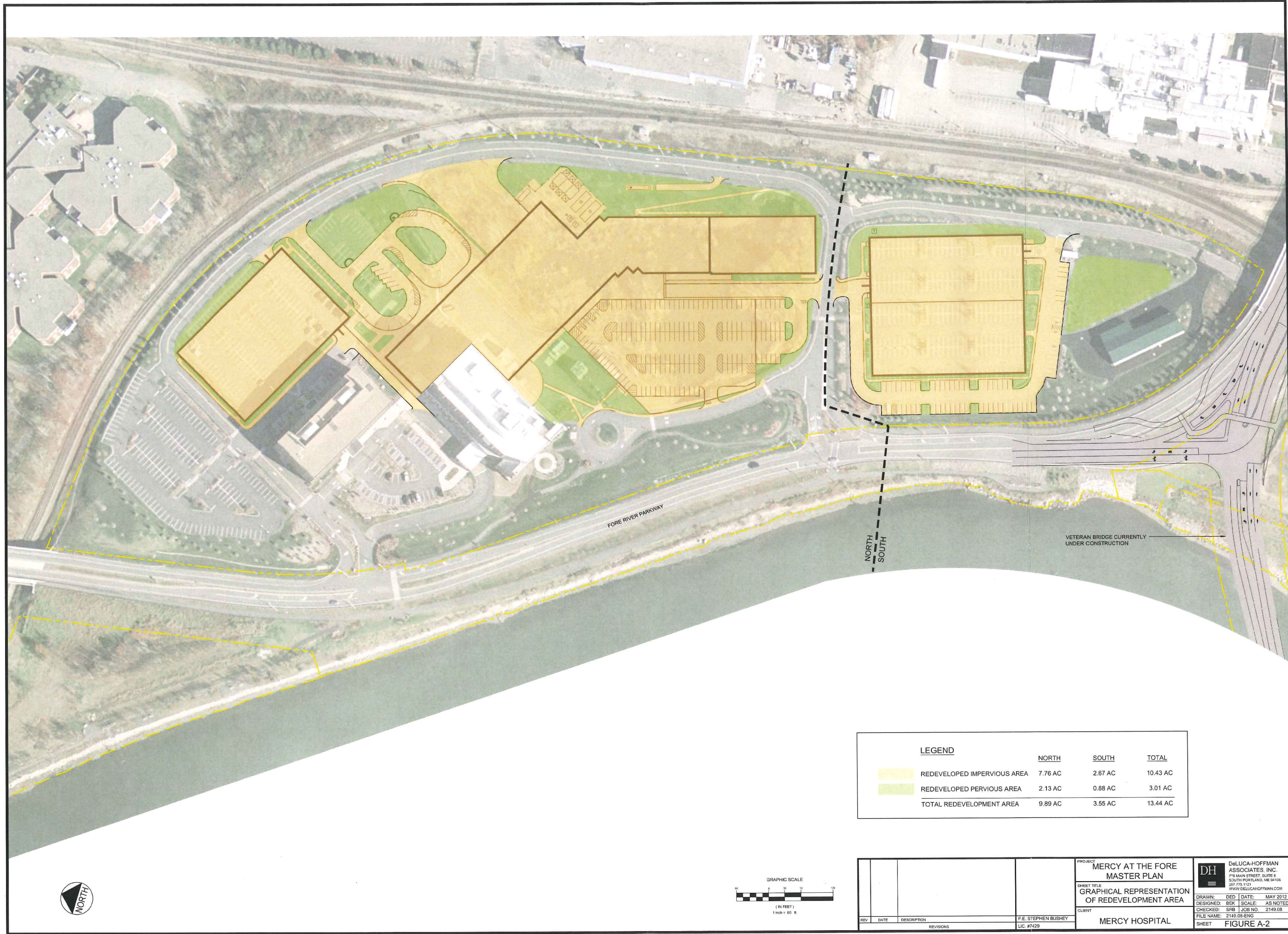
| Stormwater Quality Treatment Zone           | Treated Impervious Area (AC) | Treated Pervious Area (AC)  | Total Treated Area (AC) |
|---|------------------------------|---|-------------------------|
| A-a   | 0.17                         | 0.08  | 0.25                    |
| A-b   | 0.35                         | 0.11  | 0.47                    |
| A-c   | 0.35                         | 0.16  | 0.51                    |
| <b>Subtotal A Zone</b>                      | <b>0.88</b>                  | <b>0.35</b>   | <b>1.23</b>             |
| B-a   | 0.55                         | 0.08  | 0.62                    |
| B-b   | 0.09                         | 0.42  | 0.51                    |
| <b>Subtotal B Zone</b>                      | <b>0.64</b>                  | <b>0.49</b>   | <b>1.13</b>             |
| C-a   | 2.04                         | 0.14  | 2.18                    |
| C-b   | 1.10                         | 0.00  | 1.10                    |
| C-c   | 0.50                         | 0.00  | 0.50                    |
| <b>Subtotal C Zone</b>                      | <b>3.64</b>                  | <b>0.14</b>   | <b>3.78</b>             |
| D-a   | 2.96                         | 1.41  | 4.37                    |
| D-b   | 1.75                         | 0.68  | 2.43                    |
| <b>Subtotal D Zone</b>                      | <b>4.71</b>                  | <b>2.09</b>   | <b>6.80</b>             |
| <b>Total Stormwater Treatment Area (AC)</b> | <b>9.86</b>                  | <b>3.07</b>   | <b>12.94</b>            |
| <b>Total Redeveloped Area</b>               | <b>13.44</b>                 | <b>AC</b>   |                         |
| <b>Percent of Treated Area</b>              | <b>96%</b>                   | <b>This meets or exceeds the MeDEP Ch 500 General Standards Requirement (80%)</b> |                         |
| <b>Total Redeveloped Impervious Area</b>    | <b>10.43</b>                 | <b>AC</b>   |                         |
| <b>Percent of Treated Impervious Area</b>   | <b>95%</b>                   | <b>This meets or exceeds the MeDEP Ch 500 General Standards Requirement (95%)</b> |                         |

A:\2149\_08\2149\_08\2149\_08\2149\_08\2149\_08.dwg, DWG, G:\SERIALS, 7/11/2012 4:03:16 PM, D:\dwg



|   |   |   |           |
|---|---|---|-----------|
| PROJECT<br><b>MERCY AT THE FORE<br/>MASTER PLAN</b>   |   | <br>DeLUCA-HOFFMAN ASSOCIATES, INC.<br>778 MAIN STREET SUITE B<br>SOUTH PORTLAND, ME 04106<br>207.775.1121<br>WWW.DELUCAHOFFMAN.COM |           |
| SHEET TITLE<br><b>GRAPHICAL REPRESENTATION OF<br/>STORMWATER QUALITY AREAS</b>  |   |   |           |
| DRAWN: DED DATE: MAY 2012<br>DESIGNED: BEK SCALE: AS NOTED<br>CHECKED: SHB JOB NO: 2149.08<br>FILE NAME: 2149.08-WSHD | C-CLIENT<br><b>MERCY HOSPITAL</b><br>LIC: #7429 |   |           |
| REV   | DATE  | DESCRIPTION   | REVISIONS |





| LEGEND  |         |         |          |
|---|---------|---------|----------|
|   | NORTH   | SOUTH   | TOTAL    |
| <span style="display:inline-block; width:15px; height:10px; background-color:yellow; border:1px solid black;"></span> REDEVELOPED IMPERVIOUS AREA   | 7.76 AC | 2.67 AC | 10.43 AC |
| <span style="display:inline-block; width:15px; height:10px; background-color:lightgreen; border:1px solid black;"></span> REDEVELOPED PERVIOUS AREA | 2.13 AC | 0.88 AC | 3.01 AC  |
| TOTAL REDEVELOPMENT AREA  | 9.89 AC | 3.55 AC | 13.44 AC |

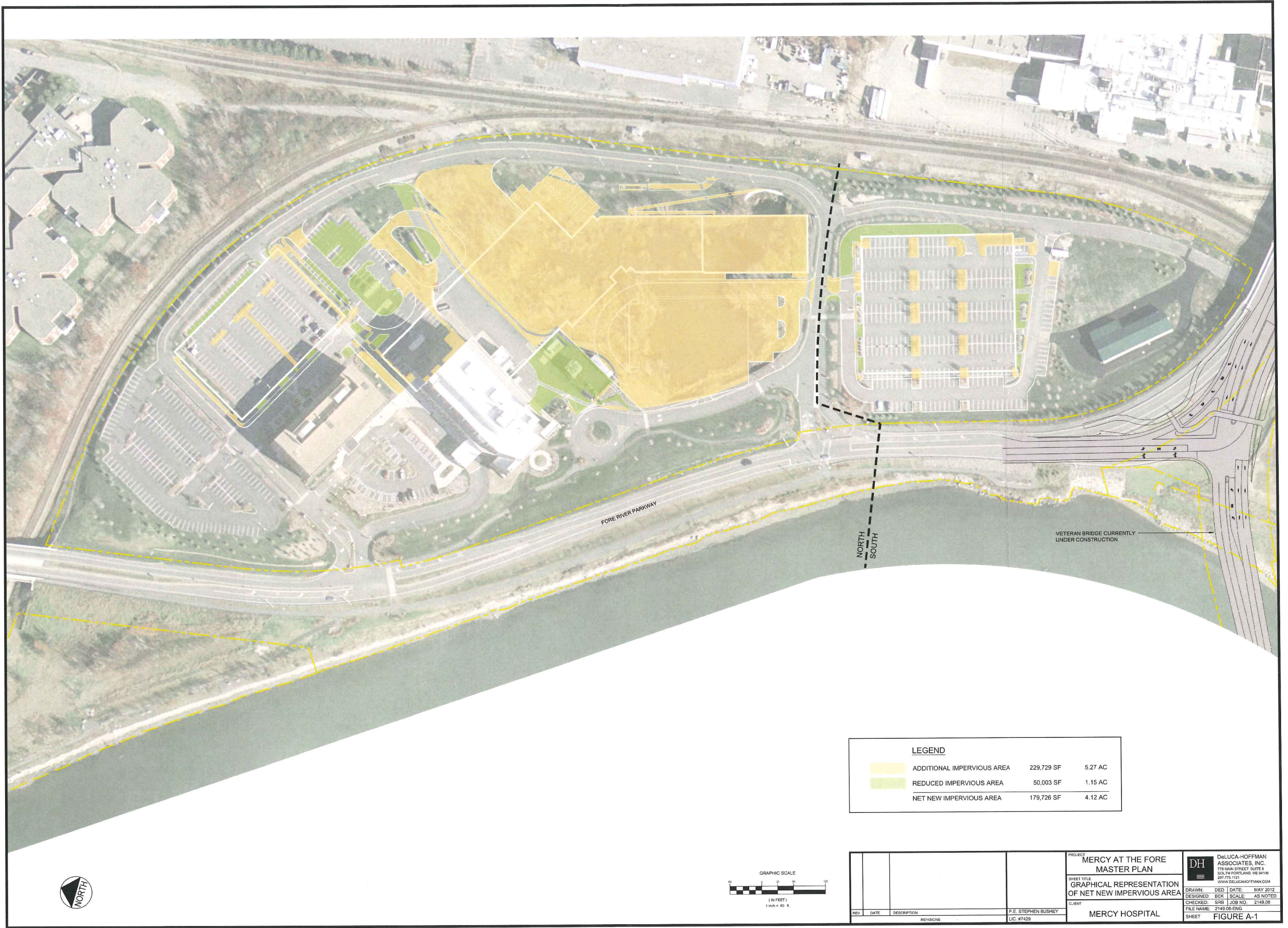
| REV | DATE | DESCRIPTION | REVISIONS |
|-----|------|-------------|-----------|
|     |      |             |           |



|  |                                   |
|--|-----------------------------------|
| PROJECT<br><b>MERCY AT THE FORE<br/>MASTER PLAN</b>                      |                                   |
| SHEET TITLE<br><b>GRAPHICAL REPRESENTATION<br/>OF REDEVELOPMENT AREA</b> |                                   |
| CLIENT<br><b>MERCY HOSPITAL</b>  | F.E. STEPHEN BUSHEY<br>LIC. #7429 |

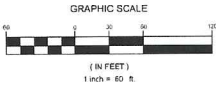
|                        |   |                |
|------------------------|---|----------------|
| <b>DH</b>              | DeLUCA-HOFFMAN ASSOCIATES, INC.<br>778 MAIN STREET, SUITE 4<br>SOUTH PORTLAND, ME 04106<br>207.775.1123<br>WWW.DELOUCAHOFFMAN.COM |                |
|                        | DRAWN: DEO  | DATE: MAY 2012 |
| DESIGNED: BEK          | SCALE: AS NOTED   |                |
| CHECKED: SRB           | JOB NO. 2149.08   |                |
| FILE NAME: 2149.08.ENG | SHEET   | FIGURE A-2     |


R:\3149\_08\Cadd\Permit Set\149\_08-DWG.dwg, REDEVELOPED, 7/16/2012 2:31:41 PM, D0048





| LEGEND  |                            |            |         |
|---|----------------------------|------------|---------|
|  | ADDITIONAL IMPERVIOUS AREA | 229,729 SF | 5.27 AC |
|  | REDUCED IMPERVIOUS AREA    | 50,003 SF  | 1.15 AC |
|   | NET NEW IMPERVIOUS AREA    | 179,726 SF | 4.12 AC |



|     |  |      |             |           |                                    |   |   |
|-----|--|------|-------------|-----------|------------------------------------|---|---|
| REV |  | DATE | DESCRIPTION | REVISIONS | P. E. STEPHEN BUSHEY<br>LIC. #7429 | PROJECT<br><b>MERCY AT THE FORE<br/>         MASTER PLAN</b><br>SHEET TITLE<br><b>GRAPHICAL REPRESENTATION<br/>         OF NET NEW IMPERVIOUS AREA</b><br>CLIENT<br><b>MERCY HOSPITAL</b> |  DeLUCA-HOFFMAN<br>ASSOCIATES, INC.<br>778 MAIN STREET SUITE 8<br>SOUTH PORTLAND, ME 04106<br>207.775.1121<br>WWW.DELUCAHOFFMAN.COM<br>DRAWN: DED DATE: MAY 2012<br>DESIGNED: BEK SCALE: AS NOTED<br>CHECKED: SRS JOB NO.: 2149.08<br>FILE NAME: 2149.08-ENG<br>SHEET: <b>FIGURE A-1</b> |
|-----|--|------|-------------|-----------|------------------------------------|---|---|



### Summary of Water Quality Treatment

| Storm Water Management Zone      | Inlet Subcatchment | Treatment Approach              | Total Treated Area (ac) | Impervious Area (ac) |                            |                            | Pervious Area (ac) | Required Water Quality Volume (cf) | Required Water Quality Filter Surface Area (sf) (When applicable) | 1 Yr 24-hr Storm Event Peak Flow Rate (cfs) | Stormtech Isolator Row Chambers Required (EA) | StormFilter Cartridges (EA) (Where Applicable) | Stormtech Isolator Row Chambers (SC 740) Provided (EA) | Provided Water Quality Volume (cf) | Provided Filter Surface Area (sf) or Size of Proprietary Unit |
|----------------------------------|--------------------|---------------------------------|-------------------------|----------------------|----------------------------|----------------------------|--------------------|------------------------------------|---|---|---|--|--|------------------------------------|---|
|                                  |                    |                                 |                         | Roof (ac)            | Pavement, Gravel, etc (ac) | Total Impervious Area (ac) |                    |                                    |   |   |   |  |  |                                    |   |
| A-a                              | A13                | Filtterra Tree Box <sup>8</sup> | 0.25                    | 0.00                 | 0.17                       | 0.17                       | 0.08               | N/A                                | N/A   | 0.46  | 2.30  | N/A  | 3  | N/A                                | 4'x6' Tree Box  |
| A-b                              | A10                | Filtterra Tree Box <sup>8</sup> | 0.47                    | 0.00                 | 0.35                       | 0.35                       | 0.11               | N/A                                | N/A   | 0.90  | 4.50  | N/A  | 5  | N/A                                | 6'x6' Tree Box  |
| A-c                              | A4                 | Filtterra Tree Box <sup>8</sup> | 0.51                    | 0.00                 | 0.35                       | 0.35                       | 0.16               | N/A                                | N/A   | 0.90  | 4.50  | N/A  | 5  | N/A                                | 6'x8' Tree Box  |
| Total Treatment Area Discharge A |                    |                                 | 1.23                    | 0.00                 | 0.88                       | 0.88                       | 0.35               | 0                                  | 0   |   |   |  |  |                                    |   |

|                                  |                              |                                   |      |      |      |      |      |       |     |      |     |       |     |       |   |
|----------------------------------|------------------------------|-----------------------------------|------|------|------|------|------|-------|-----|------|-----|-------|-----|-------|---|
| B-a                              | Inlet B6 through B7          | StormFilter Cartridges by Contech | 0.62 | 0.00 | 0.55 | 0.55 | 0.08 | 2,091 | N/A | 1.34 | N/A | 10.35 | -   | N/A   | (11) 12" High Stormfilter Cartridges by Contech |
| B-b                              | Surface runoff and Inlet B13 | Bio Retention Cell                | 0.51 | 0.00 | 0.09 | 0.09 | 0.42 | 931   | 819 | 0.43 | N/A | N/A   | N/A | 1,145 | 2,000   |
| Total Treatment Area Discharge B |                              |                                   | 1.13 | 0.00 | 0.64 | 0.64 | 0.49 | 3022  | 819 |      |     |       |     |       |   |

|                                  |                                  |                        |      |      |      |      |      |        |       |      |      |     |    |        |      |
|----------------------------------|----------------------------------|------------------------|------|------|------|------|------|--------|-------|------|------|-----|----|--------|------|
| C-a                              | Parking Platform - Inlet C6      | Subsurface Sand Filter | 2.18 | 0.00 | 2.04 | 2.04 | 0.14 | 7,603  | 4,562 | 4.87 | 24.4 | N/A | 28 | 13,476 | 9900 |
| C-b                              | Portion of Building D Roof Drain | Subsurface Sand Filter | 1.10 | 1.10 | 0.00 | 1.10 | 0.00 | 4,000  | 2,400 | 2.59 | 13.0 | N/A | 14 |        |      |
| C-c                              | Building E Roof Drain            | Subsurface Sand Filter | 0.50 | 0.50 | 0.00 | 0.50 | 0.00 | 1,817  | 1,090 | 1.18 | 5.9  | N/A | 14 |        |      |
| Total Treatment Area Discharge C |                                  |                        | 3.78 | 1.60 | 2.04 | 3.64 | 0.14 | 13,420 | 8,052 |      |      |     |    |        |      |

|                                  |   |                      |      |      |      |      |      |        |        |                         |     |     |     |        |       |
|----------------------------------|---|----------------------|------|------|------|------|------|--------|--------|-------------------------|-----|-----|-----|--------|-------|
| D-a                              | Inlet D4 through D7 and D9 - CB 40 (Building G and F) | Water Quality Filter | 4.37 | 0.91 | 2.05 | 2.96 | 1.41 | 12,790 | 7,674  | <del>7.40</del><br>7.66 | N/A | N/A | N/A | 12,875 | 7,676 |
| D-b                              | Inlet D28 through D33 (Building C)                    | Water Quality Filter | 2.43 | 0.00 | 1.75 | 1.75 | 0.68 | 7,333  | 4,400  | 4.46                    | N/A | N/A | N/A | 7,626  | 4,428 |
| Total Treatment Area Discharge D |   |                      | 6.80 | 0.91 | 3.80 | 4.71 | 2.09 | 20,123 | 12,074 |                         |     |     |     |        |       |

|                           |  |  |       |      |      |      |      |  |  |  |  |  |  |  |  |
|---------------------------|--|--|-------|------|------|------|------|--|--|--|--|--|--|--|--|
| <b>TOTAL TREATED AREA</b> |  |  | 12.94 | 2.51 | 7.35 | 9.86 | 3.07 |  |  |  |  |  |  |  |  |
|---------------------------|--|--|-------|------|------|------|------|--|--|--|--|--|--|--|--|

**NOTES AND ASSUMPTIONS:**

- All areas are based on the Deluca Hoffman Associates Permit drawings dated July 2012
- The required water quality volumes have been computed based on Sections 7.1, 7.2, 7.3 and Interim Guidance for the Storm Filter System Dated November 12, 2009 of the Maine DEP Volume III BMP's Technical Design Manual. The volume is computed to be 1" times the subcatchments impervious area and 0.4" times the subcatchments landscaped area.
- The required filter surface area has been computed based on Sections 7.1, and 7.2 of the Maine DEP Volume III BMP's Technical Design Manual. The Underdrained Grassed filter and Subsurface Sand Filter areas are computed to be 5% of the subcatchments impervious area and 2% times the subcatchments vegetated area. The Underdrained Bioretention Cell filter area is computed to be 7% of the subcatchments impervious area and 3% times the subcatchments vegetated area.
- The 1 year peak flow rates have been computed using HydroCad a computer Hydrologic Modeling software. The rainfall intensities are derived from the Tr-55 Manual for Cumberland County SE.
- Subsurface storage system sizing is based on a Stormtech SC-740 chamber system. All isolator rows have been computed per section 7.3.3 Pretreatment Isolator Row of the Maine DEP Volume III BMP's Technical Manual. One chamber is required for each 0.2 cfs of the computed tributary 1 year peak flow rate.
- The required number of StormFilter Cartridges by Contech is computed to be one 12" cartridges per 202 Cubic feet of Water quality volume.
- The owner reserves the right to use an alternate tree box filter device provided it has been approved by the Maine DEP Chapter 500 and the City of Portland.

|  | Required | Provided |
|--|----------|----------|
| Percent of Treated Area which is Impervious  | N/A      | 76%      |
| Percent of Treated Impervious Area which is Rooftop  | N/A      | 25%      |
| Percent of Total Redeveloped Area Treated (13.44 AC Redeveloped Area See Figure A-2)                 | 80%      | 96%      |
| Percent of Redeveloped Impervious Area Treated (10.43 AC Redeveloped Impervious Area See Figure A-2) | 95%      | 95%      |

**ORIFICE DIAMETER FOR GRASSED UNDERDRAIN SOIL FILTER D-b (TRIBUTARY AREA 104-3 Parking Garage and Emergency Care)**

| Elevation | Depth (ft) | Surface Area (sq.ft) | Area End (sq.ft) | Area End Depth (ft) | Incremental Stage Volume (c.f) | Cumulative Volume (c.f.) | Head (ft) | Orifice Flow (cfs) | Drawdown Time (secs) | Drawdown Time (hours) |
|-----------|------------|----------------------|------------------|---------------------|--------------------------------|--------------------------|-----------|--------------------|----------------------|-----------------------|
| 23.00     | 3.50       | 7,429.00             | 6986.50          | 1.00                | 6986.50                        | 20734.25                 | 5.33      | 0.102              | 68212.38             | 18.9                  |
| 22.00     | 2.50       | 6,544.00             | 6121.50          | 1.00                | 6121.50                        | 13747.75                 | 4.33      | 0.092              | 66310.31             | 18.4                  |
| 21.00     | 1.50       | 5,699.00             | 5296.00          | 1.00                | 5296.00                        | 7626.25                  | 3.33      | 0.081              | 65417.36             | 18.2                  |
| 20.00     | 0.50       | 4,893.00             | 4660.50          | 0.50                | 2330.25                        | 2330.25                  | 2.33      | 0.068              | 34410.56             | 9.6                   |
| 19.50     | 0.00       | 4,428.00             | 0.00             | 0.00                | 0.00                           | 0.00                     | 1.83      | 0.060              | 0.00                 | 0.0                   |
| TOTAL     |            |                      |                  |                     |                                |                          |           | 0.301              | <b>TOTAL</b>         | <b>27.7</b>           |

$CA (2gh)^{1/2}$

|                  |        |                   |
|------------------|--------|-------------------|
| Orifice Diameter | 1.3    | inch              |
| Area             | 0.0092 | sq.ft             |
| Head             |        | feet              |
| g                | 32.174 | ft/s <sup>2</sup> |
| C                | 0.6    | Orifice/Grate     |

**ORIFICE DIAMETER FOR GRASSED UNDERDRAIN SOIL FILTER D-a (TRIBUTARY AREA 104-1Future Parking Garage and Future MOB)**

| Elevation | Depth (ft) | Surface Area (sq.ft) | Area End (sq.ft) | Area End Depth (ft) | Incremental Stage Volume (c.f) | Cumulative Volume (c.f.) | Head (ft) | Orifice Flow (cfs) | Drawdown Time (secs) | Drawdown Time (hours) |
|-----------|------------|----------------------|------------------|---------------------|--------------------------------|--------------------------|-----------|--------------------|----------------------|-----------------------|
| 19.00     | 7.00       | 18,341.00            | 17070.50         | 1.00                | 17070.50                       | 86471.00                 | 8.83      | 0.176              | 97260.66             | 27.0                  |
| 18.00     | 6.00       | 15,800.00            | 15050.00         | 1.00                | 15050.00                       | 69400.50                 | 7.83      | 0.165              | 91059.85             | 25.3                  |
| 17.00     | 5.00       | 14,300.00            | 13580.00         | 1.00                | 13580.00                       | 54350.50                 | 6.83      | 0.154              | 87975.30             | 24.4                  |
| 16.00     | 4.00       | 12,860.00            | 12168.00         | 1.00                | 12168.00                       | 40770.50                 | 5.83      | 0.143              | 85321.06             | 23.7                  |
| 15.00     | 3.00       | 11,476.00            | 10813.00         | 1.00                | 10813.00                       | 28602.50                 | 4.83      | 0.130              | 83299.80             | 23.1                  |
| 14.00     | 2.00       | 10,150.00            | 9829.00          | 0.50                | 4914.50                        | 17789.50                 | 3.83      | 0.116              | 42515.89             | 11.8                  |
| 13.50     | 1.50       | 9,508.00             | 9194.00          | 0.50                | 4597.00                        | 12875.00                 | 3.33      | 0.108              | 42650.46             | 11.8                  |
| 13.00     | 1.00       | 8,880.00             | 8278.00          | 1.00                | 8278.00                        | 8278.00                  | 2.83      | 0.099              | 83311.22             | 23.1                  |
| 12.00     | 0.00       | 7,676.00             | 0.00             | 0.00                | 0.00                           | 0.00                     | 1.83      | 0.080              | 0.00                 | 0.0                   |
| TOTAL     |            |                      |                  |                     |                                |                          |           | 0.403              | <b>TOTAL</b>         | <b>35.0</b>           |

CA (2gh)<sup>1/2</sup>

|                  |        |                   |
|------------------|--------|-------------------|
| Orifice Diameter | 1.5    | inch              |
| Area             | 0.0123 | sq.ft             |
| Head             |        | feet              |
| g                | 32.174 | ft/s <sup>2</sup> |
| C                | 0.6    | Orifice/Grate     |

**ORIFICE DIAMETER FOR SUBSURFACE SAND FILTER OUTLET DISCHARGE C-a (TRIBUTARY AREA 103-2)**

| Description of Elevation   | Elevation | Depth (ft) | Incremental Stage Volume (c.f) | Cumulative Volume (c.f.) | Head (ft) | Orifice Flow (cfs) | **Orifice Flow (gal/min) | Drawdown Time (secs) | Drawdown Time (hours) | Cumulative *Drawdown Time (hours) |
|----------------------------|-----------|------------|--------------------------------|--------------------------|-----------|--------------------|--------------------------|----------------------|-----------------------|-----------------------------------|
| Elevation of Overflow Weir | 14.41     | 1.91       | 3144.00                        | 13476.00                 | 4.33      | 0.1579             | 70.850                   | 19915.65             | 5.5                   | 25.8                              |
|                            | 14.00     | 1.50       | 4084.00                        | 10332.00                 | 3.92      | 0.1502             | 67.412                   | 27189.34             | 7.6                   | 20.2                              |
|                            | 13.50     | 1.00       | 4268.00                        | 6248.00                  | 3.42      | 0.1403             | 62.967                   | 30420.57             | 8.5                   | 12.7                              |
|                            | 13.00     | 0.50       | 1980.00                        | 1980.00                  | 2.92      | 0.1296             | 58.182                   | 15273.19             | 4.2                   | 4.2                               |
| Bottom of Storage          | 12.50     | 0.00       | 0.00                           | 0.00                     | 2.42      | 0.1180             | 52.967                   | 0.00                 | 0.0                   | 0.0                               |
| Invert of Orifice          | 10.08     |            |                                |                          |           |                    |                          |                      |                       |                                   |

\*TARGET IS 48 HOURS OR LESS AT FOR THE FULL WATER QUALITY VOLUME

$Q=CA (2gh)^{1/2}$

|                  |        |                   |
|------------------|--------|-------------------|
| Orifice Diameter | 1.7    | inch              |
| Area             | 0.0158 | sq.ft             |
| Head             |        | feet              |
| g                | 32.174 | ft/s <sup>2</sup> |
| C                | 0.6    | Orifice/Grate     |

**ORIFICE DIAMETER FOR STORMFILTERS B-a (PORTION OF TRIBUTARY AREA 102)**

| Elevation | Depth (ft) | Surface Area (sq.ft) | Area End (sq.ft) | Area End Depth (ft) | Incremental Stage Volume (c.f.) | Cumulative Volume (c.f.) | Head (ft) | Orifice Flow (cfs) | Drawdown Time (secs) | Drawdown Time (hours) |
|-----------|------------|----------------------|------------------|---------------------|---------------------------------|--------------------------|-----------|--------------------|----------------------|-----------------------|
| 9.30      | 1.80       | 1,164.00             | 1164.00          | 0.30                | 349.20                          | 2095.20                  | 2.47      | 0.024              | 14653.87             | 4.1                   |
| 9.00      | 1.50       | 1,164.00             | 1164.00          | 0.50                | 582.00                          | 1746.00                  | 2.17      | 0.022              | 26056.72             | 7.2                   |
| 8.50      | 1.00       | 1,164.00             | 1164.00          | 0.50                | 582.00                          | 1164.00                  | 1.67      | 0.020              | 29702.39             | 8.3                   |
| 8.00      | 0.50       | 1,164.00             | 1164.00          | 0.50                | 582.00                          | 582.00                   | 1.17      | 0.016              | 35485.97             | 9.9                   |
| 7.50      | 0.00       | 1,164.00             | 0.00             | 0.00                | 0.00                            | 0.00                     | 0.67      | 0.012              | 0.00                 | 0.0                   |
|           |            |                      |                  |                     |                                 |                          | TOTAL     | 0.048              | <b>TOTAL</b>         | <b>29.4</b>           |

1164.00

 $CA (2gh)^{1/2}$ 

|                  |        |                   |
|------------------|--------|-------------------|
| Orifice Diameter | 0.76   | inch              |
| Area             | 0.0032 | sq.ft             |
| Head             |        | feet              |
| g                | 32.174 | ft/s <sup>2</sup> |
| C                | 0.6    | Orifice/Grate     |

Note: Orifice diameter is sized to mimic the peak flow of 0.245 CFS with 1.8 ft of head provided by the proprietary flow restricting disc in the Stormfilter cartridge.

**ORIFICE DIAMETER FOR BIORETENTION CELL B-b (PORTION OF TRIBUTARY AREA 102)**

| Elevation | Depth (ft) | Surface Area (sq.ft) | Area End (sq.ft) | Area End Depth (ft) | Incremental Stage Volume (c.f) | Cumulative Volume (c.f.) | Head (ft) | Orifice Flow (cfs) | Drawdown Time (secs) | Drawdown Time (hours) |
|-----------|------------|----------------------|------------------|---------------------|--------------------------------|--------------------------|-----------|--------------------|----------------------|-----------------------|
| 14.00     | 1.00       | 3,019.00             | 2771.50          | 0.50                | 1385.75                        | 2530.50                  | 2.83      | 0.011              | 125517.85            | 34.9                  |
| 13.50     | 0.50       | 2,524.00             | 2289.50          | 0.50                | 1144.75                        | 1144.75                  | 2.33      | 0.010              | 114273.76            | 31.7                  |
| 13.00     | 0.00       | 2,055.00             | 0.00             | 0.00                | 0.00                           | 0.00                     | 1.83      | 0.009              | 0.00                 | 0.0                   |
|           |            |                      |                  |                     |                                |                          | TOTAL     | 0.030              | <b>TOTAL</b>         | <b>31.7</b>           |

2530.50

CA (2gh)<sup>1/2</sup>

|                  |        |                   |
|------------------|--------|-------------------|
| Orifice Diameter | 0.5    | inch              |
| Area             | 0.0014 | sq.ft             |
| Head             |        | feet              |
| g                | 32.174 | ft/s <sup>2</sup> |
| C                | 0.6    | Orifice/Grate     |