CHAPTER 7

Control Strategy and Attainment Demonstration

FIGURES

TABLES

7

Control Strategy and Attainment Demonstration

7.1 INTRODUCTION

On March 23, 2007, the United States Environmental Protection Agency (USEPA) published a finding that the Owens Valley Planning Area did not attain the federal 24-hour PM_{10} standard by December 31, 2006 as mandated by the Clean Air Act Amendments of 1990 (CAAA) (USEPA, 2007a). As a result of this finding, the 2003 Owens Valley SIP must be revised to include a control strategy that will provide for attainment of the federal standard as soon as practicable. In addition, the SIP control strategy must achieve at least a 5 percent reduction in PM_{10} emissions per year and demonstrate attainment with the federal standard by March 23, 2012, unless the USEPA grants an extension. Such an extension could extend that deadline by up to 5 years to March 23, 2017 (CAAA §179(d)(3)).

The proposed control strategy described in this chapter sets forth an overall plan to control dust from Owens Lake by combining the three Best Available Control Measure (BACM) methods discussed in Chapter 5: Shallow Flooding, Managed Vegetation and Gravel Blanket. These three BACM control methods are also the "most stringent measures" (MSM) that have been applied in a USEPA-approved SIP and are feasible for implementation at Owens Lake. The application of MSM was required by the USEPA for inclusion in the 2003 SIP to help ensure that the federal standard could be attained as expeditiously as practicable. For the purpose of regulatory requirements, these three BACM are also considered MSM for the Owens Valley Planning Area, and will be referred to as BACM in this chapter.

The overall PM_{10} control strategy for Owens Lake is based on first identifying dust source areas that cause or contribute to exceedances of the federal standard at the historic shoreline. After these areas are identified the District issues an order for the City to implement BACM to control dust from those areas. Under the 2003 SIP control strategy the District ordered the City to implement BACM on 29.8 square miles of the Owens Lake bed (GBUAPCD, 2003). Between July 2002 and June 2006, more than 12 square miles of the lake bed that were not controlled under the 2003 SIP control strategy were found to cause or contribute to exceedances at the historic shoreline. These areas and additional areas suspected of contributing to exceedances (for a total of 13.2 square miles) will be controlled under the proposed control strategy for this 2008 SIP. Any other areas that are found to cause or contribute to exceedances of the federal standard at the shoreline, after the additional controls are implemented, or which cause exceedances of the state PM_{10} standard in the communities will be controlled in the future. (GBUAPCD, 2006b)

If all the necessary dust control measures are implemented by December 31, 2013 in the Supplemental Dust Control Areas (SDCAs) and the Keeler dunes, the Planning Area can demonstrate attainment with the federal standard by 2017. This implementation deadline provides three calendar years to collect air quality monitoring data after the implementation of control measures. Three years of clean air quality data are necessary to provide evidence that the federal standard has been attained.

The following subsections describe the control strategy that was implemented through the 2003 SIP and will be implemented through the proposed control strategy.

7.2 2003 Dust Control Area – 29.8 Square Miles

An analysis of dust events that occurred from January 2000 through June 2002 identified dust source areas that caused or contributed to exceedances of the federal PM_{10} standard at the historic shoreline of Owens Lake. These dust source areas covered 29.8 square miles of the lake bed. The modeling analysis showed that there would be no exceedances of the federal standard caused by these areas after dust control measures were implemented in the 2003 Dust Control Area (DCA). Under the requirements of the 2003 SIP, the City was ordered to implement dust control measures in these areas of the lake bed by December 31, 2006. The existing DCA is shown in Figure 7.1.

Shallow Flooding was implemented on 26.3 square miles of the DCA, while the remainder (3.5 square miles) was controlled using the Managed Vegetation DCM. The Shallow Flooding DCM is currently being operated in accordance with the 2003 SIP and the requirements of Board Order #031113-01. The Managed Vegetation DCM is currently being operated under a modified plan in accordance with the 2006 Settlement Agreement between the District and the City discussed below and in Section 5.3.1 (GBUAPCD, 2006b). Although the City's existing Managed Vegetation DCM site did not fully comply with the 50 percent vegetation cover requirement of the 2003 SIP, the vegetation that currently covers the site has substantially controlled PM_{10} emissions. To help ensure that the area does not cause or contribute to an exceedance of the federal standard at the shoreline, the City is implementing a modified Operation and Management Plan on the Managed Vegetation DCM site. This modified Operation and Management Plan is proposed as a revision to the Managed Vegetation requirements approved in the 2003 SIP for the existing site only and does not apply to any new Managed Vegetation areas constructed after 2006. The City is currently operating the site under a draft version of the Managed Vegetation Operation and Management Plan. The final plan will be approved by the District in 2008.

7.3 2008 Dust Control Area – 13.2 Square Miles

An analysis of dust events during the period from July 2002 through June 2006 identified additional dust source areas that caused or contributed to exceedances of the federal standard. The process to identify these dust source areas was done in accordance with the procedures in the 2003 SIP Supplemental Control Requirements. In 2006, a dispute arose between the District and the City regarding requirements to control dust from additional areas at Owens Lake beyond the 29.8 square miles identified in the 2003 SIP. On December 4, 2006 a Settlement Agreement was approved by both parties to resolve this dispute. Under the major provisions of this agreement, the City agreed to implement dust control measures on an additional 13.2 square miles of the lake bed by April 1, 2010 and the District agreed to revise the 2003 SIP before March 1, 2008 to incorporate the provisions of the Settlement Agreement (GBUAPCD, 2006b). The 2008 control area is comprised of the Supplemental Dust Control Area (SDCA) (12.7 sq. mi) and Channel Area (0.5 sq. mi.) shown in Figure 7.1. There will be a total of 43.0 square miles of controls on the lake bed by 2010.

Under the proposed control strategy, the City can adjust the control efficiencies needed in each new control area to provide the minimum dust control efficiency (MDCE) necessary to prevent

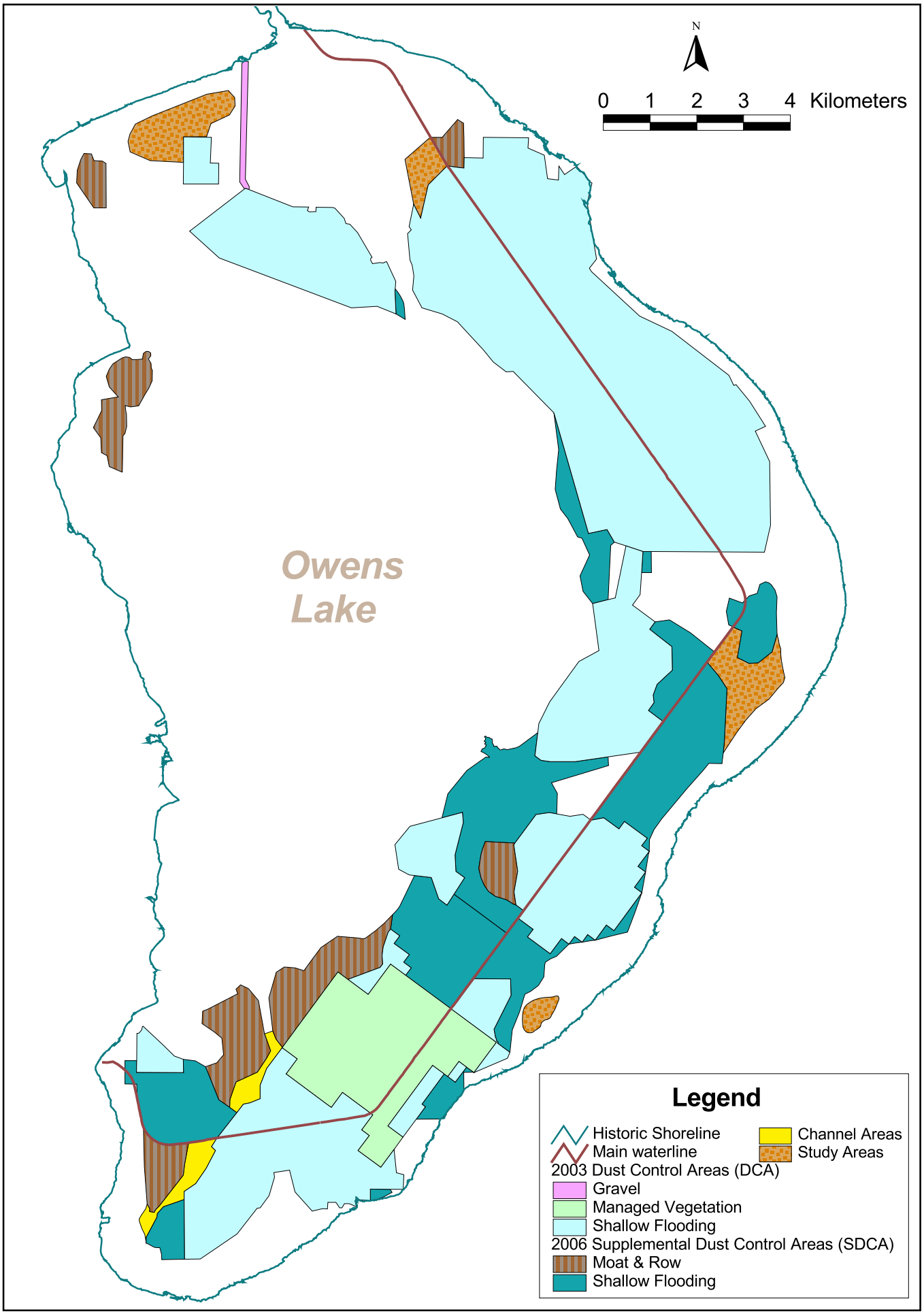

Figure 7.1 - 2008 Dust Control Measure footprint map

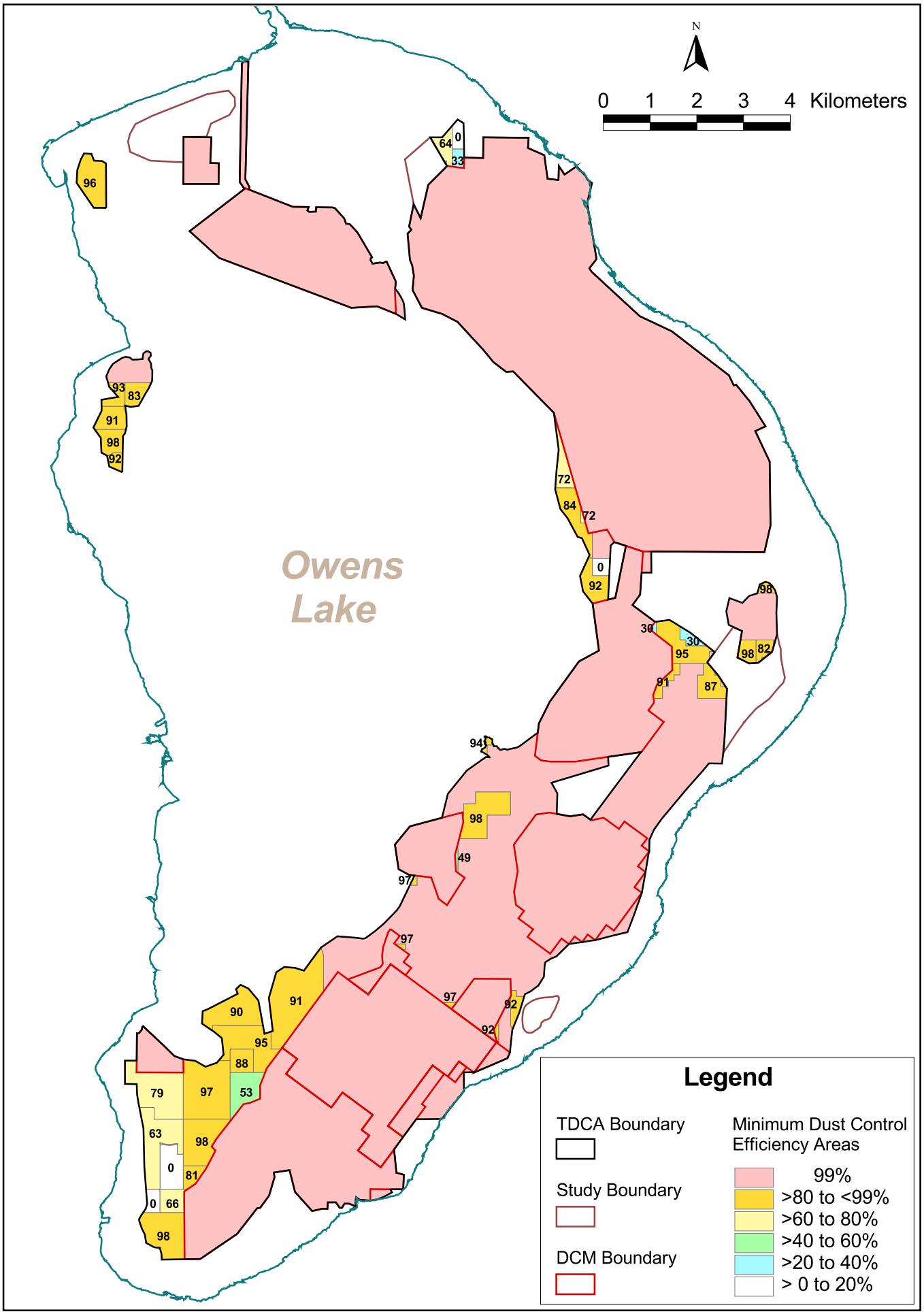

Figure 7.2 - TDCA Minimum Dust Control Efficiency map

exceedances of the federal standard at the historic shoreline. As discussed in the PM_{10} control measure descriptions in Chapter 5 and in the modeling discussion in Chapter 6, each dust source area in the SDCA and Channel Area has a target MDCE ranging from 0 percent to 99 percent (Figure 7.2).

7.3.1 Shallow Flooding Dust Control Areas

Figure 7.2 shows the target MDCEs for all of the dust source areas to be constructed under this 2008 SIP. At least 9.2 square miles within the 13.2 square mile dust control area will be controlled with Shallow Flooding as discussed in Chapter 5. The amount of water coverage in each area will be adjusted using the control efficiency and water cover curve shown in Figure 5.8. The Shallow Flooding areas in the SDCA will be fully implemented and in operation by April 1, 2010.

7.3.2 Moat & Row Dust Control Areas

The City will conduct demonstration projects to evaluate the effectiveness of the Moat & Row dust control measure. Depending on the results of the Moat & Row demonstration projects and the approvals required by other responsible agencies, the City, in its sole discretion, may decide which DCMs to propose for implementation in the areas designated for Moat & Row in Figure 7.1. Up to 3.5 square miles of the SDCA may be controlled by either Moat & Row or approved BACM.

Depending on the results of the Moat & Row demonstration projects, the control measure implemented in the Moat & Row areas may include Moat & Row, enhanced Moat & Row (e.g. closer Moat & Row spacing, Moat & Row with some Shallow Flooding, Moat & Row with some vegetation), combined Moat & Row/ Shallow Flood, MDCE-BACM or BACM. If the City is permitted by other responsible agencies to implement Moat & Row in any of the SDCA areas, it shall be designed and constructed to achieve the target MDCEs shown in Figure 7.2. The City will consult with the District before making its decision and will inform the District in writing. If the City implements Moat & Row in any of the areas so designated in Figure 7.1, it must be operational by October 1, 2009.

Because the Moat & Row dust control measure has not been fully tested, there is a possibility that wind blown dust from Moat & Row areas may cause or contribute to exceedances of the PM_{10} standard. In that case, modifications of the Moat & Row design, or replacement of the control measure to MDCE-BACM or other approved BACM may be necessary. In accordance with the Settlement Agreement, the City will have one opportunity to modify the Moat & Row design, if the Air Pollution Control Officer (APCO) determines that any implemented Moat & Row control area resulted in an exceedance of the federal standard. After April 1, 2010, a second exceedance of the standard caused by a previously remediated Moat & Row area would result in the City replacing the Moat & Row control measure with MDCE-BACM or other approved BACM dust control measure. A schedule for transition of the Moat & Row areas to BACM is provided in Exhibit 11 of the Settlement Agreement (GBUAPCD, 2006b).

7.3.3 Channel Areas

The City will implement DCMs in the 0.5 square mile (320 acre) Channel Area shown in Figure 7.1. This is a natural drainage channel on the southern portion of the lake bed that contains about 300 acres of sensitive wetland habitat and delineated water channel and therefore has significant resource issues and regulatory constraints. Because this is a natural drainage channel, additional

regulatory requirements may apply that could alter the design and operation of DCMs in this area. Although the Channel Area is not part of the 12.7 square mile SDCA, it must be included as part of the control strategy for the SDCA in order to demonstrate attainment of the NAAQS. PM_{10} emissions from the Channel Area must be controlled by April 1, 2010. Control measures implemented in the Channel Area may include methods that both control PM_{10} emissions and enhance the channel habitat. This could include wetting and spreading of water through the area for the purpose of wetland habitat development and attendant dust control and/or vegetating emissive portions of the area.

7.3.4 Fall and Spring Shallow Flooding Ramping Flows

As discussed in the DCM descriptions in Chapter 5, after April 1, 2010, Shallow Flooding wetness cover may be reduced during the ramping flow periods from October 1 – 15, and from May 16 – June 30 of each year to reduce water use in areas that are required to apply BACM and achieve 99 percent control efficiency. Dust events during these periods have been less intense than the larger dust events that occur in winter and early spring. This is also a period of high evaporative water loss and the ability to fully wet the shallow water areas may be constrained by water supply limitations during extremely hot weather periods. Except during the ramping flow periods in the spring and fall, all control areas requiring 99 percent control efficiency must be in full compliance with BACM and the minimum areal wetness cover requirement of 75 percent.

The amount of wetness cover reduction that will be allowed in these Shallow Flooding areas will be subject to limits determined through air quality modeling. This modeling analysis was based on the required emission reductions for uncontrolled dust events that took place from July 2002 through June 2006, the Shallow Flooding control efficiency curve in Chapter 5, and the following minimum wetness covers:

Ramping Flow Period	Minimum Areal Wetness Cover
May 16 - May 31	70%
June 1 - June 15	65%
June 16 - June 30	60%.

The modeling analysis showed that minimum areal wetness cover specified for the ramping period should be sufficient to prevent exceedances of the federal standard for all of the shallow flood areas that are required to have 99 percent control efficiency during the regular season, except for the following areas: 7199, 7499, 7522 and 7544 (Ono and Richmond, 2007). These areas are shown in Figure 7.3. For these areas the minimum areal wetness cover during the spring ramping flow period cannot be less than the following areal covers:

Dust Control Area	Minimum Areal Wetness Cover	Area-Specific Ramping Flow Period
7199	75%	May 16 - June 30
7499 (period 1)	70%	May 16 - May 31
7499 (period 2)	65%	June 1 - June 30
7522	70%	May 16 - June 30
7544	70%	May 16 - June 30

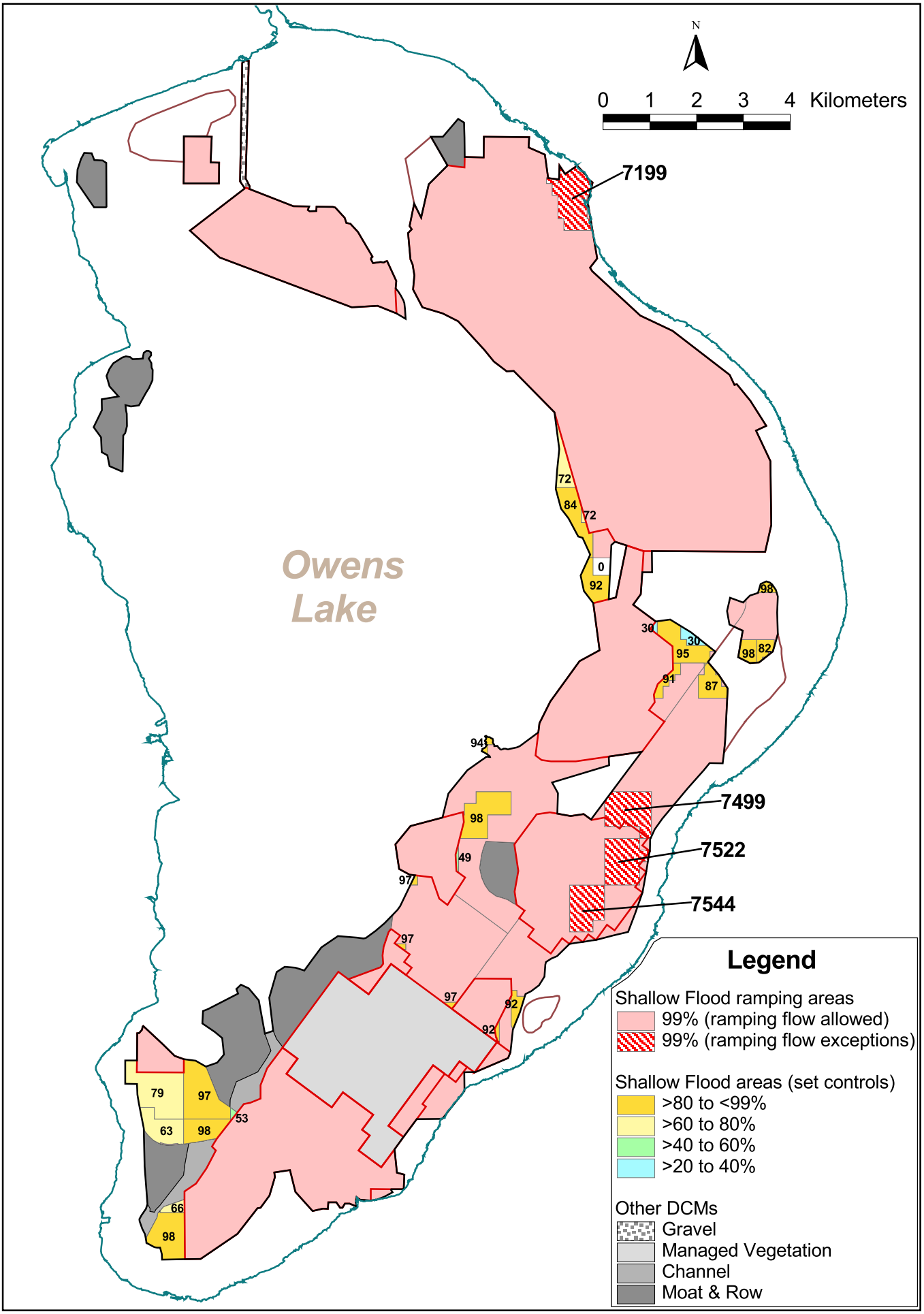

Figure 7.3 - Shallow Flood ramping areas

BLANK PAGE

This list is subject to change upon written request of the City and APCO approved modeling that shows some other configuration could also keep the lake bed in compliance (Ono and Richmond, 2007).

During exceptionally hot weather periods evaporative water losses from the Shallow Flooding areas may be higher than anticipated during the ramping flow period. In this case, it is possible that despite providing the maximum amount of water that has been historically applied, that the existing water delivery system cannot provide enough water to meet the minimum areal wetness cover requirements. If for any Shallow Flooding area, the percent of areal wetness cover during these ramping flow periods is below the minimum areal wetness cover, specified above, and there were no monitored or modeled exceedances of the federal standard at the historic shoreline, that area will be deemed to be in compliance, if the City demonstrates in writing and the APCO reasonably determines in writing that the maximum mainline water flows were maintained during the applicable period. This maximum water flow provision that allows cover less than the minimum areal wetness cover, only applies to areas that were required to have 99 percent control efficiency during the regular Shallow Flooding season (October 16 through May 15). Shallow Flooding areas that are set at control efficiency levels less than 99 percent must maintain the required areal wetness cover in accordance with the currently approved MDCE control strategy during the entire dust season from October 15 through June 30.

7.4 DUST CONTROLS FOR STUDY AREAS

Several dust source areas that were active between July 2002 and June 2006 were excluded from the proposed 2008 control area due to uncertainty regarding the actual boundaries of the emissive areas. Additional monitoring of sand flux and investigation as to the actual emissive area boundaries will be done in these four Study Areas to better quantify the contributions from these areas to shoreline PM_{10} concentrations. These Study Areas are shown in Figure 7.1. Starting from July 1, 2006, Dust ID data collected from the sites will be used to determine if any of these areas are causing or contributing to exceedances of the federal standard at the shoreline. After May 1, 2010, if the District determines that any Study Area causes or contributes to an exceedance at the shoreline, the City will be required to apply MDCE-BACM or BACM as necessary to bring that area into compliance. However, if the City is not in compliance with Sections 1 and 2 of the Settlement Agreement regarding the amount, timing and operation of existing and future dust controls, the District may issue orders to control the Study Areas prior to April 1, 2010. To make the determination, the District will follow the SCR procedures that are in effect at the time of the determination (GBUAPCD, 2006b).

7.5 DUST CONTROLS FOR KEELER DUNES

The Keeler dunes are located northwest of the town of Keeler above the 3600-foot elevation that defines the historic Owens Lake shoreline (Figure 4.14). The total area covered by deep sand is about 0.64 square kilometers (157 acres). Significant portions of the Keeler dunes were formed from sand moving off the lake bed after it became dry. Figure 7.4 shows a sand dune about one-half mile north of Keeler in the Keeler dune field that formed across the abandoned State highway after the lake was dried by the City's water diversions. Sensits and sand catchers have been installed in the Keeler dunes so that their PM_{10} emissions could be modeled, and not attributed to lake bed sources. There is some recent evidence that the Shallow Flooding DCM constructed on the lake bed west of the dunes in 2001 may have arrested the growth of the Keeler dunes. The District and others have observed that old landmarks, desert pavement surfaces and dead upland shrubs that were buried under the dunes have become exposed; this may be due to

the lack of new sand from the lake bed that replenished the dunes before dust controls were implemented.

Due to their proximity to the town of Keeler, dust emissions from the Keeler dunes contribute significantly to exceedances of the federal PM_{10} standard in the town. After all the lake bed sources in the 2003 and 2008 dust control areas are controlled, the Keeler dunes area is expected to be the only remaining dust source that is causing exceedances of the standard in the planning area. The District will work with the City and other federal, state and local agencies to develop a plan to control dust emissions from the Keeler dunes. If additional PM_{10} control measures are required for the Keeler dunes, they will be ordered by the District before January 1, 2012 and implemented by the responsible parties before January 1, 2014 in order to demonstrate attainment of the federal standard by 2017.

The other major dune area, the Olancha dunes, is shown in Figure 4.14 and were not monitored or included in the model. The Olancha dunes are natural dunes that were present prior to the City's water gathering activities in the Owens Valley. If PM_{10} violations are attributed to the Olancha dunes, these violations will be treated as natural events and a Natural Events Action Plan will be developed and implemented in accordance with the USEPA rule on Exceptional Events (see Section 2.2.3.3).

7.6 FUTURE SUPPLEMENTAL DUST CONTROL AREAS

Since 1999, the District has continuously monitored air quality and wind erosion activity at Owens Lake through the Owens Lake Dust Source Identification (Dust ID) program. The results of the monitoring data collected by the Dust ID program from 1999 through 2002 resulted in the 29.8 square miles of dust controls required in the 2003 SIP. Data collected from 2002 through 2006, along with a joint effort between the District and the City to identify all lake bed areas that posed a significant risk of becoming sources, resulted in the requirement for the additional 13.2 square miles of controls required in this 2008 SIP. If any new dust source areas develop on the lake bed after the completion of construction of the 13.2 additional square miles of controls in April 2010, they will be identified from information collected through the Dust ID Program and evaluated following the procedures in the Supplemental Control Requirements found in Chapter 8. These events may be caused by:

- New source areas on the lake bed that were not identified prior to July 1, 2006, or
- Areas that are located within the existing 43 square miles of DCMs that are in compliance with MDCE-BACM or BACM, but residual emissions are still found to cause or contribute to an exceedance of the federal standard.

If there are new dust source areas identified after April 1, 2010, when all DCMs ordered by this SIP have been completed, they will be identified from information collected through the Dust ID Program. However, if the City is not in compliance with Sections 1 and 2 of the Settlement Agreement regarding the amount, timing and operation of existing and future dust control controls, the District may issue orders to control these areas prior to April 1, 2010. If the new source areas are determined by the APCO to cause or contribute to any monitored or modeled PM_{10} NAAQS exceedance at the historic shoreline, those areas will be identified for MDCE-BACM or BACM implementation.

Figure 7.4 – Sand dune that formed across the old State Highway to Death Valley (view looking southeast toward Keeler)

BLANK PAGE

Some significant dust source areas may be located within dust control areas that are in compliance with the approved control requirements, but due to extreme emissive conditions, may still cause or contribute to a monitored or modeled exceedance of the federal standard at the historic shoreline. In this case, the control measures may be adjusted to provide more uniform and/or denser application of the dust controls in the source area. For example, Shallow Flooding may be applied to a small-scale hotspot area that is located within a dust control area that may be in compliance with BACM over a larger scale area. Increased application of water or saltgrass, or the application of gravel, may be necessary to control emissions from these types of emission areas.

If the modeling or monitoring analyses reveal new dust source areas on the lake bed, or emissions from existing control areas cause or contribute to exceedances of the federal standard at the shoreline, the District will issue an order for the City to control those new source areas or increase the minimum dust control efficiency on existing dust controls.

The Dust ID Program has continuously evolved since it was started in 1999. Data collection has improved with daily collection of sand flux data, more sand flux and PM_{10} monitors have been placed in the field, and more video cameras have been added to help with the mapping and characterization of active source areas. However, the District and the City recognize that a method for identifying sources of potential exceedances of the federal standard at the historic shoreline could be developed that is superior to and could replace or modify the current Dust ID Program. The District and the City will work cooperatively with the help of technical experts to determine if better methods can be developed and/or improvements can be made to the current Dust ID Program.

7.7 CONTROLS TO MEET THE STATE PM_{10} STANDARD

Following the implementation of the proposed control strategy, PM_{10} levels are expected to show compliance with the federal standard of 150 $\mu g/m^3$ at the shoreline of Owens Lake. However, compliance with the state PM_{10} standard of 50 $\mu g/m^3$ in the communities surrounding Owens Lake may require additional control measures. In order to help meet the state PM_{10} standard, the Board adopted District Rule 401.D in December 2006. This rule will require the City to implement dust control measures in lake bed areas that cause or contribute to monitored violations of the state PM_{10} standard in any community surrounding Owens Lake. In accordance with the Settlement Agreement, any District orders to implement dust control measures to meet the state standard will be based on Dust ID data collected after April 1, 2010. After this date, the DCMs for the 2003 and 2008 control areas will have been fully implemented. For the purpose of applying District Rule 401.D, the Dust ID model results will only be used to determine if any lake bed dust source area(s) caused or contributed to a state PM_{10} standard violation after that violation is monitored at a community-based monitor site. If the City is not in compliance with Sections 1 and 2 of the Settlement Agreement regarding the amount, timing and operation of existing and future dust controls, the District may issue orders to control lake bed dust source areas that cause monitored violations of the state PM_{10} standard in communities near Owens Lake prior to April 1, 2010 (GBUAPCD, 2006b).

7.8 MODELED ATTAINMENT DEMONSTRATION

The attainment demonstration is performed through the use of a USEPA approved model to forecast the air quality improvement associated with air pollution control measures. Chapter 6 and the Air Quality Modeling Report in Appendix B provide the modeling analysis for the

required attainment demonstration. Air quality modeling for the 2008 SIP utilized the CALPUFF modeling system. CALPUFF is the USEPA recommended modeling approach for long-range transport studies and for near-field modeling of complex wind fields. To demonstrate attainment with the federal PM_{10} standard at Owens Lake any receptor location at or above the historic shoreline (elevation 3,600 feet) cannot have more than 1 day per year on average above the federal 24-hour PM_{10} standard (150 $\mu g/m^3$). The number of exceedances is averaged over the number of years analyzed in the modeling analysis to determine if the average number of exceedances is greater than 1.0.

7.8.1 Modeling the 2003 Control Area – 29.8 Square Miles

An air quality modeling analysis was performed to forecast PM_{10} concentrations after the application of BACM on the 29.8 square mile dust control area required under the 2003 SIP. The model was run for the period from January 2000 through June 2002. As discussed in the 2003 SIP, the results showed that the 29.8 square mile dust control area would be sufficiently controlled to prevent the areas of the lake bed that were active at that time from causing violations of the federal standard. Over the 2.5 year modeling period, the third highest PM_{10} concentration after control measures were applied was predicted to be 149.9 $\mu g/m^3$.

7.8.2 Modeling the 2003 and 2008 Control Areas – 43.0 Square Miles

An air quality modeling analysis was performed to forecast PM_{10} concentrations after the application of the proposed control strategy for the combined 43.0 square mile dust control area required under the 2003 SIP and the proposed control strategy for the 2008 control area. The model was run for the period from July 2002 through June 2006 using the minimum target control efficiencies for the 2008 control areas. The model assumed that no emissions were coming from the 2003 control areas. Because dust control measures were not fully implemented in the 29.8 square mile DCA during the modeling period from July 2002 through June 2006, it was assumed that no emissions were coming from the 2003 DCA for the purpose of determining if additional dust source areas caused exceedances of the standard. A revision of the target MDCE strategy may be necessary in the future if the 2003 DCA is found to have significant contributions after it is in full compliance with BACM requirements.

The air quality modeling analysis, discussed in Chapter 6, predicted that after dust control measures are implemented on the 2008 control area that two shoreline receptor locations will have 4 days over the federal standard for the 4-year modeling period. The 5^{th} highest PM_{10} concentration at the worst site was 147 $\mu g/m^3$. Therefore, the strategy of controlling dust from the 2008 control area using the target MDCEs will result in an average of 1 exceedance per year, which is the maximum allowed for the attainment demonstration. The modeling indicated exceedances at the most frequently impacted shoreline receptor were attributed to wind blown dust from Study Area 1 in the northwest area of the lake bed. If the Study Areas continue to cause exceedances after July 1, 2006, the District will require controls on these areas.

7.9 CHANGES TO BACM

Existing BACM controls may be replaced with other BACM to help reduce implementation and operating costs. In addition, control measure research may identify new BACM control methods that are as effective as the BACM methods discussed in Chapter 5. Any approved BACM can be changed to any other approved BACM, however, such transitions must be done in a manner that at all times results in the performance specifications for one or the other BACMs being met. Changes to BACM may require approval by the District and other responsible agencies,

including the California State Lands Commission. Any environmental analyses, approvals, permits or leases required as a result of the transition are the sole responsibility of the City.

Testing of any new or modified BACM on the control areas must be approved by the APCO. New methods may include different control method approaches or may be adjustments to the Managed Vegetation, Shallow Flood or Gravel Blanket BACM methods. Any control measure research will be performed under a project test protocol approved by the APCO. Any new BACM must show that it will not cause federal PM_{10} standard violations at the historic shoreline. The regulatory requirements to adjust, change or research new BACM are discussed in detail in Attachment D to the Board Order, "2008 Procedure for Modifying Best Available Control Measures (BACM) for the Owens Lake Planning Area" (Chapter 8). Attachment D provides a special provision for step-wise reductions in the amount of wetness cover on Shallow Flood areas such that PM_{10} control is maintained and water use efficiency is maximized. Attachment D also makes special provisions for the testing of Moat & Row. These special provisions are the result of the 2006 Settlement Agreement between the District and the City.

7.10 IMPLEMENTATION MILESTONES AND EMISSION REDUCTIONS

Table 7.1 summarizes the PM_{10} emission reductions associated with each of the milestones in the 2003 SIP control strategy and the proposed 2008 SIP control strategy. The total PM_{10} emission inventory includes emissions from all PM_{10} emission sources in the planning area. A breakdown of these emission categories can be found in Chapter 4. The emissions estimates and milestones provided in this table correspond to the graph shown in Figure 7.5.

Baseline emission inventories were developed for 2000 and 2006. It was not possible to develop good overall estimates for windblown dust for the interim years, due to the construction of control measures in the highest dust producing areas on the lake bed. During this period, many of the key wind erosion monitoring sites were removed to allow for the installation of dust control measures. From July 2005 through June 2006 most of the active erosion sites were monitored for windblown dust emissions. Due to particularly emissive lake bed conditions that naturally developed due to weather conditions, the 2006 emissions inventory included many windblown dust source areas that were not active in the 2000 emissions inventory. Because of the addition of these new dust source areas, the 2006 emissions inventory is slightly larger than the 2000 inventory, even though dust control measures were implemented on 16.5 square miles of the lake bed in 2003. This is an excellent example of the unpredictable nature of Owens Lake bed emission areas.

The 2006 inventory is the baseline emissions inventory that will be used to determine the 5 percent emission reduction rate that is required under CAAA §189(d) (see Chapter 2.2.3). As shown in Figure 7.5 the proposed control strategy will reduce PM_{10} emissions in the planning area at a rate of about 11 percent per year from 2006 to 2014.

Attainment of the federal PM_{10} standard is expected in 2017. By this time, the District expects to have three years of air monitoring data that show no violations of the federal standard in the planning area. To meet this attainment deadline, the final control measures for the Keeler Dunes area must be implemented by December 31, 2013.

To help prevent new dust source areas from causing additional violations of the federal standard, the District will continue to monitor and observe dust through the Owens Lake Dust ID program.

Any new dust source areas that are determined to cause or contribute to an exceedance of the federal standard at the shoreline will be controlled through the Supplemental Control Requirements contained in the proposed Board Order. After May 1, 2010 and at least once per year thereafter, the District will evaluate new dust source areas to determine if they cause or contribute to an exceedance at the shoreline. For the Study Areas shown in Figure 7.1, this determination will be made on information collected after July 1, 2006. For all other lake bed areas, this determination will be based on information collected after April 1, 2010.

7.11 REASONABLE FURTHER PROGRESS

Under CAAA Section 189(c), the demonstration of attainment SIP is required to include quantitative milestones that are to be achieved every three years until the area is redesignated attainment. These milestones must demonstrate reasonable further progress toward attainment of the NAAQS by the attainment date. Table 7.1 includes the milestones that will be tracked to achieve the emission reduction trend as shown in Figure 7.5 to demonstrate reasonable further progress toward attaining the NAAQS. Milestones associated with this 2008 SIP include completion of Moat & Row dust controls by October 1, 2009, completion of Shallow Flood dust controls by April 1, 2010 and control of the Keeler dunes by January 1, 2014. The Planning area is then expected to attain the NAAQS after three years or by January 1, 2017. As required by Section 189(c)(2) of the CAAA, the District shall submit to the USEPA, no later than 90 days after the date of each milestone, a demonstration that each milestone has been met.

7.12 CONTINGENCY MEASURES – SUPPLEMENTAL CONTROLS

The federal Clean Air Act Amendments of 1990 require a description of contingency measures (CAAA Section 172(c)(9) and 182(c)(9)). The contingency measures are control measures that will be implemented in case the 2008 SIP control strategy fails to bring the planning area into attainment or the Reasonable Further Progress Milestones cannot be met. The District commits to make a Supplemental Control Requirements (SCR) determination at least once a year, starting after May 1, 2010, as to whether there have been any monitored or modeled exceedances of the PM_{10} NAAQS from areas on the Owens Lake bed that have not been included in the 2008 SIP control strategy or if implemented controls do not control emissions sufficiently to attain the NAAQS.

The procedure for the SCR determination is described in detail in the Board Order (Order, Paragraphs 10 and 11 and Attachment B, “2008 Owens Valley Planning Area Supplemental Control Requirements Determination Procedure”). Any areas that cause or contribute to a NAAQS exceedance, based on dust events that occur after April 1, 2010, will be controlled according to the schedule of contingency measures set forth in the Board Order (Attachment B, Exhibit 1). This includes emissive areas that have no dust controls, as well as existing control areas that may need additional control. The time allowed for implementation of contingency measures varies according to the type of measure to be implemented and vary from as little as one month for existing Shallow Flood areas that simply require additional wetness, to as much as three years for the construction of new dust control measures.

If, based on an analysis of the Dust ID data, the APCO determines that there are new areas that cause or contribute to a NAAQS exceedance, or that existing controls are not sufficient to prevent NAAQS exceedances, the following procedure will be followed:

1. The APCO will issue a written SCR determination to the City.

Table 7.1 - Control strategy milestones and estimated PM_{10} emission reductions.			
Milestone	1st Year in full Operation	Emission Reductions for Milestone (tons/year)	Total PM_{10} Emissions Inventory (tons/year)
Year-2000 Total PM_{10} Emissions	2000		83,232
2003 SIP Control Area			
Phase I - 10 sq. mi.	2002	23,475	59,757
Phase II - 3.5 sq. mi.	2003	758	58,999
Phase IV** - 3 sq. mi.	2004	11,542	47,457
Year-2006 Total PM_{10} Emissions	2006		85,692
Phase V - 13.3 sq. mi.	2007	39,405	46,287
2008 SIP Control Area			
Moat & Row control area	2010*	9,922	36,365
Shallow Flood control area	2011	20,529	15,836
Keeler dunes control area	2014	8,302	7,534
Demonstrate Attainment with federal PM_{10} standard	2017		7,534

* Supplemental Control Requirements: After April 1, 2010 and at least once per year, the District will determine if additional dust source areas cause or contribute to exceedances of the federal PM_{10} standard at the historic shoreline and must be controlled.

** Phase III is the Brady Highway construction

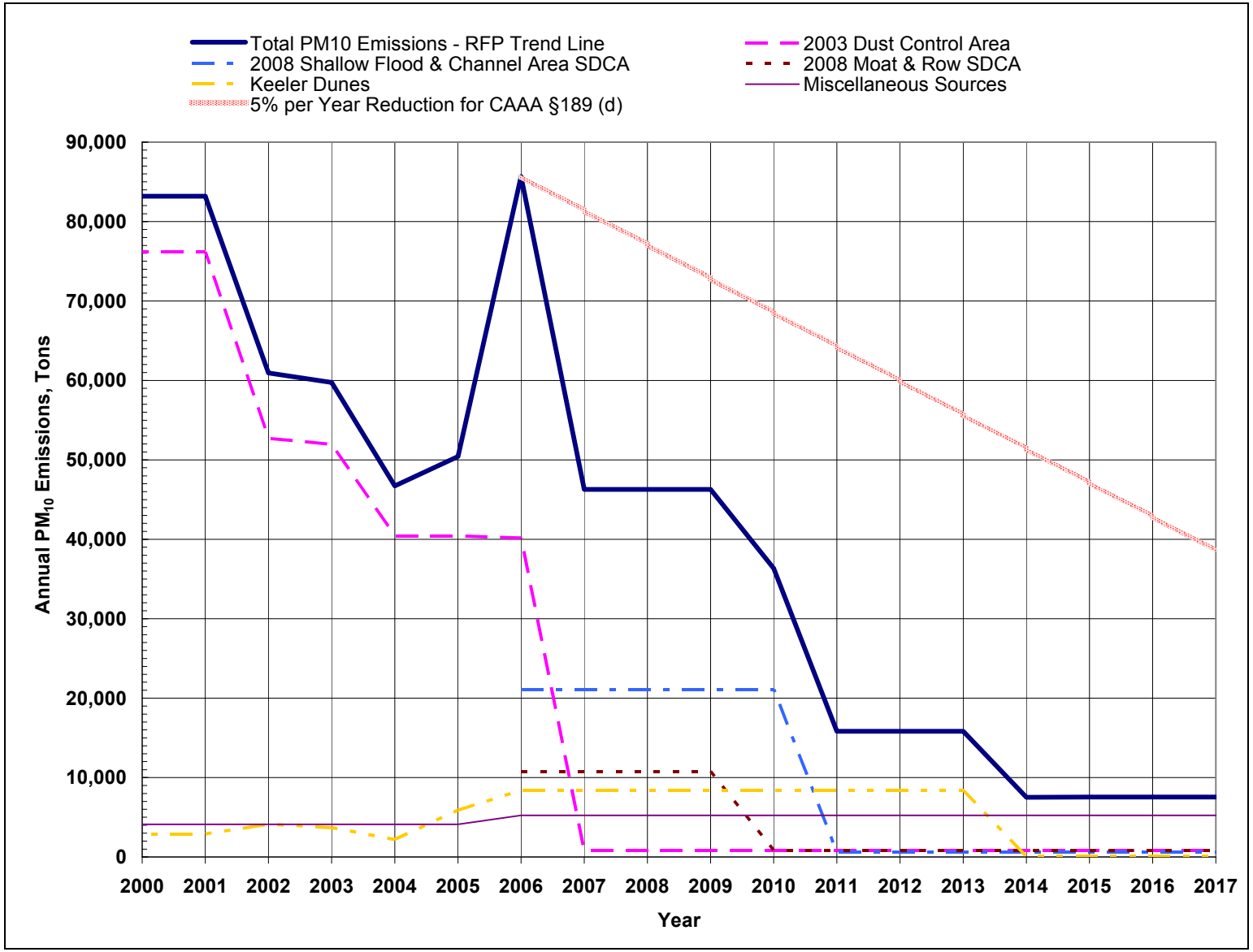

Figure 7.5 The PM_{10} emissions forecast for the SIP milestones shows that the control strategy complies with the federal clean air act requirement to reduce emissions by at least 5% per year.

2. The City has 60 days to submit an alternative analysis of the data used by the APCO to make the determination.
3. Based on a review of the City's alternative analysis, within 60 days the APCO may withdraw, modify or confirm the original SCR determination.
4. If the City does not agree with the APCO's action in Step 3, the City may initiate a 60-day Dispute Resolution Process as set forth in the 2006 Settlement Agreement between the District and the City. Based on this process, the APCO may modify the SCR determination.
5. If the District and the City are unable to resolve disagreements through the Dispute Resolution Process, the City may appeal the APCO's SCR determination to the California Air Resources Board (CARB) under the provisions of Health & Safety Code Section 42316.
6. In the case of a City appeal to the CARB, the APCO's SCR determination will be considered a final contingency measure action, if it is affirmed by the CARB and will be effective on the date of the CARB decision.

Health & Safety Code Section 42316(b) provides that pending a decision of CARB, the City is not required to comply with any measure imposed by the supplemental control determination. This creates a potential conflict with the CAAA, which requires that the SIP contain automatic contingency measures when reasonable further progress or attainment with the National Ambient Air Quality Standards are not obtained by the proposed control measures. Section 172(c)(9) of the CAAA provides that:

> Such [nonattainment] plan shall provide for the implementation of specific measures to be undertaken if the area fails to make reasonable further progress, or to attain the national primary ambient air quality standard by the attainment date applicable under this part. Such measures shall be included in the plan revision as contingency measures to take effect in any such case without further action by the State or Administrator.

In addition, Section 182(c)(9) similarly provides that:

> In addition to the contingency provision required under section [172](c)(9) of this title, the plan revisions shall provide for the implementation of specific measures to be undertaken if the area fails to meet any applicable milestone. Such measures shall be included in the plan revision as contingency measures to take effect without further action by the State or Administrator upon a failure by the State to meet the applicable milestone.

The District and the City intend that the 2008 Order and SIP be consistent with both federal and state law (Settlement Agreement Para. 28(C)). To reconcile the need for automatic contingency measures with Health & Safety Code Section 42316, the District proposes that the CARB adopt procedural timelines for its hearing under Section 42316 to require that its decision be rendered within 90 days of the filing of an appeal by the City. The District believes this delineated time for resolving the City's challenge will enable the supplemental control measure to be implemented expeditiously and without further rulemaking by the state, which would violate Sections 172(c)(9) or 182(c)(9) of the federal Clean Air Act. Moreover, the 90-day time period will be sufficient for the CARB to fully consider the positions of the parties and render its decision given the extensive technical reviews and dispute resolution procedure that the District and the City would undertake before the request for a hearing under Section 42316 would be made (Settlement Agreement Paragraphs 18 and 32). The dispute resolution process is

anticipated to narrow and more specifically define the issues remaining for resolution by the CARB, if any, under Section 42316, and define the contents of the administrative record upon which the CARB's decision would be based.

As a practical matter, challenges to the supplemental control measures are expected to be unlikely, or at least limited given the extensive agreements reached by the District and the City in the Settlement Agreement (e.g., Settlement Agreement Paragraphs 18(B)(iv) and 40). Under some circumstances, the City's appeal may be limited or otherwise not challenge the supplemental control measure itself, but rather challenge some other aspect of the fees or procedure utilized by the District that would not delay the immediate planning that would be required for implementation of the supplemental control measure.

To further confirm the intention that the Order comply with CAAA Sections 172(c)(9) and 182(c)(9), the Order relies upon action by the CARB to issue its determination under Section 42316, or otherwise require the City to immediately undertake alternative supplemental control measures within 90 days in such circumstances where automatic control measures are required under those sections of the CAAA. The CARB presumptively will take these federal requirements into account in its determination of the City's appeal and to issue such interim orders as necessary to implement automatic supplemental control measures so that this Order complies with the CAAA and can be approved by the U.S. Environmental Protection Agency as a proper State Implementation Plan. This presumption of administrative regularity, that the CARB will carry out its functions in a manner consistent with federal and state law and in compliance with all applicable requirements thereunder, is consistent with the 2006 Settlement Agreement between the City and the District that the terms of their agreement be adopted as part of a legal, valid SIP (2006 Settlement Agreement Para. 28).

As discussed in Sections 2.2.2.2 and 8.2 (Paragraphs 10 and 13 of the Board Order) in this 2008 SIP, under the provisions of Section 42316, the District has the authority to require the City to undertake all reasonable measures necessary to mitigate the air pollution caused in the District by the City's water-gathering activities. Nothing in this 2008 SIP, or the 2006 Settlement Agreement between the District and the City, limits the District's ability to order the City to take such reasonable measures that may be beyond the scope of this SIP and its incorporated Board Order. The District makes the commitment in Paragraph 13 of the Board Order (Chapter 8) to use its authority under Section 42316 to continue to ensure that the City takes all reasonable actions that may be necessary to bring the Owens Valley PM_{10} Planning Area into attainment with the NAAQS.

7.13 IMPLEMENTATION MONITORING AND ENFORCEMENT

Adoption of the control strategy set forth in this 2008 SIP will require the District to maintain programs to monitor and enforce the proper and timely execution of mandatory implementation and air quality attainment provisions of this 2008 SIP. With regard to air quality, the District will continue to monitor PM_{10} levels in the OVPA in order to determine:

- Whether reasonable further progress is being made, as predicted by the estimated annual emission trend (Figure 7.5),
- Whether the control strategy achieves progress toward attainment of the 24-hour PM_{10} NAAQS by December 31, 2017 and
- Whether the PM_{10} NAAQS has been attained in the OVPA.

With regard to control measure deployment, the District will monitor and enforce the City of Los Angeles' implementation of the control strategy, to ensure that the control measures are properly and timely installed, and that their installation and operation conform to the design and performance requirements of this 2008 SIP. Failure to meet any of the mandatory project implementation milestones set forth in Section 7.10 or failure to meet any of the requirements set forth in the Board Order (Section 8.2) are subject to enforcement as authorized by California Health & Safety Code §42316. This includes the requirements associated with the implementation, operation and maintenance of dust controls, as well as the environmental impact mitigation measures associated with the project. Although the District has prepared a full project-level environmental impact report for this SIP that analyzes anticipated project impacts, any additional environmental analysis, leases, easements and permit approvals required to implement the control measures are the sole responsibility of the City. For enforcement purposes, each Phase or Increment is a separate milestone.

The District will continue to ensure the City operates all dust control measures such that they comply with the performance requirements set forth in the SIP. This includes measuring the wetness cover in Shallow Flood areas and the vegetation cover in Managed Vegetation areas. Compliance measurement on the large scale of Owens Lake dust controls typically employs the use of satellite imagery coupled with ground-truthing. Improvements to the methods used for control measure compliance and enforcement will continue. Paragraph 19 of the Board Order in Chapter 8 and Section 29 of the 2006 Settlement Agreement commit the District and the City to work collaboratively to develop improved wetness and vegetative cover measurement techniques, control efficiency relationships and compliance specifications for all PM_{10} control measures.

With regard to the impact of the control measures on the environment, the District adopted Mitigation Monitoring and Reporting Programs at the time it certified the Final Environmental Impact Reports for the 1997 SIP (GBUAPCD, 1997), the 2003 SIP (GBUAPCD, 2003) and this 2008 SIP (GBUAPCD, 2008). As required by the Mitigation and Monitoring Programs, the District will enforce the mitigation measures, as well as elements of the project description, that are intended to avoid or lessen adverse environmental impacts of implementing the control strategy. Some of those mitigation measures and project elements require long-term monitoring of certain environmental effects of implementing the control strategy, and taking appropriate responsive action when the monitoring discloses an adverse environmental effect.

7.14 COST AND EMPLOYMENT

The cost of implementing PM_{10} control measures on the Owens Lake bed depends on the total acreage and types of DCMs used by the City of Los Angeles to meet the NAAQS. Based on actual costs for DCMs in place and the City's estimates for work to be constructed, LADWP staff estimates that the total cost of planning, design, permitting and construction for the 29.8 square miles of DCM that were in place by the end of 2006 were about $415 million. Costs associated with the additional 13.2 square miles of controls required by this 2008 SIP are estimated to be at least $125 million. Total project capital costs are therefore at least $510 million (LADWP, Harasick, 2007).

Operation and maintenance costs are estimated by the City to be approximately $17.5 million per year. The annual cost of water for the project is estimated to be about $24 million. This estimate

makes the conservative assumption that the City replaces the water supplied from the Los Angeles Aqueduct with purchases from the Metropolitan Water District at a cost of $450 per acre-foot. (Actual replacement costs may vary.) Total annual costs are estimated to be $41.5 million.

The cost for control of PM_{10} emissions in terms of dollars per ton is instructive in that it allows the cost of PM_{10} control at Owens Lake to be compared with the costs elsewhere. These costs can be calculated for the entire 43 square mile project, as well as for the 13.2 square miles ordered by this 2008 SIP. By annualizing the estimated capital costs over 25 years ($510 million total cost, interest = 5%, n = 25 years, A/P = 0.07—annualized construction cost = $36 million) and using the above annual operation and maintenance cost estimate ($41.5 million), the 25-year total annualized cost for Owens Lake dust controls is $77.7 million per year. In Table 7.1 the emission reductions from the 29.8 square mile 2007 control area are estimated at 75,180 tons. The emission reduction estimate for the 13.2 square mile 2010 control area is 30,451 tons (Table 7.1). The combined annual uncontrolled emissions for the 43 square miles of dust control area is 105,559 tons. This gives a cost of $736 per ton of PM_{10} controlled for the entire 43 square miles and $716 per ton for the 13.2 square mile ordered in this SIP. These calculations are summarized in Table 7.2.

Table 7.2 – Summary of construction costs, annual costs and cost per ton of PM_{10} controlled

DCM Date	Area (sq. mi.)	% of Total	Construct (M)	Annualized* Const (M)	Annual O&M (M)	Total Annual (M)	Tons/ Year**	**Cost/ Ton**
2007	29.8	69%	$415	$29.5	$28.6	$58.1	75,180	**$773**
2010	13.2	31%	$125	$8.9	$12.9	$21.8	30,451	**$716**
Totals	43.0	100%	$510	$36.2	$41.5	$77.7	105,559	**$736**

* Interest = 5%, Life = 25 years, A/P = 0.071

** Tons/Year comes from Table 7.1

Recent analyses by the San Joaquin Valley Unified Air Pollution Control District estimate the cost of controlling windblown dust at between $7,700 and $65,000 per ton (SJVUAPCD, 2003). In the South Coast Air Quality Management District (which includes the City of Los Angeles) a fugitive dust control measure is considered cost feasible for PM_{10} Best Available Control Measures if cost-effectiveness is less than $5,300 per ton (SCAQMD, 1994). Therefore, the cost of controlling PM_{10} emissions from the bed of Owens Lake is about 7 to 80 times less, on a per ton basis, than the costs for control elsewhere in California.

The District estimates that the Proposed Project will create as many as 200 jobs during construction. The City has created about 65 new long-term jobs at Owens Lake for the operation and maintenance of the existing 29.8 square miles of controls. The additional 13.2 square miles of controls required by this 2008 SIP are expected to raise the total City jobs at Owens Lake to about 70 (LADWP, Bamossy, 2007).

7.15 REDUCING IMPLEMENTATION COSTS

During the course of implementing the control strategy, experience and ongoing studies will continue to provide knowledge that will help reduce the cost of implementing the control measures. The City will continue to gain additional experience, while constructing and operating the control measures on the playa that will help to reduce costs associated with the control

measures. The newly proposed Moat & Row control and the concepts set forth to reduce water use on Shallow Flood areas (shoulder season adjustments and minimum dust control efficiencies) are examples of cost- and water-saving measures proposed by the City. The proposed allowance for adjustments to BACM, discussed in Section 7.9 and Attachment D to the Board Order, provide both the time and the control measure flexibility to ensure that dust control measure efficiencies will improve over time.

7.16 EXISTING RULES AND REGULATIONS TO CONTROL PM_{10}

The focus of the discussion in the 2008 SIP control strategy is on controls for Owens Lake, which are regulated under California Health & Safety Code §42316. This is discussed in more detail in Section 2.2.2.2, Section 7.12 and in Chapter 8. Other sources that contribute PM_{10}, such as industrial sources, forest management burning (see Section 4.2.4 regarding prescribed burning), and other fugitive dust sources are covered under existing District Rules. These rules are listed in Table 7.3 for sources other than Owens Lake. Methods to control fugitive dust and to comply with these rules are included in permits to operate for industrial sources.

7.16.1 Fugitive Dust Regulations

It should be noted that contractors involved in the implementation of the 2008 SIP control strategy are subject to these District rules and regulations regarding fugitive dust control. District Rules 400 and 401 limit visible emissions and require that reasonable precautions be taken to control fugitive dust from activities such as road building, grading, gravel mining and hauling. Mitigation measures to control fugitive dust associated with the implementation of DCMs on the lake bed are discussed in the Environmental Impact Report for the 2003 and 2008 SIPs (GBUAPCD, 2003g and GBUAPCD, 2008). Any gravel mining and hauling activities will be required to apply for an Authority to Construct and obtain a Permit to Operate from the District. The permit will include Conditions of Approval. As discussed in Section 7.7, District Rule 401.D requires the City to implement dust control measures on lake bed areas that cause or contribute to monitored violations of the state PM_{10} standard in any community surrounding Owens Lake.

7.16.2 Transportation Conformity

Transportation conformity requirements, contained in District Regulation XII, require that federal actions and federally funded projects conform to SIP rules and that they do not interfere with efforts to attain federal air quality standards. The emissions inventory shows very low PM_{10} emissions from mobile sources and transportation-related activities in the Planning Area. However, fugitive dust from construction-related activities in areas along Highway 395 have caused significant dust events in the Planning Area. For transportation conformity purposes, PM_{10} emissions from construction-related activities will be quantified as required by District Rule 1231(e) for any new highway construction projects in the OVPA, and will be subject to District Rules 400 and 401 for controlling fugitive dust.

7.16.3 General Conformity

General conformity requirements contained in District Regulation XIII require that federal actions and federally funded projects conform to SIP rules and that they do not interfere with efforts to attain federal air quality standards. Prescribed burning activities will take place on federal lands for forest management and private lands for rangeland improvement and wildland

management purposes. The burn season for prescribed burning is expected to last about 60 days per year and daily average emissions will be about 42.2 tons per day (Section 4.2.4). The inclusion of these emission estimates for prescribed burning is for SIP conformity purposes to ensure that prescribed burning activities in the nonattainment area have been considered in the Owens Valley PM10 SIP attainment demonstration.

Prescribed burning activities are not expected to take place on windy days when Owens Lake dust storms occur. Predicted high wind days are avoided when performing prescription burns for fire safety reasons. In addition, prescribed burning is regulated through District Rules 410 and 411 for wildland and forest management burning. These rules require that a burn plan be submitted to the Air Pollution Control Officer prior to conducting the burn, and that burning will not cause or contribute to violations of the air quality standards. For General Conformity purposes, all prescribed burns in the OVPA will be limited to 42.2 tons of PM10 per day. If prescribed burning is done in a manner that complies with District rules, burning activities are not expected to interfere with attainment of the PM10 NAAQS in the Owens Valley.

7.17 AUTHORITY AND RESOURCES

Under California Health & Safety Code §42316, the District is authorized to require the City of Los Angeles to undertake reasonable control measures to mitigate the air quality impacts of its activities in the production, diversion, storage or conveyance of water. The control measures may only be required on the basis of substantial evidence that the water production, diversion, storage or conveyance of water by the City causes or contributes to violations of state or federal ambient air quality standards. In addition, the control measures shall not affect the right of the City to produce, divert, store or convey water.

The District has found that the control measures required under this plan are reasonable and that, on the basis of substantial evidence, the City's water production, diversion, storage or conveyance causes or contributes to violations of state or federal ambient air quality standards in the Owens Valley Planning Area. Also, the District has concluded that the required control measures do not affect the right of the City to produce, divert, store or convey water. On this basis, the District has authority, directly under state law, to issue orders directing the City of Los Angeles to implement the control strategy described in this plan. Those orders are enforceable by the District under state law. California Health & Safety Code §42402 provides that the District may impose civil penalties of up to $10,000 per day against a person who violates any order issued pursuant to California Health & Safety Code §42316. In addition, under California Health & Safety Code §41513, the District is empowered to bring a judicial action in the name of the People of the State of California to enjoin any violation of its orders. These District authorities under state law apply to the enforcement of the specific requirements set forth in this 2008 SIP, as well as to any subsequent actions that may be necessary as contingency measures to ensure the City takes all reasonable actions to bring the Owens Valley PM_{10} Planning Area into attainment with the NAAQS.

The District has the financial resources to enforce compliance with the plan. California Health & Safety Code §42316 authorizes the District annually to assess and collect reasonable fees from the City of Los Angeles. The amount of the fees is set by the District, based on an estimate of the actual costs to the District of its activities associated with the development of air pollution control measures and related air quality analysis, pertaining to the air quality impacts of the City's production, diversion, storage or conveyance of water. Enforcement of the requirements

Table 7.3 Existing rules and regulations to control sources of PM_{10}.	
District Rule	**Description**
209-A	Requires new sources with PM_{10} emissions greater than 250 pounds per day of total suspended particulates, or facility modifications of greater than 15 tons per year of PM_{10} to apply Best Available Control Technology to control PM emissions.
400	Limits visible emissions from any source, except those exempted under Rule 405, to less than Ringelmann 1 or 20% opacity.
401	Requires that reasonable precautions be taken to prevent visible particulate emissions from crossing the property boundary. Requires the City of Los Angeles to implement dust control measures at Owens Lake in order to prevent monitored violations of the state PM_{10} standard in communities.
402	Prohibits sources of air pollution from causing a nuisance to the public or endangering public health and safety.
408	Limits agricultural burning operations to designated burn days and requires a burn permit.
409	Limits range improvement burning to designated burn days and requires that a burn plan be approved by the APCO.
410	Limits forest management burning to designated burn days and requires that a burn plan be approved by the APCO.
411	Limits wildland management burning to designated burn days and requires that a burn plan be approved by the APCO.
Reg. XII	Requires that federal actions and federally funded transportation-related projects conform to SIP rules and that they do not interfere with efforts to attain federal air quality standards.
Reg. XIII	Requires that federal actions and federally funded projects conform to SIP rules and that they do not interfere with efforts to attain federal air quality standards.

BLANK PAGE

of this plan is a cost that the District may properly include in the estimate it develops as a basis to impose its annual fees under California Health & Safety Code §42316. Such enforcement costs include salaries and expenses of appropriate personnel and attorneys' fees incurred in enforcing provisions of the plan and defending the District in challenges to the plan and its adoption. As with the control measures, the District's orders to pay fees are enforceable under state law. The District may impose civil penalties of up to $10,000 per day and seek injunctive relief if any of its fee assessments are not timely and fully paid. Moreover, although state law permits the City to appeal an order imposing fees to the California Air Resources Board, the Court of Appeal of the State of California has ruled that the appeal does not stay the City's obligation to pay the fees on time (City of Los Angeles, et al. v. Superior Court of Kern County (1998) Cal. Court of Appeal, 5th App. Dist., Case F029795).

7.18 REFERENCES

GBUAPCD, 1997. Great Basin Unified Air Pollution Control District, Owens Valley PM_{10} Planning Area Demonstration of Attainment State Implementation Plan Final Environmental Impact Report, GBUAPCD, Bishop, California, July 2, 1997.

GBUAPCD, 2003. Great Basin Unified Air Pollution Control District, Owens Valley PM_{10} Planning Area Demonstration of Attainment State Implementation Plan - 2003 Revision, GBUAPCD, Bishop, California, November 13, 2003.

GBUAPCD, 2003c. Great Basin Unified Air Pollution Control District, 2003 Owens Valley PM_{10} Planning Area Demonstration of Attainment State Implementation Plan Draft Environmental Impact Report, State Clearing House Number 2002111020, GBUAPCD, Bishop, California, July, 2003.

GBUAPCD, 2003g. Great Basin Unified Air Pollution Control District, 2003 Owens Valley PM_{10} Planning Area Demonstration of Attainment State Implementation Plan Final Integrated Environmental Impact Report, State Clearing House Number 2002111020, GBUAPCD, Bishop, California, February 2004.

GBUAPCD, 2006b. Great Basin Unified Air Pollution Control District, Settlement Agreement between the District and the City to resolve the City's challenge to the District's Supplemental Control Requirement determination issued on December 21, 2005 and modified on April 4, 2006, GBUAPCD, Bishop, California, December 4, 2006.

GBUAPCD, 2007b. Great Basin Unified Air Pollution Control District, 2008 Owens Valley PM_{10} Planning Area Demonstration of Attainment State Implementation Plan Draft Subsequent Environmental Impact Report, State Clearing House Number 2007021127, GBUAPCD, Bishop, California**,** September 14, 2007.

LADWP, Bamossy, 2007. Personal Communication between Theodore Schade, GBUAPCD and Wayne Bamossy, Los Angeles Department of Water and Power, July 24, 2007.

LADWP, Harasick, 2007. LADWP Comments on Screen Check of Draft 2008 SIP. Transmitted to T.D. Schade by Richard Harasick via e-mail on August 31, 2007, hardcopy dated September 10, 2007.

Ono and Richmond, 2007. Duane Ono and Ken Richmond. Air Quality Model Evaluation of the Shallow Flood Ramping Flow Strategy. Great Basin Unified Air Pollution Control District, Bishop, California, September 2007.

SCAQMD, 1994. South Coast Air Quality Management District, Best Available Control Measures PM_{10} State Implementation Plan for the South Coast Air Basin, September 1994.

SJVUAPCD, 2003. San Joaquin Valley Unified Air Pollution Control District, Final BACM Technological and Economic Feasibility Analysis. March 21, 2003.

USEPA, 2007a. United States Environmental Protection Agency, Proposed Finding of Failure to Attain; State of California, Owens Valley Nonattainment Area; Particulate Matter of 10 Microns or Less, EPA-R09-OAR-2007-0091, FRL-8291-1, Federal Register, Volume 72, No. 56, March 23, 2007, pp 13723-13726.