APPENDIX O

CALCULATION OF FUTURE DESIGN VALUE

DALLAS/FORT WORTH ATTAINMENT DEMONSTRATION

APRIL 2000 REVISION

This appendix contains tables which were used to calculate the predicted future design values for the DFW ozone nonattainment area. Calculations for the 2007d future base and for Strategy D30 are presented. The future design value is determined by comparing future case peak modeled ozone with base case modeled peak ozone at each monitoring location, then determining the relative reduction factor (RRF) at each site. These RRFs are used to predict the ozone design value at each site in the future.

In the analysis presented here, data from eight modeled days are used (the two ramp-up days were not included), but some values are excluded based on criteria shown below. Additional details on the calculation methodology used can be found in "Ozone Design Value-Based Attainment Demonstration Methodology: Application to Two Ozone Nonattainment Areas in Texas" (Smith, *et. al.*) in *Proceedings of the Air & Waste Management Association 92nd Annual Meeting and Exhibition*.

Calculation of future design value for the 2007d future base

Site	95-97 DV_C	1995 and 1996 Base Case (base5) Modeled Ozone Concentrations (ppb)							
		06/19/95	06/20/95	06/21/95	06/22/95	07/01/96	07/02/96	07/03/96	07/04/96
DANC	134	*99.8*	123.4	133.5	138.7	103.5	115.0	135.4	125.8
DCLC	129	100.5	125.5	133.5	138.7	110.2	116.0	120.0	125.8
DHIC	121	*96.7*	114.9	130.0	126.6	*91.7*	101.6	153.8	111.8
DTMA	**139**	108.8	130.2	129.1	133.2	108.5	113.1	109.7	*99.1*
FRIC	132	*97.3*	122.0	128.6	137.3	107.9	116.0	105.6	125.8
FWMC	133	100.4	104.5	109.2	112.6	*90.3*	*96.6*	156.9	*85.7*
KELC	131	104.4	111.1	113.1	112.6	*90.4*	100.0	156.9	*87.6*
TX44	134	*87.6*	101.7	109.5	107.1	*83.3*	*87.5*	153.8	*98.3*

Site	95-97 DV_C	2007 Future Base (2007d) Modeled Ozone Concentrations (ppb)							
		06/19/95	06/20/95	06/21/95	06/22/95	07/01/96	07/02/96	07/03/96	07/04/96
DANC	134	*93.1*	113.2	122.4	125.6	96.6	106.8	128.4	115.1
DCLC	129	95.7	115.6	122.4	126.7	101.3	107.2	116.2	115.1
DHIC	121	*92.3*	107.7	120.1	120.6	*89.2*	96.3	139.0	105.8
DTMA	**139**	101.7	119.2	118.5	124.3	102.0	106.9	101.9	*94.1*
FRIC	132	*90.5*	111.4	117.0	125.3	98.8	107.2	104.0	115.1
FWMC	133	95.5	98.8	100.2	103.8	*85.1*	*89.5*	146.0	*80.6*
KELC	131	99.1	105.1	105.0	103.8	*86.1*	93.5	146.0	*82.6*
TX44	134	*83.7*	97.6	103.4	101.0	*82.2*	*88.1*	139.0	*91.7*

Site	95-97 DV_C	Relative Reduction Factor (RRF)									
		06/19/95	06/20/95	06/21/95	06/22/95	07/01/96	07/02/96	07/03/96	07/04/96	Mean	DV_F
DANC	134		0.92	0.92	0.91	0.93	0.93	0.95	0.91	0.92	123.7
DCLC	129	0.95	0.92	0.92	0.91	0.92	0.92	0.97	0.91	0.93	119.8
DHIC	121		0.94	0.92	0.95		0.95	0.90	0.95	0.94	113.2
DTMA	**139**	0.93	0.92	0.92	0.93	0.94	0.95	0.93		0.93	**129.3**
FRIC	132		0.91	0.91	0.91	0.92	0.92	0.98	0.91	0.92	122.1
FWMC	133	0.95	0.94	0.92	0.92			0.93		0.93	124.1
KELC	131	0.95	0.95	0.93	0.92			0.93		0.94	122.5
TX44	134		0.96	0.94	0.94			0.90		0.94	125.6

DV_C = Current Design Value at a monitoring location
DV_F = Predicted Future Design Value at a monitoring location
1. Ozone values at these sites are maxima of 7x7 4x4km cells around the sites.
2. Data that meet the following conditions are excluded from the DVF caculations:
   a. DVc >= 125 ppb and Predicted Maximum Concentrations < 100 ppb, or
   b. DVc < 125 ppb and Predicted Maximum Concentrations < (DVc - 20) ppb.
   Values shown in *italic* were excluded from the calculation.
3. Final future design values are calculated based on means of RRFs.
4. Area-wide current and future design values shown in **bold**.

Calculation of future design value for the 2007d future base

Site	95-97 DV_C	1995 and 1996 Base Case (base5) Modeled Ozone Concentrations (ppb)							
		06/19/95	06/20/95	06/21/95	06/22/95	07/01/96	07/02/96	07/03/96	07/04/96
DANC	134	*99.8*	123.4	133.5	138.7	103.5	115.0	135.4	125.8
DCLC	129	100.5	125.5	133.5	138.7	110.2	116.0	120.0	125.8
DHIC	121	*96.7*	114.9	130.0	126.6	*91.7*	101.6	153.8	111.8
DTMA	**139**	108.8	130.2	129.1	133.2	108.5	113.1	109.7	*99.1*
FRIC	132	*97.3*	122.0	128.6	137.3	107.9	116.0	105.6	125.8
FWMC	133	100.4	104.5	109.2	112.6	*90.3*	*96.6*	156.9	*85.7*
KELC	131	104.4	111.1	113.1	112.6	*90.4*	100.0	156.9	*87.6*
TX44	134	*87.6*	101.7	109.5	107.1	*83.3*	*87.5*	153.8	*98.3*

Site	95-97 DV_C	Control Strategy D30 Modeled Ozone Concentrations (ppb)							
		06/19/95	06/20/95	06/21/95	06/22/95	07/01/96	07/02/96	07/03/96	07/04/96
DANC	134	87.8	103.2	113.0	115.9	91.7	100.2	121.0	101.8
DCLC	129	88.6	104.1	113.0	115.9	93.9	100.2	113.1	101.8
DHIC	121	87.0	100.2	111.7	112.5	85.8	90.9	124.9	97.2
DTMA	**139**	90.8	105.4	104.9	111.4	92.2	95.5	89.7	85.5

FRIC	132	83.1	101.1	106.7	113.6	91.9	100.2	100.2	101.8
FWMC	133	88.0	89.3	92.7	95.5	79.3	82.4	133.9	77.9
KELC	131	90.3	94.5	93.6	95.5	80.7	85.6	133.9	79.8
TX44	134	78.0	87.1	92.3	93.2	78.0	78.7	124.9	87.3

Site	95-97 DV_C	Relative Reduction Factor (RRF)									
		06/19/95	06/20/95	06/21/95	06/22/95	07/01/96	07/02/96	07/03/96	07/04/96	Mean	DV_F
DANC	134		0.84	0.85	0.84	0.89	0.87	0.89	0.81	0.85	114.4
DCLC	129	0.88	0.83	0.85	0.84	0.85	0.86	0.94	0.81	0.86	110.6
DHIC	121		0.87	0.86	0.89		0.90	0.81	0.87	0.87	104.8
DTMA	**139**	0.83	0.81	0.81	0.84	0.85	0.84	0.82		0.83	**115.3**
FRIC	132		0.83	0.83	0.83	0.85	0.86	0.95	0.81	0.85	112.4
FWMC	133	0.88	0.85	0.85	0.85			0.85		0.86	113.9
KELC	131	0.86	0.85	0.83	0.85			0.85		0.85	111.2
TX44	134		0.86	0.84	0.87			0.81		0.85	113.3

DV_C = Current Design Value at a monitoring location
DV_F = Predicted Future Design Value at a monitoring location
1. Ozone values at these sites are maxima of 7x7 4x4km cells around the sites.
2. Data that meet the following conditions are excluded from the DVF caculations:
   a. DVc >= 125 ppb and Predicted Maximum Concentrations < 100 ppb, or
   b. DVc < 125 ppb and Predicted Maximum Concentrations < (DVc - 20) ppb.
   Values shown in *italic* were excluded from the calculation.
3. Final future design values are calculated based on means of RRFs.
4. Area-wide current and future design values shown in **bold**.