These computations were not evaluated using the TR-55 method but some of the values for soil group and hydrology were taken from the Urban Hydrology for Small Watershed manual.

The soils on the site are represented best by Group A based on the soil evaluation performed at Test Pit shown on the design drawing. A reasonable infiltration rate for this well drained soil based on Appendix A information is 0.3 inches per hour, also represented as 43.2 cubic inches in volume per square foot per hour.

The pre-development former buildings aggregate roof area amounts to 4170 SF and paved areas amounts to 2812 SF including the paved parking area off edge of travel way.

The pre-development site can be considered the amount of area consisting of managed lawn without higher vegetation 28,413 SF. The percentage of paved impervious to the site area is approximately 10%. The percentage of impervious due to building roof areas is approximately 15%.

Using actual maximum observed rainfall figures from the New Bedford Airport, a Two year storm would be equivalent to an average 4.0 inches in a 24 hour period. The Ten year storm would be 6.0 inches and the 100 year storm would be 9.8 inches in a 24 hour period.

Using these rainfall values as the volume of rain falling on the predevelopment area, if the site area were not covered by any impervious area the following are believed to be true:

1. For a Two year storm with 4.0 inches over a 24 hour period equivalent to 4/24 = .17 inches per hour if steady rainfall, then these soils would absorb the entire amount through infiltration. This is also represented as 4 inches of depth or 576 cubic inches per square foot of rainfall over a 24 hour period equivalent to 576/24 = 24.0 cubic inches per square foot per hour.

2. For a Ten year storm with 6.0 inches over a 24 hour period equivalent to .21 inches per hour these soils would absorb the entire amount through infiltration. This is also represented as 6 inches of depth or 864 cubic inches per square foot of rainfall over a 24 hour period equivalent to 864/36 cubic inches per square foot per hour

3. For a 100 year storm with 9.8 inches over a 24 hour period equivalent to .31 inches per hour it would be reasonable to expect that some standing water would appear and perhaps some sheet flow would result. This is also represented as 9.8 inches of depth or 1411.2 cubic inches per square foot of rainfall over a 24 hour period equivalent to 1411.2/24 = 58.8 cubic inches per square foot per hour

The pre-development impervious paved areas amount to 10% of site area therefore it is reasonable to assume that 90% of the site soils would have to provide the same infiltration as would be needed to accommodate a given storm. The inclusion of the building impervious areas would add 15% of impervious area though some limited direct infiltration was able to occur because the buildings were founded on blocking and piles with no wall foundations in the ground. It would be reasonable to assume that overall in the pre-development computations that 80% of the site soils would have to provide the same infiltration as would be needed to accommodate a given storm.

Assuming that the same volume of rainfall occurred but the area for infiltration is 80% of the original site area, the following is believed to be true:

1. For a Two year storm with 4 inches of depth or 576 cubic inches per square foot of rainfall over a 24 hour period the equivalent of 576 X 28,413 = 16,365,888 cubic inches of volume would fall on the site but would have to be absorbed by 80% of the original site or 22,730 square feet of soil. This would be the equivalent of 16,365,888 / 24 = 681,912 cubic inches of volume. This volume 681,912 / 22,730 = 30 cubic inches per square foot per hour. Therefore in the pre-development situation the soils would absorb the entire amount through infiltration.

2. For a Ten year storm with 6.0 inches of depth or 864 cubic inches per square foot of rainfall over a 24 hour period the equivalent of 864 X 28,413 = 24,548,832 cubic inches of volume would fall on the site but would have to be absorbed by 80% of the original site or 22,730 square feet of soil. This would be the equivalent of 24,548,832 / 24 = 1,022,868 cubic inches of volume. This volume 1,022,868 / 22,730 = 45 cubic inches per square foot per hour. Therefore in the pre-development situation the soils would absorb almost all of the amount through infiltration but there would probably be some puddling in areas especially during the later stage of the storm where some saturation will have had a chance to occur.

3. For a 100 year storm with 9.8 inches of depth or 1411.2 cubic inches per square foot of rainfall over a 24 hour period the equivalent of 1411.2 X 28,413 = 40,096,426 cubic inches of volume would fall on the site but would have to be absorbed by 80% of the original site or 22,730 square feet of soil. This would be the equivalent of 24,548,832 / 24 = 1,670,684 cubic inches of volume. This volume 1,670,684 / 22,730 = 73.5 cubic inches per square foot per hour. Therefore in the pre-development situation the soils would absorb a portion of the rainfall but it would be reasonable to expect that significant standing water would appear and sheet flow would result during period of higher intensity rainfall and more so during the later portion of the storm.

The post development proposed salt shed footprint amounts to 8816 SF including the perimeter paved walkway except for the paved area immediately in front of the garage opening.

The post development paved areas amounts to 2789 SF keeping the parking area off edge of travel way and relocating the driveway area to the front of the garage opening.

Therefore the post development aggregate amount of impervious area would include the salt shed pad and the paved areas 8816 + 2789 = 11,605 SF. This area represents the 40.8% of the original site considered in predevelopment. Therefore there is an expectation that 59.2% of the site would have to absorb the same amount of rainfall and the analysis is similar.

Assuming that the same volume of rainfall occurred but the area for infiltration is 59.2% of the original site area, the following is believed to be true:

1. For a Two year storm with 4 inches of depth or 576 cubic inches per square foot of rainfall over a 24 hour period the equivalent of 576 X 28,413 = 16,365,888 cubic inches of volume would fall on the site but would have to be absorbed by 59.2% of the original site or 16,820 square feet of soil. This would be the equivalent of 16,365,888 / 24 = 681,912 cubic inches of volume. This volume 681,912 / 16,820 = 40.5 cubic inches per square foot per hour. Therefore in the post development situation the soils would absorb the entire amount through infiltration.

2. For a Ten year storm with 6.0 inches of depth or 864 cubic inches per square foot of rainfall over a 24 hour period the equivalent of 864 X 28,413 = 24,548,832 cubic inches of volume would fall on the site but would have to be absorbed by 59.2% of the original site or 16,820 square feet of soil. This would be the equivalent of 24,548,832 / 24 = 1,022,868 cubic inches of volume. This volume 1,022,868 / 16,820 = 60.8 cubic inches per square foot per hour. Therefore in the post development situation the soils would absorb approximately two thirds of the amount through infiltration so it would be reasonable to expect that the remaining third of volume would have to be retained to mitigate sheet flow.

3. For a 100 year storm with 9.8 inches of depth or 1411.2 cubic inches per square foot of rainfall over a 24 hour period the equivalent of 1411.2 X 28,413 = 40,096,426 cubic inches of volume would fall on the site but would have to be absorbed by 59.2% of the original site or 16,820 square feet of soil. This would be the equivalent of 24,548,832 / 24 = 1,670,684 cubic inches of volume. This volume 1,670,684 / 16,820 = 99.3 cubic inches per square foot per hour. Therefore in the post development situation the soils would absorb approximately one third of the rainfall but it would be reasonable to expect that

the remaining two thirds of volume would result in significant standing water and sheet flow if there were no mitigating measures in place.