Appendix L
Dry Weather Modeling
Load Estimates

The dry weather steady-state watershed model was used to calculate the allowable loading from dry weather urban runoff by calculating the dry weather flow and multiplying it by the dry weather 30-day geometric mean numeric targets. This allowable bacteria load from the watershed was used as a boundary condition in the receiving water (EFDC) model. Nonpoint, non-urban runoff sources of bacteria that may be attributed to waterfowl or other unidentified sources within the receiving waters were added to the allowable load calculated from the dry weather steady-state watershed model. These loads were modeled on an hourly basis during the 30-day critical tidal period by the EFDC model. The hourly model-predicted bacteria densities allowed the consideration of diurnal variations in water quality resulting from tidal fluctuations, which may vary by orders of magnitude.

The hourly EFDC model-predicted bacteria densities were used to calculate a geometric mean bacteria density for the 30-day critical tidal period. Additionally, the hourly EFDC model-predicted bacteria densities were used to calculate daily arithmetic averages for each day of the 30-day critical tidal period. The 30-day critical tidal period geometric mean was compared to the 30-day geometric mean numeric target. The daily arithmetic averages were compared to the single sample maximum numeric target.

Bacteria loads attributed to non-urban runoff sources (e.g., waterfowl or other unidentified sources) were increased until either the 30-day critical tidal period geometric mean was equal to the 30-day geometric mean numeric target, or one or more daily arithmetic means was equal single sample maximum numeric target. This was considered the allowable load attributed to non-urban runoff sources that could still meet the assimilative capacity of the receiving water, while accounting for the allowable loads from urban runoff sources.

Results of these analyses are shown in the following figures for the dry weather 30-day critical tidal period evaluated. The graphical results show the hourly EFDC model-predicted bacteria densities (blue lines), which are used to calculate the daily arithmetic means (green lines) and 30-day critical tidal period geometric means (not shown). The 30-day critical tidal period geometric means are not shown in the figures, because the 30-day critical tidal period geometric mean is a single point

The daily arithmetic means (green lines) are compared to the single sample maximum numeric targets (dashed red lines). The 30-day critical tidal period geometric means are compared to the 30-day geometric mean numeric targets (solid red lines). As discussed above, the 30-day critical tidal period geometric means are not shown in the figures; however, they are less than or equal to the 30-day geometric mean numeric targets.

For each shoreline segment evaluated, the EFDC model-predicted TC, FC and ENT bacteria densities were compared to REC-1 WQOs for development of TMDLs.

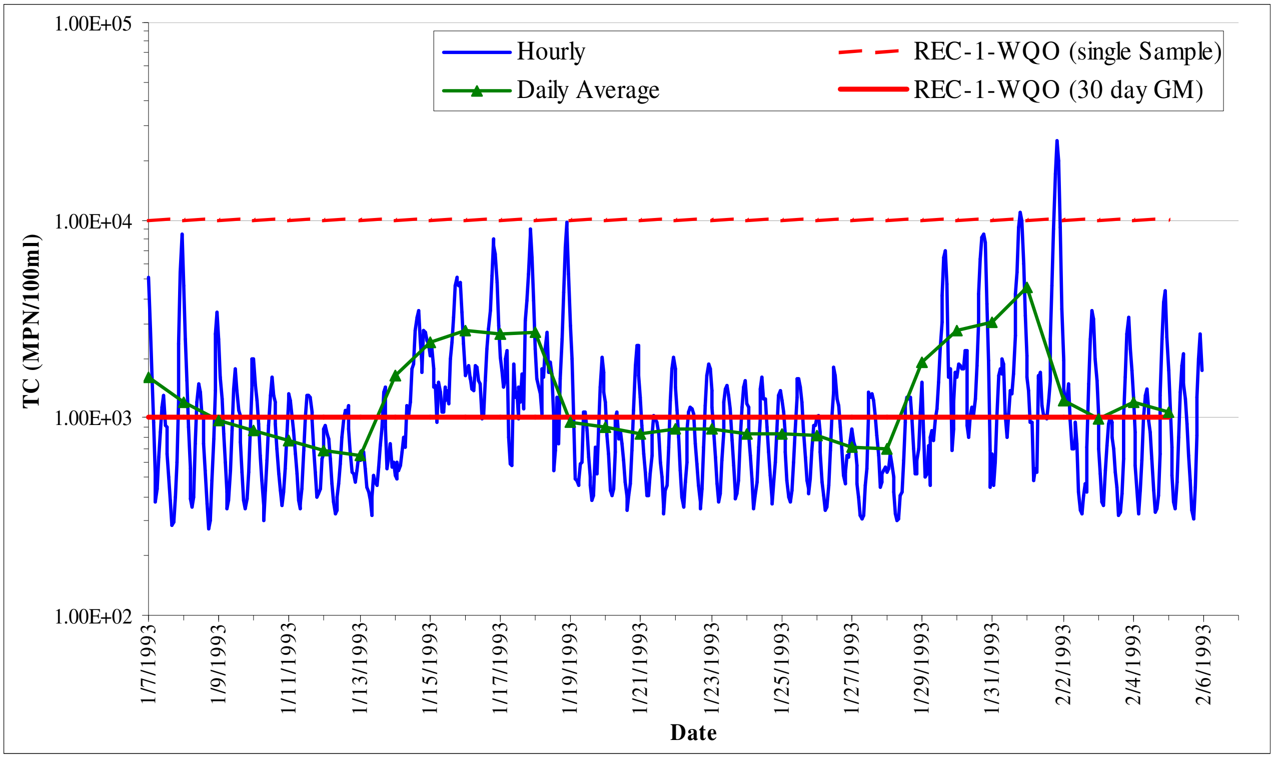

Figure L-1. Model-Predicted Total Coliform Concentration at Shelter Island Shoreline Park, San Diego Bay-Dry Weather

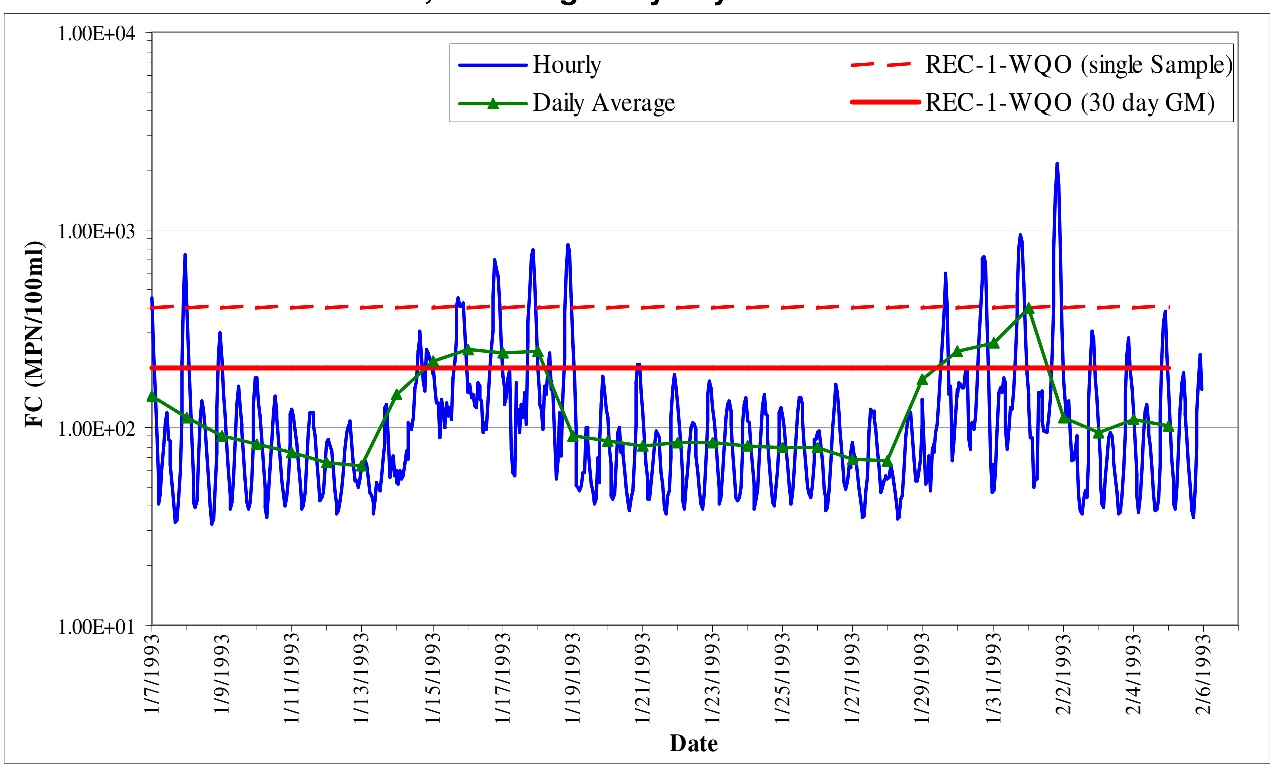

Figure L-2. Model-Predicted Fecal Coliform Concentration at Shelter Island Shoreline Park, San Diego Bay-Dry Weather

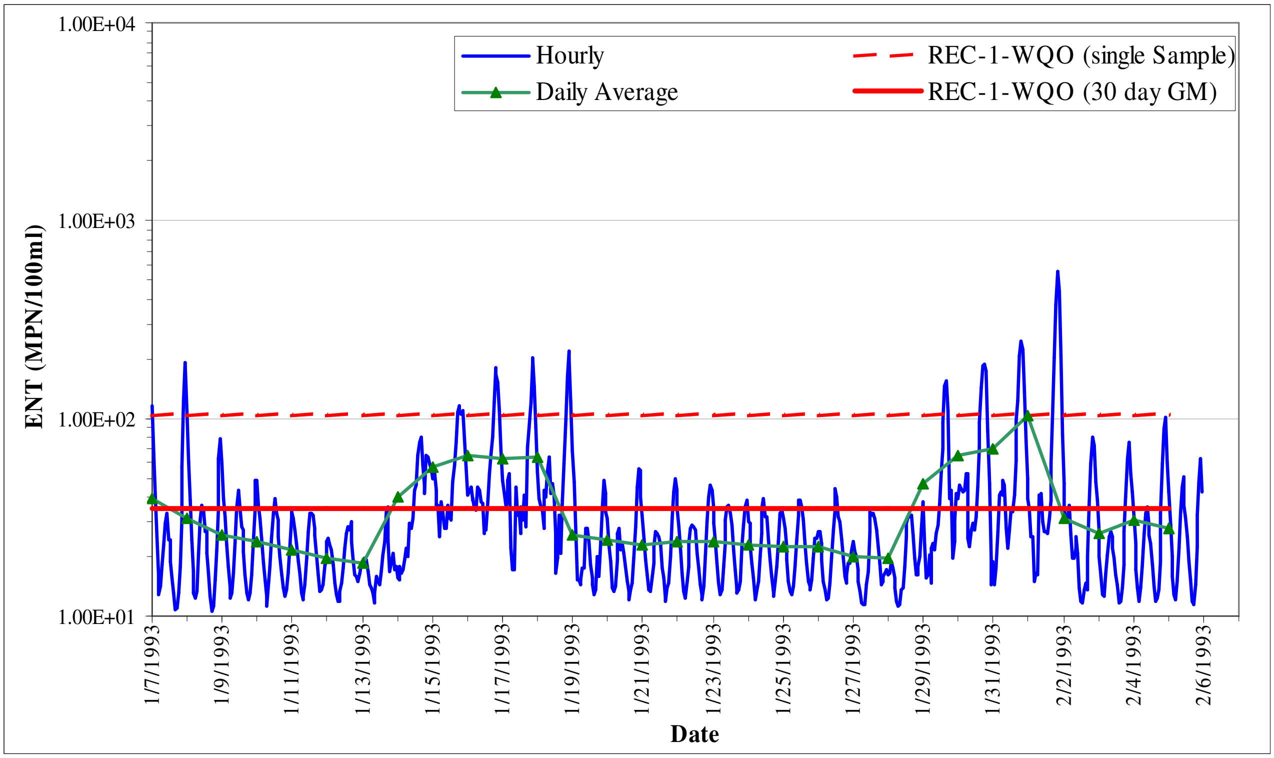

Figure L-3. Model-Predicted *Enterococcus* Concentration at Shelter Island Shoreline Park, San Diego Bay-Dry Weather

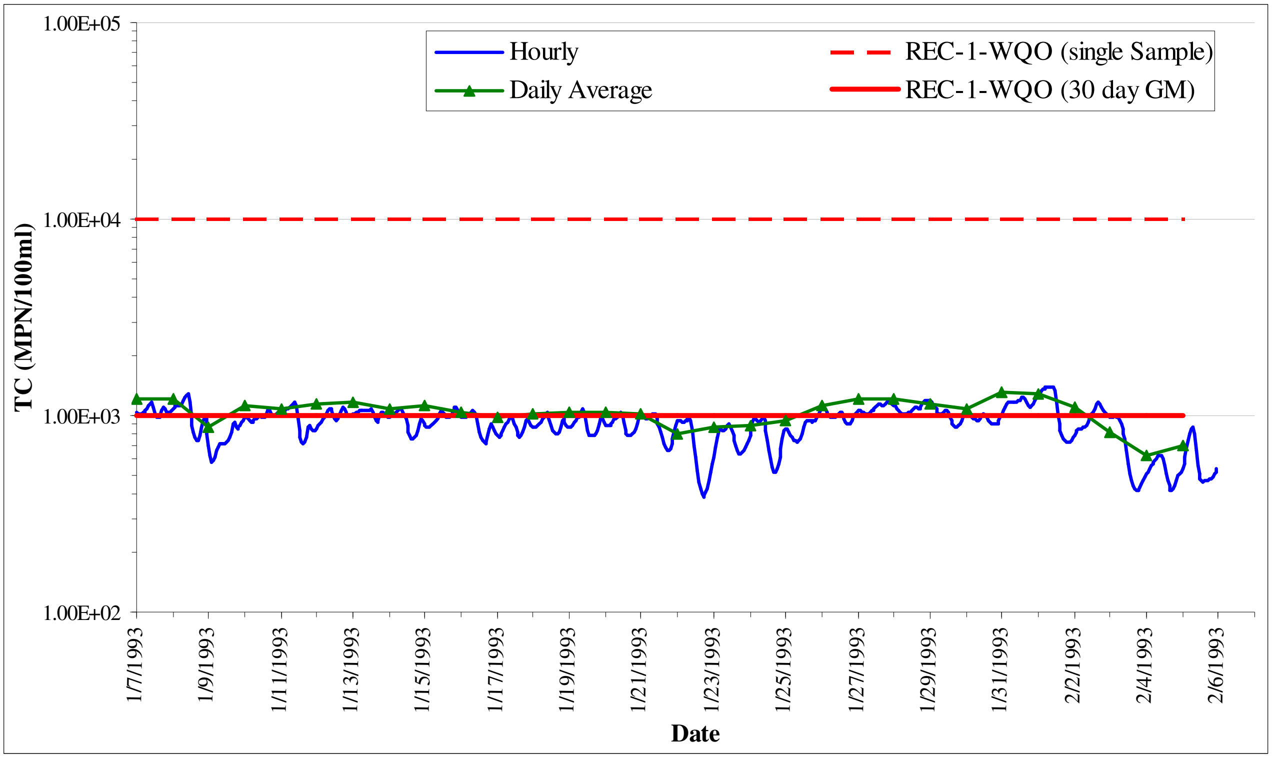

Figure L-4. Model-Predicted Total Coliform Concentration at Baby Beach Shoreline, Dana Point Harbor- Dry Weather

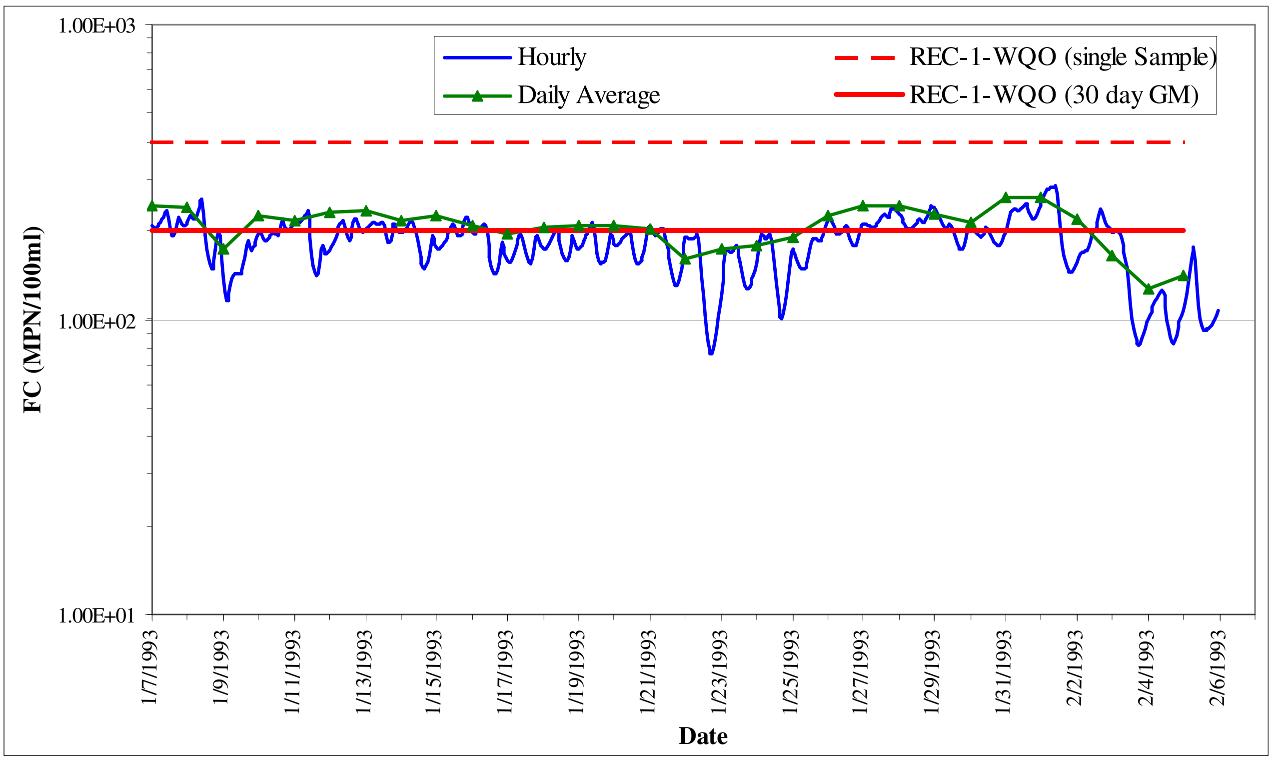

Figure L-5. Model-Predicted Fecal Coliform Concentration at Baby Beach Shoreline, Dana Point Harbor- Dry Weather

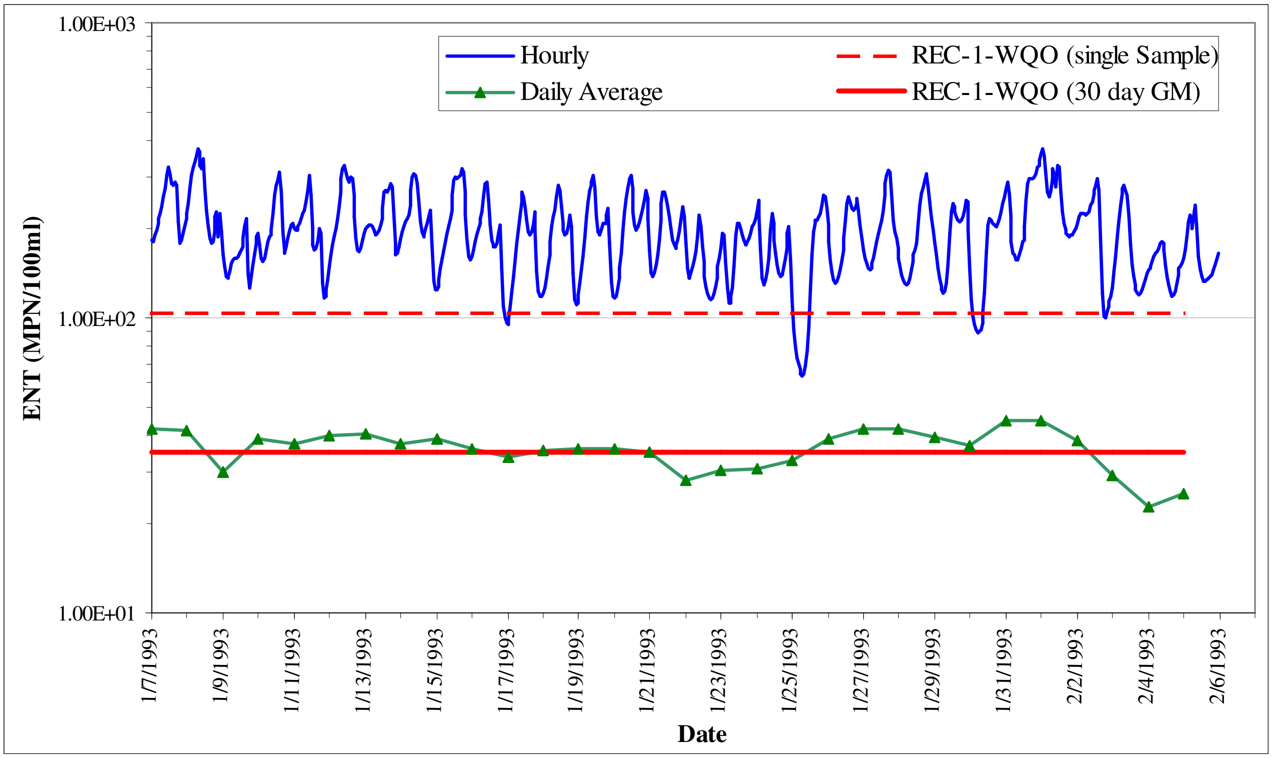

Figure L-6. Model-Predicted *Enterococcus* Concentration at Baby Beach Shoreline, Dana Point Harbor-Dry Weather