NITROGEN LOADING CALCULATIONS

In conformance with *Technical Bulletin 91-001 (Final) Nitrogen Loading* , April 1992 by the Cape Cod Commission, Water Resources Office

Areas (Lot 1 Only)

Existing Area (Outside of Tower Improvements):

Non-Residential (Office) =	1000	sf
Non-Residential (Ind. Plant w/o Café) =	10	emp
Residential (Apartment) =	2	bdr
Roof =	9,207	sf
Pavement =	4,356	sf
Gravel Roadway =	42,551	sf
Lawn =	0	sf
Natural Area =	94,367	sf
Sub-Total =	150,481	sf

Drainage Area P-1 (Tower Improvements):

Non-Residential (Office) =	0	sf
Non-Residential (Ind. Plant w/o Café) =	0	emp
Residential (Apartment) =	0	bdr
Roof =	1,249	sf
Pavement =	0	sf
Gravel Roadway =	5,144	sf
Lawn =	0	sf
Natural Area =	17,117	sf
Sub-Total =	23,510	sf

Drainage Area P-2 (Tower Improvements):

Non-Residential (Office) =	0	sf
Non-Residential (Ind. Plant w/o Café) =	0	emp
Residential (Apartment) =	0	bdr
Roof =	0	sf
Pavement =	0	sf
Gravel Roadway =	1,030	sf
Lawn =	0	sf
Natural Area =	8,175	sf
Sub-Total =	9,205	sf

Total Area (Lot 1 Only):

Non-Residential (Office) =	1000	sf
Non-Residential (Ind. Plant w/o Café) =	10	employees
Residential (Apartment) =	2	bdr
Roof =	10,456	sf
Pavement =	4,356	sf
Gravel Roadway =	48,725	sf
Lawn =	0	sf
Natural Area =	119,659	sf
Total =	183,196	sf

WASTEWATER (TITLE 5 FLOWS)

Non-Residential (Office)

1,000 sf * 75 gpd / 1,000 sf * 3.785 L/gal = **283.9 L/day** * 35 mg/L = **9,935.6 mg/day**

Non-Residential (Ind. Plant w/o Café)

10 emp * 15 gpd/emp * 3.785 L/gal = **567.8 L/day** * 35 mg/L = **19,871.3 mg/day**

Residential (Apartment)

2 bdr * 110 gpd/bdr * 3.785 L/gal = **832.7 L/day** * 35 mg/L = **29,144.5 mg/day**

IMPERVIOUS SURFACES

Roof

10,456 sf * 40 in/yr * 1/12 ft/in * 28.32 L/cf * 1/365 yr/day = **2,704.2 L/day** * 0.75 mg/L = **2,028.2 mg/day**

Pavement

4,356 sf * 40 in/yr * 1/12 ft/in * 28.32 L/cf * 1/365 yr/day = **1,126.6 L/day** * 1.5 mg/L = **1,689.9 mg/day**

Gravel Roadway

48,725 sf * 40 in/yr * 1/12 ft/in * 28.32 L/cf * 1/365 yr/day = **12,601.8 L/day** * 1.5 mg/L = **18,902.6 mg/day**

LAWN

0 sf * 3 lb / 1,000 sf-yr * 1 yr / 365 day 454,000 mg/lb * 0.25 = **0.0 mg/day**

NATURAL

119,659 sf * 18 in/yr * 1/12 ft/in 28.32 L/cf * 1/365 yr/day = **13,926.3 L/day**

SUMMARY

$$\frac{9{,}935.6\ \frac{mg}{day} + 19{,}871.3\ \frac{mg}{day} + 29{,}144.5\ \frac{mg}{day} + 2{,}028.2\ \frac{mg}{day} + 1{,}689.9\ \frac{mg}{day} + 18{,}902.6\ \frac{mg}{day} + 0.0\ \frac{mg}{day} + 0.0\ \frac{mg}{day}}{283.9\ \frac{L}{day} + 567.8\ \frac{L}{day} + 832.7\ \frac{L}{day} + 2{,}704.2\ \frac{L}{day} + 1{,}126.6\ \frac{L}{day} + 12{,}601.8\ \frac{L}{day} + 0.0\ \frac{L}{day} + 13{,}926.3\ \frac{L}{day}} = \frac{81{,}572.1\ mg}{32{,}043.2\ L} = \boxed{2.5\ ppm}$$

< 5 ppm then OK

COMMONWEALTH OF MASSACHUSETTS
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