The Berkshire Design Group, Inc.
4 Allen Place
Northampton, Massachusetts 01060

Landscape Architecture
Civil Engineering
Planning
Urban Design
Environmental Services

JOB North Street Condominiums
SHEET NUMBER 1 OF 5
CALCULATED BY BCD DATE 2/19/09
CHECKED BY DATE
SCALE

Revised 3/10/09 to exclude infiltration trench and include rain garden

Standard 3 – Recharge

Target Depth factor = 0.25 in for type "C" soils

System Sizing:

Dry Well 1

Impervious Area to System = 708 sf

$R_v = (708\,sf) * (\frac{1\,ft}{12\,in}) * (0.25\,in) = 15\,cf$

Volume provided = 52 cf ✓OKAY

Dry Well 2

Imp Area to system = 1988 sf

$R_v = (1988\,sf) * (\frac{1\,ft}{12\,in}) * (0.25\,in) = 41\,cf$

Volume Provided = 99 cf ✓OKAY

Dry Well 3

Imp Area to system = 1732 sf

$R_v = (1732\,sf) * (\frac{1\,ft}{12\,in}) * (0.25\,in) = 36\,cf$

Volume provided = 100 cf ✓OKAY

Dry Well 4

Imp Area to system = 2076 sf

$R_v = (2076\,sf) (\frac{1\,ft}{12\,in}) (0.25\,in) = 44\,cf$

Volume provided = 89 cf ✓OKAY

The Berkshire Design Group, Inc.
4 Allen Place
Northampton, Massachusetts 01060

Landscape Architecture
Civil Engineering
Planning
Urban Design
Environmental Services

JOB North Street Condominiums
SHEET NUMBER 2 OF 5
CALCULATED BY BDD DATE 2/19/09
CHECKED BY DATE
SCALE

Revised 3/10/09 to exclude inf. trench and include Rain Garden

Dry Well 5

Imp Area to system = 1900 sf

$R_v = (1900\ sf) * \left(\frac{1\ ft}{12\ in}\right) * (0.25\ in) = 40\ cf$

Volume Provided = 80 cf ✓OKAY (Note: plans state Dry Well 5 holds 67 cf. This is an error on the plans)

Dry Well 6-7

Imp Area to system = 765 sf

$R_v = (765\ sf) * \left(\frac{1\ ft}{12\ in}\right) * (0.25\ in) = 16\ cf$

Volume Provided = 32 cf ✓OKAY

Dry Well 7

Imp Area to system = 765 sf

$R_v = (765\ sf) * \left(\frac{1\ ft}{12\ in}\right) * (0.25\ in) = 16\ cf$

Volume provided = 32 cf ✓OKAY

Rain Garden

Imp. Area to system = 8,494 sf

$R_v = (8{,}494\ sf)\left(\frac{1'}{12''}\right)(0.25\ in) = 177\ cf$

Volume provided = 369 cf (See Rain Garden hydro CAD in appendix C)

Dry Well 8

Imp Area to system

$R_v = (1900\ sf) * \left(\frac{1\ ft}{12\ in}\right) * (0.25\ in) = 40\ cf$

Volume provided = 90 cf ✓OKAY

The Berkshire Design Group, Inc.

Landscape Architecture
Civil Engineering
Planning
Urban Design
Environmental Services

4 Allen Place
Northampton, Massachusetts 01060

JOB North Street Condominiums
SHEET NUMBER 3 OF 5
CALCULATED BY BCD DATE 2/19/09
CHECKED BY DATE
SCALE

Revised 3/10/09 to exclude infiltration and include Rain Garden

Drawdown in 72 Hours

$$\text{Time} = \frac{Rv}{K * \text{Bottom Area}}$$

Dry Well 1

$Rv = 51cf$

* $K = 0.17 in/hr$

Bottom Area = 128sf

$$\frac{51cf}{(0.17in/hr \times \frac{1}{12})(128sf)} = 28hrs$$

28hrs < 72hrs ✓OKAY

Dry Well 2

$Rv = 99cf$

* $K = 0.17 in/hr$

Bottom Area = 246sf

$$\frac{99cf}{(0.17in/hr \times \frac{1}{12})(246sf)} = 28.4hrs$$

28.4hrs < 72hrs ✓OKAY

Dry Well 3

$Rv = 100cf$

* $K = 0.17 in/hr$

Bottom Area = 250sF

$$\frac{100cf}{(0.17in/hr \times \frac{1}{12})(250sf)} = 28.2hrs$$

28.2hrs < 72hrs ✓OKAY

Dry Well 4

$Rv = 89cf$

* $K = 0.17 in/hr$

Bottom Area = 222sF

$$\frac{89cf}{(0.17in/hr \times \frac{1}{12})(222sf)} = 28.3hrs$$

28.3hrs < 72hrs ✓OKAY

Dry Well 5

$Rv = 80cf$

* $K = 0.17 in/hr$

Bottom Area = 200sf

$$\frac{80cf}{(0.17in/hr \times \frac{1}{12})(200sf)} = 28.2hrs$$

28.2hrs < 72hrs ✓OKAY

*K values based on Rawls Rates in Table 2.3.3 in Vol 3 chp 1
see appendix for TP Data

The Berkshire Design Group, Inc.
4 Allen Place
Northampton, Massachusetts 01060

Landscape Architecture
Civil Engineering
Planning
Urban Design
Environmental Services

JOB North Street Condominiums
SHEET NUMBER 4 OF 5
CALCULATED BY BCD DATE 2/19/09
CHECKED BY _____ DATE _____
SCALE

Revised 3/10/09
to exclude inf. trench
and include Rain Garden

Dry Well 6

$R_v = 16\ cf$

*$K = 0.17\ in/hr$

Bottom Area = 80 sf

$$\frac{16\ cf}{(0.17\ in/hr \times \frac{1}{12}')(80\ sf)} = 14.1\ hrs$$

14.1 hrs < 72 hrs ✓OKAY

Dry Well 7

$R_v = 16\ cf$

*$K = 0.17\ in/hr$

Bottom Area = 80 sf

$$\frac{16\ cf}{(0.17/hr)(\frac{1}{12}')(80\ sf)} = 14.1\ hrs$$

14.1 hrs < 72 hrs ✓OKAY

Rain Garden

$R_v = 369\ cf$

$K = 0.17\ in/hr$

Bottom Area = 380 sf

$$\frac{369\ cf}{(0.17\ in/hr)(\frac{1}{12})(380\ sf)} = 68.5\ hrs$$

68.5 hrs < 72 hrs ✓okay

Dry Well 8

$R_v = 90\ cf$

*$K = 0.17\ in/hr$

Bottom Area = 224 sf

$$\frac{90\ cf}{(0.17\ in/hr)(\frac{1\ ft}{12\ in})(224\ sf)} = 28.4\ hrs$$

28.4 hrs < 72 hrs ✓OKAY

* K values based on Rawls Rates in Table 2.3.3 in Vol 3. chpt 2 see appendix for HSG

The Berkshire Design Group, Inc.

4 Allen Place
Northampton, Massachusetts 01060

Landscape Architecture
Civil Engineering
Planning
Urban Design
Environmental Services

JOB North Street Condominiums
SHEET NUMBER 5 OF 5
CALCULATED BY BCD DATE 2/19/09
CHECKED BY DATE
SCALE

Revised 3/10/09 to exclude inf. trench and include Rain Garden

Capture Area

Total New impervious area = 47,959 sf

Impervious Area sent to infiltration system =

708 sf	Dry Well 1
1988 sf	Dry Well 2
1732 sf	Dry Well 3
2076 sf	Dry Well 4
1900 sf	Dry Well 5
765 sf	Dry Well 6
765 sf	Dry Well 7
1900 sf	Dry Well 8
8494 sf	Rain Garden
20,328 sf	

% of new impervious area to infiltration system =

$$100\% \times \frac{20,328\ sf}{47,959\ sf} = 42.4\%$$

Note: Due to high ground water and hydrologic group 'C' soils throughout the site, infiltration was could only be achieved to the maximum extent practicable.