Great Basin Unified Air Pollution Control District

Mono Basin Planning Area PM-10

State Implementation Plan

- Final -

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Mono Basin Planning Area PM-10 State Implementation Plan - Final -

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SUMMARY

Introduction

The Mono Basin Planning Area experiences severe episodes of air pollution attributable to windblown erosion of fine particulate matter, known as PM-10, from the exposed lake shore of Mono Lake--the water elevation of the lake having declined approximately 45 feet between 1941 and 1989, due to water diversions from tributary streams by the City of Los Angeles Department of Water and Power. These pollution episodes produce concentrations of PM-10 that violate federal, health-based air quality standards and adversely impact the public trust resources of the Mono Basin.

The federal Clean Air Act states that areas in violation of the National Ambient Air Quality Standard (Standard) for PM-10 are required to develop a State Implementation Plan or SIP that demonstrates how the area will decrease emissions and attain the federal Standard. The purpose of the *Mono Basin PM-10 State Implementation Plan* is to fulfill this requirement. In accordance with the time line established by the United States Environmental Protection Agency, this submittal is due by June 29, 1995.

The present document summarizes the air pollution problem and its projected resolution, including:

- a synopsis of the regulatory status,
- a description of the planning area,
- an inventory and analysis of the sources and severity of polluting emissions, and the impact on human health and natural resources,
- a presentation of modeling results that predict the distribution and concentration of emissions at varying lake levels, and
- a demonstration of attainment through implementation of the control measure--a gradual restoration of the lake level to an elevation of at least 6,391 feet.

Scope of the Problem

PM-10, particulate matter less than 10 microns in diameter, can penetrate deep into the respiratory tract, and lead to a variety of respiratory problems and illnesses. Ambient air quality monitoring in the Mono Basin--conducted by Great Basin Unified Air Pollution Control District (District) during the period of 1988-1992--measured eight exceedances of the federal Standard for 24-hour PM-10 concentration of 150 micrograms per cubic meter ($\mu g/m^3$). These violations--some over three times the Standard--were the basis for the redesignation of the planning area as moderate nonattainment on November 29, 1993.

An analysis of the sampling data from the monitoring sites clearly shows that dust storms in the basin are dominated by PM-10 sized particles of eroded efflorescent salt deposits with some soils and sediments. Efflorescent salts, which were virtually nonexistent before 1941, now cover 4,975 acres of the exposed lake shore between the 6,376 and 6,390 foot elevations.

Peak day PM-10 emissions from lake shore windblown dust are estimated at 588 tons/day and annual average emissions are calculated at 5,665 tons. Other possible sources of PM-10 have been evaluated and their individual and cumulative contribution to the pollution problem is insignificant--lake shore windblown dust accounts for approximately 99% of total emissions for the peak day and 86% of the annual average.

Mono Lake Basin Water Right Decision 1631

Recognizing the duty to protect public trust resources, Decision 1631 of the California State Water Resources Control Board (SWRCB) amends the water right licenses of the City of Los Angeles. Air quality is a public trust resource and the SWRCB found that protecting air quality should be a determining factor in the water appropriation decision at Mono Lake.

The process of review of Mono Basin water rights involved extensive evidentiary hearings. For that portion on air quality, the SWRCB considered computer modeling results predicting future air quality conditions at different lake levels. It was resolved that the only feasible control measure to sufficiently reduce emissions to comply with the federal PM-10 Standard is a limitation on diversions to affect a gradual increase in the water elevation of Mono Lake to at least 6,391 feet and submerge much of the exposed emissive source area. As shown in Figure S-1, an estimated 26 years is required for Mono Lake to rise to 6,391 feet under normal runoff hydrology. Extremely wet runoff years could result in the lake reaching 6,391 feet in as little as nine years, whereas it may take as long as 38 years under drought conditions (Figure S-2).

Design Day Concentrations

Dispersion modeling techniques are a method to assess the effectiveness of the planned control measure to remediate source conditions and bring the area into compliance with the PM-10 Standard. The Industrial Source Complex Model (ISC2) and an empirically-derived emission factor are applied to predict PM-10 concentrations downwind of exposed lake shore areas, and the modeling results are examined to correlate change in predictions to different lake levels or source elevations.

Windblown PM-10 emissions at Mono Lake vary with season due to crust formation, snow cover, and precipitation--conditions that inhibit the erodibility of the lake shore and are typically present on days outside of the "dust season." In order to obtain realistic predictions that account for actual source area conditions, only days within the dust season recording at least one hour of winds above 16 mph are selected from the monitoring data.

Federal regulations focus on the sixth highest or design day concentration over a five year period at the worst air impact site for determining attainment of the 150 $\mu g/m^3$ PM-10 Standard. For a simulated lake level of 6,391 feet, the modeling predictions indicate a design day concentration at the worst site of 387 $\mu g/m^3$.

Demonstration of Attainment

The dispersion modeling study assumed that all source areas are homogeneous. In fact, higher lake shore areas closer to the prediversion water line have different surface characteristics--and less susceptibility to erosion--than lower areas of the relicted lake bed. Analysis indicates that the exposed lake shore area above 6,390 feet is a net deposition area, while the zone below that elevation is a net deflation area. This means that as the water elevation increases over time, submerging source areas below the 6,390 foot contour, the supply of suspended or entrained particulate matter being deposited above the 6,390 foot contour will decrease. There is also evidence of expansion of surface-stabilizing natural vegetation above the 6,390 foot elevation.

The change in modeled air quality impact due to decreasing deposition from lower-to-higher exposed lake shore areas can be calculated. Modeled PM-10 emissions decrease proportionally with the decrease in size of net deflation source areas, a result of the increase in lake level. Figure S-3 depicts adjusted design day PM-10 concentrations at the worst air impact site as a function of increasing lake levels.

The combined effects of (1) increasing the water elevation of Mono Lake to 6,391 feet, and (2) eliminating deposition of particulate matter in the area between the 6,391 to 6,400 foot elevations, accomplishes attainment of the PM-10 Standard of 150 $\mu g/m^3$ by 2021.

Conclusion

This submittal has been prepared to satisfy all PM-10 SIP requirements of the federal Clean Air Act Amendments of 1990 in a single, consolidated document.

Modeling predictions demonstrate that full implementation of the control measure will bring the area into attainment. Calculations of adjusted PM-10 concentrations at different lake levels provide quantitative milestones for "reasonable further progress" (RFP), which the District commits to submit every three years to track progress toward attainment.

Decision 1631 provides an enforceable assurance that the control measure will be implemented. As a contingency measure, if the lake level does not reach an elevation of 6,391 feet by September 28, 2014, the SWRCB will hold a hearing to consider appropriate revisions to the water right licenses and to determine if they will further limit water diversion activities by the Licensee.

It is not possible to comply with the serious attainment date of December 31, 2003, and additional time will be required. An Extension of Attainment Date--to set said date to be coterminous with the SWRCB schedule for restoring the lake level--is considered reasonable and is herewith requested.

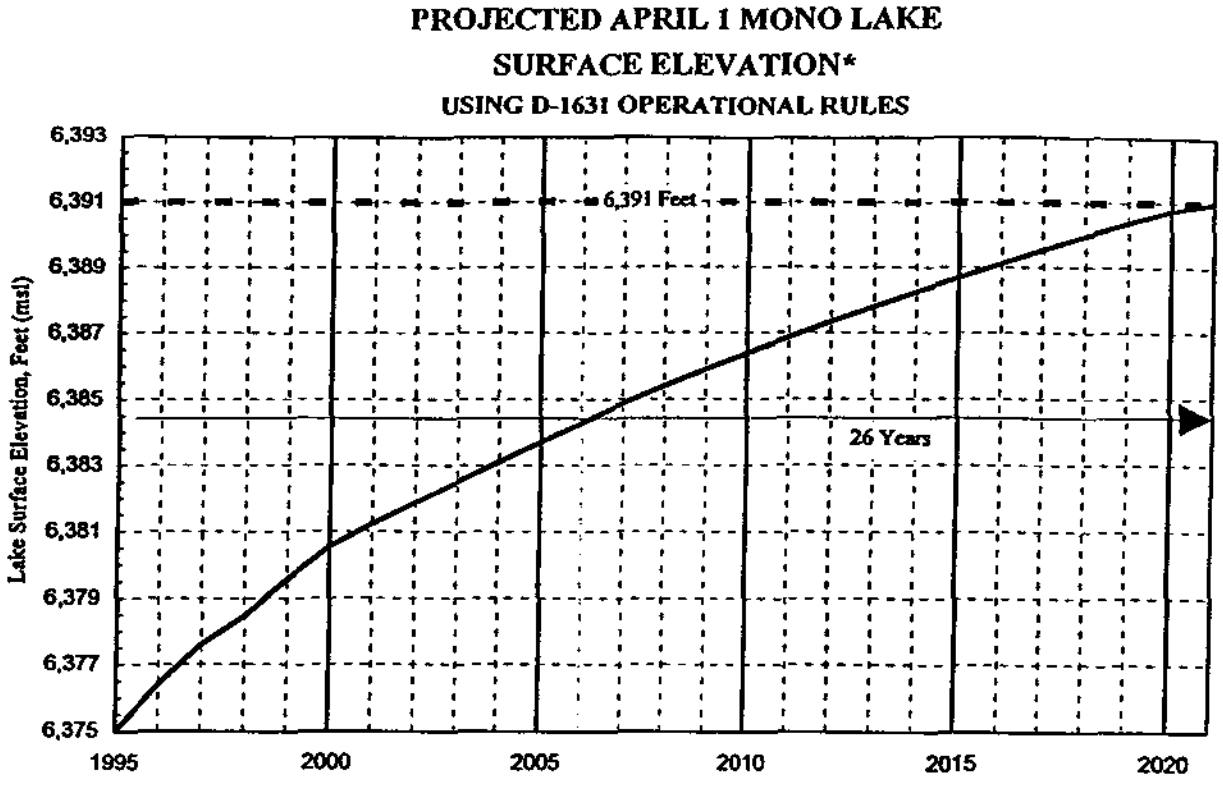


Figure S-1 (Source: LADWP, 1995)

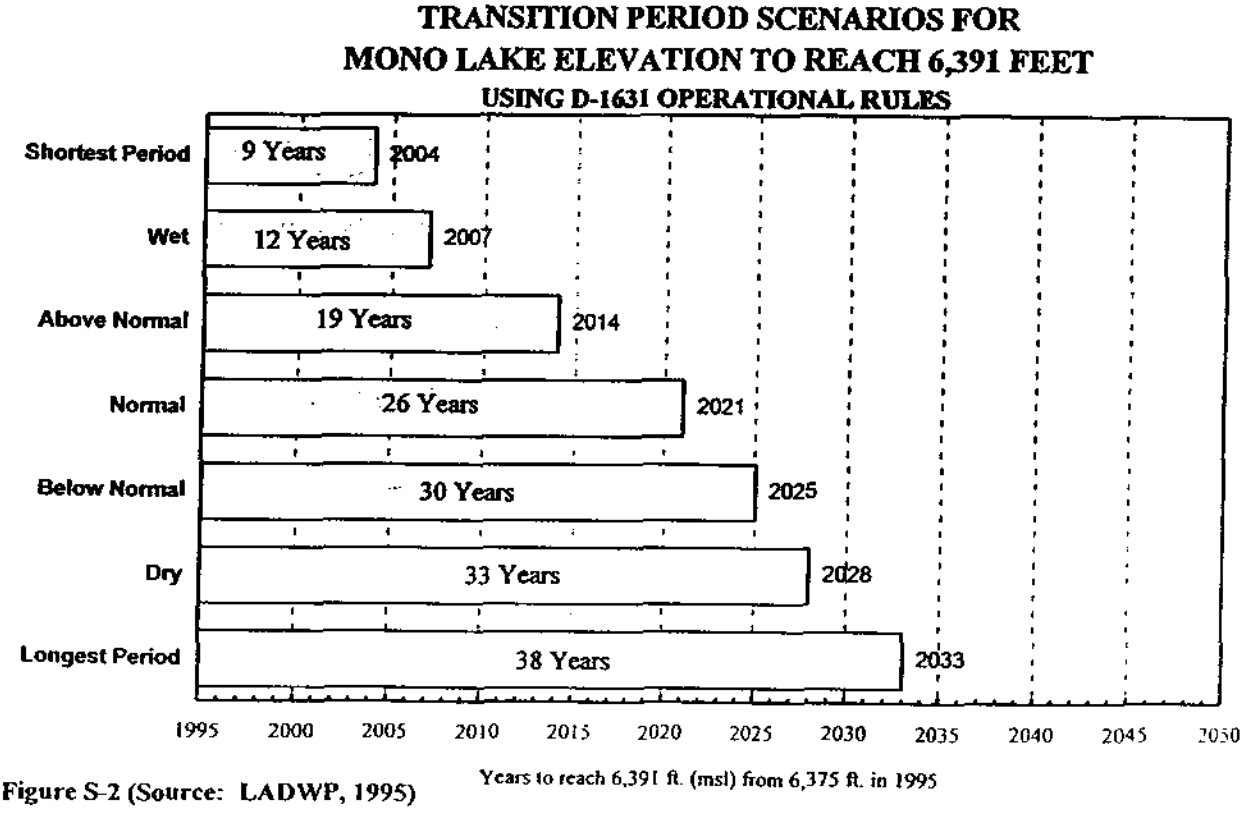
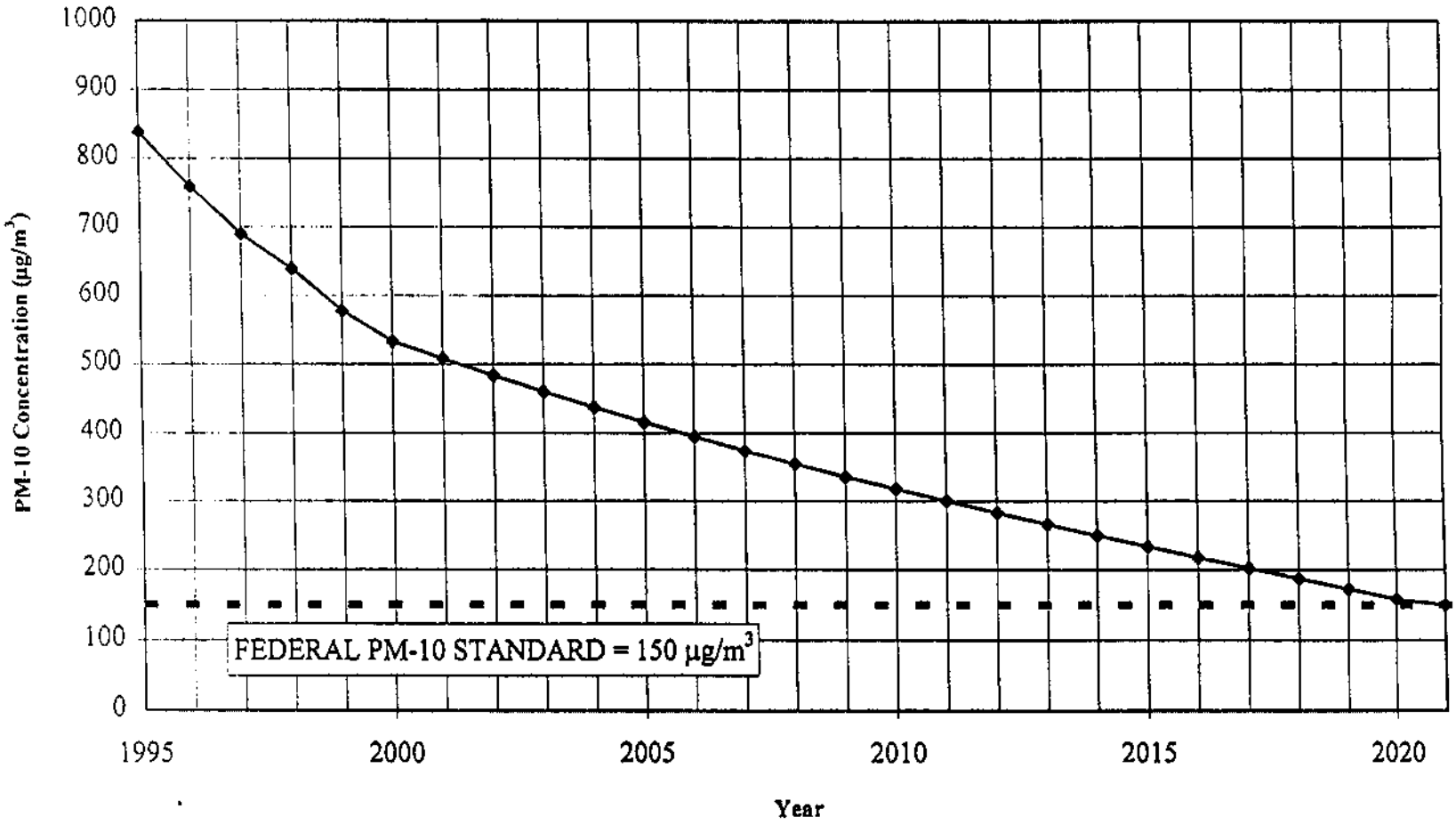


Figure S-2 (Source: LADWP, 1995)

Figure S-3

ADJUSTED PM-10 CONCENTRATIONS AT RECEPTOR SITE 45
for Increasing Mono Lake Surface Elevations



* Normal hydrology assumed

SECTION 1 - INTRODUCTION

PURPOSE
FEDERAL CLEAN AIR ACT
CALIFORNIA'S REQUEST TO REDESIGNATE MONO BASIN NONATTAINMENT ACTION FOR MONO BASIN, CALIFORNIA
SIP REQUIREMENTS
CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)
ELEMENTS OF SIP

1.1 Purpose

The Mono Basin PM-10 State Implementation Plan has been prepared in response to a federal Clean Air Act (CAA) requirement to develop and implement a PM-10 State Implementation Plan. All areas that violate the National Ambient Air Quality Standard (NAAQS) for PM-10 are required to develop a SIP that demonstrates how the area will attain and maintain the PM-10 Standard. An analysis of PM-10 sources and their impact is presented, and the control measure to improve air quality in the Mono Basin is described. The purpose of this document is to satisfy all SIP requirements of the CAA in a single, consolidated submittal, including:

- Moderate PM-10 SIP [CAA § 189(a)(2)(B)];
- Best Available Control Measures (BACM) SIP [CAA § 189(b)(2)];
- Demonstration of Attainment (DOA) SIP [CAA § 189(b)(2)]; and
- Extension of Attainment Date [CAA § 188(e), 189(d)].

1.2 Federal Clean Air Act

On July 1, 1987, the United States Environmental Protection Agency (EPA) promulgated a new National Ambient Air Quality Standard for particulate matter 10 microns in diameter or less (PM-10). The PM-10 Standard was set at 150 micrograms per cubic meter ($\mu g/m^3$) for the 24-hour standard and 50 $\mu g/m^3$ for the annual average standard. These levels were selected to protect the health of people who are sensitive to exposure to fine particles that can penetrate deep into the respiratory tract, leading to a variety of respiratory problems and illnesses.

In August 1987, the U.S. EPA adopted a PM-10 SIP development policy dividing all areas of the country into three categories based upon their probability of violating the new PM-10 Standard (Group I-High, Group II-Medium, Group III-Low). In November 1990, the federal Clean Air Act Amendments were enacted, setting into motion new statutory requirements for attaining the PM-10 Standards. Pursuant to sections 107(d)(4)(B) and 188(a) of the CAA, in November 1991, all areas of the United States that had monitored violations of the PM-10 Standard prior to January 1, 1989 were designated as moderate PM-10 nonattainment areas. All other areas of the country with no monitored violations of the PM-10 Standard prior to January 1, 1989, including Mono Basin, were designated as unclassifiable for PM-10. Areas designated nonattainment and unclassifiable were announced in the Federal Register, November 6, 1991.

1.3 California's Request to Redesignated Mono Basin

The U.S. EPA is authorized to redesignate areas (or portions thereof) as nonattainment for PM-10 pursuant to section 107(d)(3) of the CAA, on the basis of air quality data, planning and control considerations, or any other air quality-related considerations that the administrator deems appropriate. Consistent with section 107(d)(3)(C) of the CAA, EPA must promulgate all redesignations. In addition, section 107(d)(3)(D) provides that a Governor of a state may, on his or her own initiative, submit to EPA a request to redesignate an area within the state. EPA must either approve of deny the Governor's redesignation request.

In a letter to EPA dated August 1, 1991, the California Air Resources Board (CARB), the Governor's designee, recommended that EPA redesignate the Mono Basin portion of Mono County as "nonattainment" for the 24-hour PM-10 NAAQS. The EPA proposed that the Mono Basin, defined as "California, Mono County, Hydrologic Unit 18090101," be classified as "nonattainment" (Federal Register, July 16, 1993: 58 FR 38331).

1.4 Nonattainment Action for Mono Basin, California

According to 40 Code of Federal Regulations (CFR) Part 50, the 24-hour PM-10 NAAQS is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. In the simplest case, the number of expected exceedances at a site is determined by recording the number of exceedances in each calendar year and then averaging them over the past three calendar years. In general, four exceedances measured in three sampling years cause a site to be in violation of the PM-10 NAAQS. The Warm Springs monitoring site measured four exceedances of the PM-10 NAAQS in 1988, 1990, and 1991. (The monitor did not operate during 1989 for reasons unrelated to air quality). These exceedances monitored in the Mono Basin demonstrated that the area is in violation of the PM-10 Standard and are the basis for the redesignation.

This action is further supported by District information showing several additional exceedances at both the Warm Springs and Simis Ranch sites in the Mono Basin. In a letter dated December 7, 1992, the District informed EPA, Region IX, of two additional exceedances at the Warm Springs site and two exceedances at the Simis Ranch site. The exceedances at the Warm Springs site were measured on June 12, 1992 (362 $\mu g/m^3$) and December 2, 1992 (265 $\mu g/m^3$). The exceedances at the Simis Ranch were measured on April 12, 1992 (493 $\mu g/m^3$) and December 2, 1992 (225 $\mu g/m^3$) (Federal Register, July 16, 1993: 58 FR 38331).

On November 29, 1993, the EPA approved the California Air Resources Board's recommendation regarding the redesignation of the Mono Basin as a federal PM-10 nonattainment area. By law, Mono Basin is initially classified as "moderate." The EPA may reclassify Mono Basin to "serious"

if it determines that the area cannot practically attain the PM-10 Standards for moderate areas by the applicable attainment date (December 31, 1999). EPA must complete such reclassifications within 18 months after the submission of this SIP (December 29, 1996).

1.5 SIP Requirements

According to EPA guidance, the following describes the normal sequence of compliance actions required under the federal Clean Air Act Amendments of 1990:

Moderate PM-10 SIP. The redesignation of Mono Basin as a moderate PM-10 nonattainment area requires that the District submit a PM-10 SIP to the California Air Resources Board for approval and forwarding to the U.S. EPA by June 29, 1995--18 months after nonattainment redesignation. In addition to meeting the general nonattainment area plan requirements identified in section 172(c) of the CAA--baseline inventory of PM-10 and evaluation of source impacts--the Moderate Area SIP must specifically include:

- A demonstration, including air quality modeling, that the plan will attain the Standard by December 31, 1999, or that attainment by such date is impractical;
- Assurances that reasonably available control measures (RACM) for the control of PM-10 be implemented no later than four years after redesignation (December 29, 1997);
- A New Source Review (NSR) permit program for construction and operation of new and modified major stationary sources of PM-10, if, applicable;
- Quantitative milestones to be achieved every three years until the area is redesignated attainment and which demonstrate "reasonable further progress" towards attainment;
- Control requirements for major stationary sources of PM-10 precursors, unless EPA determines that sources of precursors do not contribute significantly to PM-10 exceedances.

Contingency Measures. At the same time the Moderate PM-10 SIP is due, the District is also required to submit contingency measures, pursuant to section 172(c)(9) of the CAA, which are to take effect without further action by the State or EPA, upon a determination by EPA that an area has failed to make reasonable further progress or attain the PM-10 Standard by December 31, 1999. These contingency measures should include other available control measures not included in the primary control strategy.

Best Available Control Measures (BACM) SIP. If the Moderate PM-10 SIP does not demonstrate attainment and the Mono Basin is reclassified to "serious," submission of a BACM SIP is required by June 29, 1998. Expanding on the information required in the Moderate PM-10 SIP, BACM SIP submittals include the application of "best available control technology" (BACT) and consist of more extensive evaluation of candidate measures:

- An evaluation of the technological feasibility of each candidate BACM;
- An evaluation of the costs associated with each candidate BACM;
- A rationale for the selection of each BACM from the candidate list of BACMs;
- Provisions to lower the emissions level for sources that are classified as "major sources" to include any point sources that emit 70 tons per year of PM-10 or more; and
- Assurances that implementation of selected BACM (including BACT) are effective by December 29, 2000.

Note: At this time, EPA BACM Guidance Documents, relevant to urban fugitive dust sources, are not readily transferable to the situation at Mono Lake. Therefore, any evaluations will most probably be specific to Mono Lake.[1]

Demonstration of Attainment (DOA) SIP. In the normal compliance sequence, a Demonstration of Attainment (DOA) SIP must be submitted by December 29, 2000. The DOA SIP for the Mono Basin Planning Area must include:

- A control strategy with a list of measures for implementation at Mono Lake;
- An air quality model that will demonstrate that the proposed control measures will bring the area into attainment with the PM-10 Standard; and
- Quantitative milestones that will be evaluated every three years to demonstrate that "reasonable further progress" is being made to attain the Standard.

Extension of Attainment Date. The attainment date will be reset to December 31, 2003 if Mono Basin is reclassified to "serious." Section 188(e) of the CAA provides for extensions of this date.

Pursuant to the *Mono Lake Basin Water Right Decision 1631* (September 28, 1994) of the State Water Resources Control Board (SWRCB), the future of Mono Lake has been determined. As explained more fully in Section 7, starting in Fall 1994, diversion of tributary streams of Mono Lake will be reduced--resulting in the gradual raising of the water level and submerging of lake shore source areas responsible for monitored PM-10 emissions. The SWRCB--at its evidentiary hearing--considered computer modeling results predicting future air quality conditions at differing lake levels and corroborating testimony of the District, and decided that increasing the water elevation is the only feasible control measure to bring PM-10 emissions into compliance with the Standard.

The control measure has been selected and the SWRCB decision provides enforceable assurances that the measure will be progressively implemented over an approximate 20-year time frame starting in Fall 1994. No contingency measure is proposed for the 20-year period. Air quality models have been prepared which quantitatively demonstrate that full implementation of the control measure will result in attainment. A monitoring program exists to measure change in emissions as the lake level increases and to compare to the modeled predictions. Compliance with the PM-10 Standard by December 31, 2003 is not practical based on the SWRCB decision and an extension of the attainment date will be required. Based on these facts, it is most expedient to consolidate the multiple compliance actions described above into a single submittal.

1.6 California Environmental Quality Act (CEQA)

The California Environmental Quality Act of 1970 (CEQA) (Public Resources Code Section 21000, et seq) and the State CEQA Guidelines (Title 14, Division 6, California Code of Regulations) require that the District and its Board document and consider the possible environmental effects of the Mono Basin PM-10 SIP before any decision is made to implement the SIP.

The SWRCB, acting as Lead Agency under CEQA, has caused to be prepared a three-volume Environmental Impact Report (EIR) entitled *Environmental Impact Report for the Review of Mono Basin Water Rights of the City of Los Angeles* (Mono Basin EIR). The Mono Basin EIR presents the environmental setting, impacts, alternatives, and mitigation measures for decisions regarding reduction of water diversions from Mono Basin, which would result in raising of the water level of Mono Lake. The Mono Basin PM-10 SIP calls for this same raising of the water level of Mono Lake. The SWRCB, as CEQA Lead Agency, has certified the Mono Basin EIR as adequate under CEQA, and has issued its *Mono Lake Basin Water Right Decision 1631*, which includes findings as required under CEQA to document the rationale for the decision with respect to those adverse environmental effects which cannot feasibly be reduced or mitigated below a level of significance.

Copies of the Mono Basin EIR and SWRCB Decision are available for public review at the following locations:

- Forest Service Mono Lake Visitor Center
  Lee Vining, CA
- Great Basin Unified Air Pollution Control District
  157 Short Street, Bishop CA
- California State Water Resources Control Board, Division of Water Rights
  901 P Street, 3rd Floor, Sacramento, CA
  2092 Lake Tahoe Blvd., South Lake Tahoe, CA
- City of Los Angeles Department of Water and Power, Aqueduct Division
  111 North Hope Street, Room 1466, Los Angeles, CA

Pursuant to CEQA Guidelines (14 CCR 15096), the District has acted as a Responsible Agency during the preparation of the Mono Basin EIR and, prior to reaching a decision on the Mono Basin PM-10 SIP, the District Board must consider the environmental effects of the implementation of the SIP. The District Board will also consider the adoption of alternatives or mitigation measures which would mitigate or avoid the direct or indirect environmental effects of implementation of the SIP; adopt findings as required under CEQA to document the rationale for its decision with respect to those adverse environmental effects which cannot feasibly be reduced or mitigated below a level of significance; and publish a Notice of Determination.

1.7 Elements of the SIP

The SIP includes detailed analyses of the sources of PM-10, their contributions and impacts, the effects of population growth on future PM-10 levels, and the effectiveness of the control measure to attain and maintain the PM-10 Standard.

The PM-10 air quality data that was used for the analyses is discussed in Section 3. The data summary includes health impacts, episodes of pollution violations, and trends.

The PM-10 emissions inventory is included in Section 4. This section provides a discussion of sources, methods for emission estimation, and calculations of emissions from lake shore windblown dust, unpaved roads, vehicle exhaust, resuspended road cinders, and wood burning.

The use of dispersion modeling to analyze ambient air quality impacts is discussed in Section 5. The Industrial Source Complex (ISC2) Model and an empirically-derived emission factor are applied to predict peak day PM-10 concentrations downwind of source areas and examine change in predictions based on different lake levels.

Section 6 describes the effects of population growth on peak day PM-10 concentrations.

The final control measure and demonstration of attainment with the PM-10 Standard are presented in Section 7. The adopted regulation assuring implementation of the control measure is included.

The Appendices include key documents summarized and referenced in this SIP.

SECTION 2 - MONO BASIN PLANNING AREA

DESCRIPTION OF THE PLANNING AREA
PHYSICAL CHARACTERISTICS
CLIMATIC CONDITIONS
DIVERSION OF TRIBUTARY STREAMS (1941-PRESENT)

2.1 Description of the Planning Area

Mono Basin Planning Area is located in eastern California in the center of Mono County about 300 miles north of Los Angeles and 190 miles east of San Francisco (Figure 2-1). Immediately to the west is Yosemite National Park. The Planning Area has been defined by the EPA as the Mono County, California portion of hydrologic unit number 18090101 on the State of California Hydrologic Unit Map 1978. The area is approximately 35 miles long and 45 miles wide.

Mono Basin is walled in by the eastern escarpment of the Sierra Nevada to the west and by Great Basin ranges to the north, south, and east. The Sierra Nevada delineate the western boundary of the area from approximately Excelsior Mountain down to San Joaquin Mountain. The southern boundary extends just beneath the Mono Craters to Cowtrack Mountain, then the eastern edge runs northeast to the Anchorite Hills near the Nevada Stateline. At the Anchorite Hills, the northern boundary heads west crossing the Alkali Valley and the Bodie Hills to Conway Summit and on to the ridge line of the Sierra Nevada.

The Planning Area is rural in character with pockets of ranching activity and contains small, unincorporated communities, such as Lee Vining, Mono City, and June Lake. The permanent population of the Planning Area is approximately 2,600 people.[2] Most of the land is public land under the jurisdiction of U.S. Forest Service, the California State Lands Commission, the County of Mono, and the City of Los Angeles.

In order to preserve the natural, scenic, and cultural resources of the Mono Basin, the United States Congress established the Mono Basin National Forest Scenic Area. On September 28, 1984, the California Wilderness Act was signed into law, allotting the lake, the surrounding lands, and the land use administration to the Forest Service. The boundaries of the Scenic Area surround Mono Lake and includes some 76,703 acres of land and approximately 41,600 acres of Mono Lake. Prior to the establishment of the Scenic Area, the administration of the land was shared by the Bureau of Land Management (BLM), the Forest Service, and the State of California.

The Mono Basin National Forest Scenic Area Comprehensive Management Plan was developed, as directed by the California Wilderness Act, with the overall goal being to protect the geologic, ecologic, cultural, scenic, and other natural resources while allowing recreational, scientific, and other activities consistent with this goal to take place.[3]

2.2 Physical Characteristics

Mono Basin is typical of the complex of basins or sinks occurring throughout the Great Basin (Figure 2-2). The basin was once covered by a much larger body of water, Lake Russell, with its ancient terraces 600-700 feet above the present surface of Mono Lake. Historically, runoff was collected from the surrounding mountains, but no water naturally flowed out of the basin. The only water loss (prior to diversion activities) was from evaporation into the arid environment, which has resulted in the hypersaline and alkaline condition of the lake--giving rise to a unique ecological system of lake-dwelling invertebrates preyed on by large number of migrating and nesting birds.

Dozens of tufa towers are scattered on the south shore of the lake. These structures reach 15 feet or more in height occurring where freshwater seeps flow into the lake, and the calcium precipitates due to the action of calcareous algae.

The volcanic history of the area is evident everywhere. Lava and pumice floor the basin in many places, raising sections of it into tablelands often over 8,000 feet in elevation. Though the lake itself has two small island craters, the most notable remnant of vulcanism is the Mono Craters. Other craters, lava flows, hot springs, pumice flats, and cliffs of volcanic glass are indicative of activity in the last 1,000 years.[4]

2.3 Climatic Conditions

Mono Basin is semi-arid in nature with annual precipitation for most of the area ranging from six to 10 inches per year. The data available suggest that precipitation amounts along the west shore of Mono Lake are somewhat higher than precipitation amounts measured at Cain Ranch and that precipitation at the east side of the lake is lower.[5] The temperature is typical of the high desert with cold winters and cool summers. The annual mean temperature is about 48°F at Mono Lake and 43°F at Cain Ranch. Most of the difference in temperature patterns between Cain Ranch and Mono Lake is attributable to the moderating influence of the lake.[6]

Wind patterns vary at different locations around the lake. For example, wind directions at Lee Vining are seldom in phase with Simis Ranch. The differences in wind direction appear to be related to topographic features, with lake effects and upslope/downslope winds exerting strong influences. Lee Vining experiences higher peak wind speeds than does Simis Ranch, although average wind speeds at Lee Vining and Simis Ranch are similar.[7]

2.4 Diversion of Tributary Streams (1941-Present)

Since 1941, portions of the water from four of the major tributary streams, which flow from the eastern slopes of the Sierras, have been exported south from Mono Basin via the Los Angeles Department of Water and Power (LADWP) aqueduct system. Mono Basin water joins with other Eastern Sierra water in the double-barreled aqueduct which leads to Los Angeles. From 1974 through 1989, an average of 83,000 acre-feet of water was exported from the Mono Basin which accounted for approximately one-fifth of the water delivered through the aqueduct.

For over 50 years, the export of water has resulted in a lowering of the water level of Mono Lake by approximately 45 feet, causing the surface area of the lake to decrease by about 30 percent. The consequences of this diversion of stream flows have been manifold:

- Riparian and freshwater habitats along the tributary streams have been seriously degraded by stream incision and erosion, fragmentation, and draining of wetlands. Fishery and terrestrial wildlife have been seriously impacted.

- Salinity and alkalinity of Mono Lake water has increased, adversely affecting the aquatic ecosystem, notably the productivity of alkali flies and brine shrimp--a food source for birds.

- Islands providing nesting habitat for California gulls have become "landbridged" and lost their security from mainland predators.

- Loss of open water habitats and fresh water sites around the lake have coincided with the decline in migratory waterfowl populations to a small fraction of historic numbers.

- Occasional massive dust storms have been induced from salt efflorescence on exposed lake beds. These episodes have caused the Mono Basin to violate the federal PM-10 Standard and have detracted from the visual and recreational resources for which the area is known.

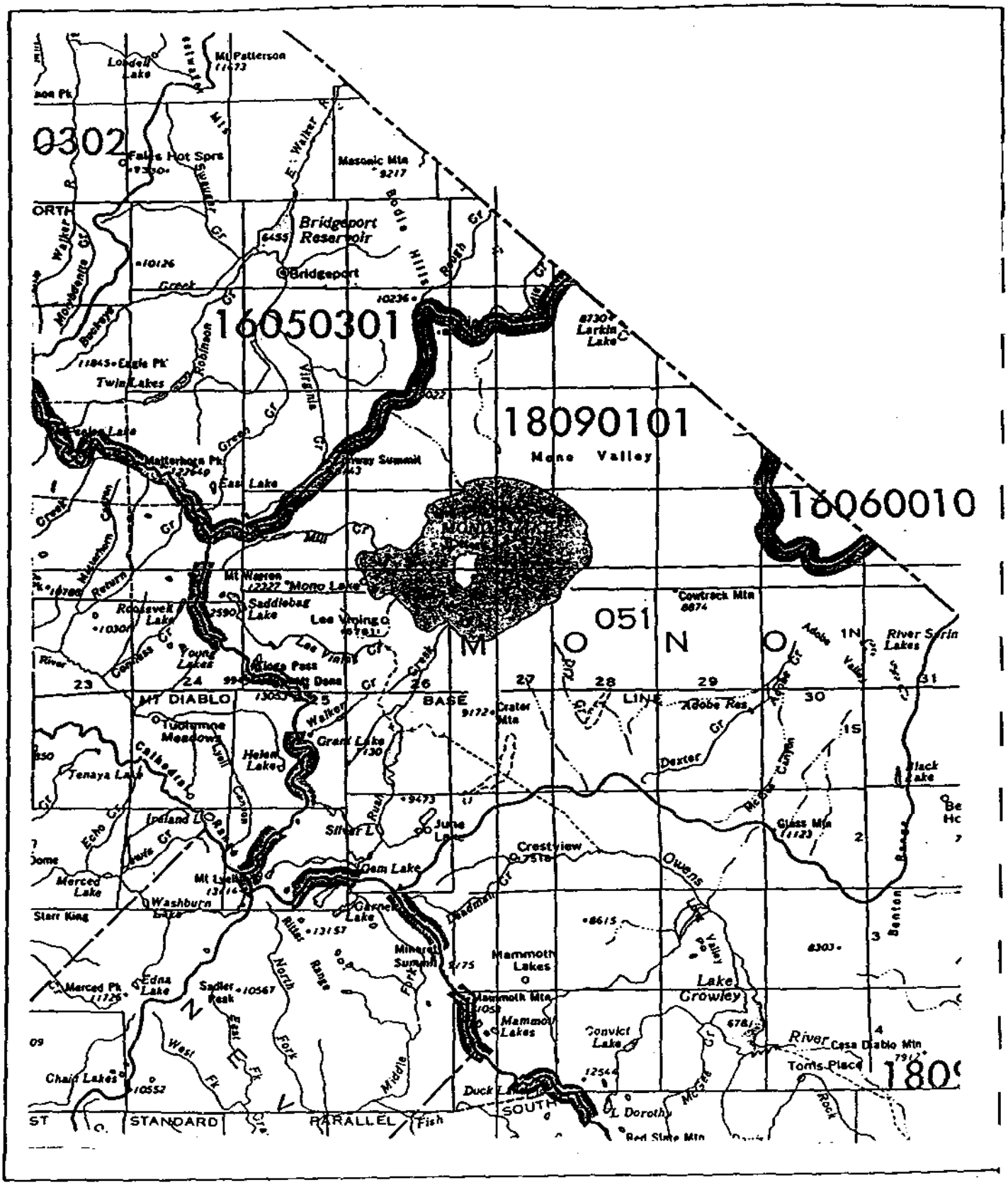


Figure 2-1 Vicinity Map

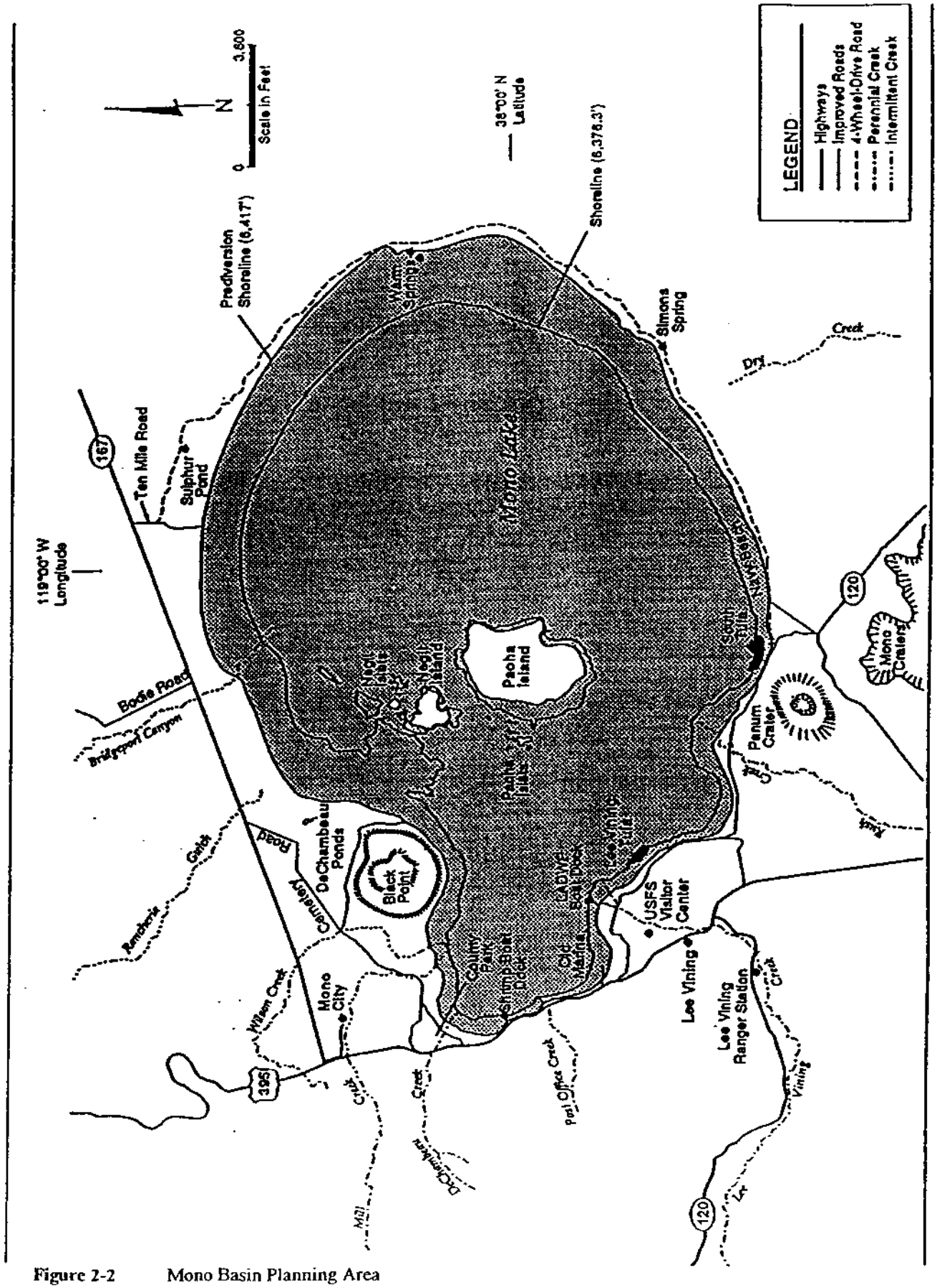


Figure 2-2 Mono Basin Planning Area

SECTION 3 - AIR QUALITY SETTING

HEALTH IMPACTS OF PM-10
PLANNING AREA PREDIVERSION ENVIRONMENT
MONITORING SITES AND DATA COLLECTION
PM-10 VIOLATIONS/EXCEEDANCES
EXPECTED NUMBER OF EXCEEDANCES
AVERAGE ANNUAL PM-10 CONCENTRATIONS

3.1 Health Impacts of PM-10

Both the EPA and the State of California have established ambient air quality standards for PM-10. The California 24-hour and annual average standards, which are considerably more stringent than the federal standards, have been set with the intention of:

> "Prevention of excess deaths from short-term exposures and of exacerbation of symptoms in sensitive patients with respiratory disease. Prevention of excess seasonal declines in pulmonary function, especially in children." (CAC, Title 17, Section 70200)[8]

In developing these standards, many sources of health effects data were considered, including: epidemiology studies, clinical studies of controlled human exposures, animal toxicology, short-term bioassays, and biochemical studies. The development of the final standards focused primarily on epidemiological studies.

In developing the short-term (24-hour) health-based PM-10 Standard, EPA considered health effects reported in the literature, including mortality and various morbidity indicators such as reduced lung function. Examples are:

- As early as 1952, particulate pollution was blamed for contributing to an estimated 4,000 deaths in London when a thick fog laden with coal dust enveloped the city. Illnesses included pneumonia, heart disease, and chronic obstructive lung disease. Deaths among children under age five increased.

- In the Utah Valley, the death rate rose 16% after particulate pollution levels from a nearby steel mill exceeded 100 $\mu g/m^3$. Further, when the steel mill was open, twice as many children were in the hospital for bronchitis and asthma as when the mill was closed. On high pollution days, school absences rose 40%.[9]

- In Saskatchewan, Canada, Old Wives Lake evaporated in the 1980's leaving 180 km2 of dry lake bed. Exposure to airborne alkali dust has caused: increased nasal, throat, and eye irritation, respiratory problems in residents, and weight loss and nasal and eye irritation in livestock.[10]

- The diversion of water from the Aral Sea on the border of Kazakistan and Uzbekistan has resulted in a 40% reduction in the lake surface. It is calculated that 43 million tons of salty grit are whipped up from the dry sea-bed each year. In 1959, there were 74 cases of throat cancer treated compared to 366 in 1989--a five-fold increase and twice the rate of population growth in the region.[11]

- According to the EPA, as many as 60,000 people die in the United States each year from breathing particulates at or below legally allowed levels.

Mortality effects were considered in the development of a short-term standard, although they were not used to derive a specific threshold for effects. Morbidity studies, which were most important in the development of the 24-hour standard for PM-10, were conducted by Dockery et al.[12] and Dassen et al.[13] These studies show a decrease in lung function following episodes of particulate pollution. The changes are small, but significant, and persist for two-to- three weeks. In the Dockery study, there is a higher response in some children indicating that there may be sensitive subgroups in the population.

Several studies have noted a correlation between mortality rates and long-term exposure to particulate pollution levels.[14] These studies raise concerns for possible premature mortality due to particulate pollution and were taken into consideration in the evaluation of the margin of safety for the Standard.

The data that were most influential in the development of the annual average PM-10 Standard were published by Ware et al.[15], involving about 10,000 children, ages six-to-nine, in six U.S. cities. The study reports an association between particulate pollutant levels and occurrences of coughing, bronchitis, and respiratory illness.

The federal PM-10 Standard is based on total particle mass without consideration of the chemical components. However, studies indicate that heavy exposure to desert dust may be harmful to human health. A syndrome referred to as "desert lung syndrome" [nonoccupational pneumoconiosis] has been described in the literature. Cases have been reported from the Sahara, Arabian, and Negev deserts. The syndrome is characterized by deposits of sandy dust in the lungs. Desert dust also contains crystalline silica. Exposure to this compound has been associated with adverse health effects in occupational settings (i.e., fibrosis, silicosis).[16]

In the Mono Basin, monitoring data from Simis Ranch show a statistical average of about 3.3 exceedances per year of the federal PM-10 Standard for the period 1988 to 1992. The Standard allows for one exceedance or less per year without regard to how much the level is above 150 $\mu g/m^3$. While the air quality of the Mono Basin is generally good, dust events have occurred at a frequency and concentration to be in violation of the health-based PM-10 Standard.

In a physical setting similar to Mono Lake, Owens Lake lies 120 miles to the south. There are a number of reports that windblown lake shore dust from Owens Lake has aggravated medical problems in individuals who suffer from respiratory diseases. Saint-Amand quotes personal communications with three physicians in the Owens Valley and states that "patients . . . who suffer from emphysema, asthma, and chronic bronchitis are subject to increased morbidity. Hospitalization of these patients with bronchial spasm and related pulmonary problems increases during dust episodes. The populace complains of coughing, sneezing, and irritation of the eyes. Psychological problems emerge as some people become apprehensive because of difficulty in breathing."[17]

Beyond impacts to human populations, the Mono Basin Planning Area contains significant plant and animal resources that are adversely affected by elevated levels of fugitive dust. Two Class 1 Wilderness Areas in the Inyo and Toiyabe National Forests are within the Planning Area and are less than 10 miles from the emissive lake shore: the Ansel Adams Wilderness and Hoover Wilderness. These are pristine natural areas designated "to preserve the unique wild and scenic areas of America's public lands." Visibility and excellent air quality are high priorities in a wilderness experience. Also within the Planning Area are the Mono Basin National Forest Scenic Area and Bodie State Historic Park. The U.S. Forest Service has expressed concern that exposure to dust events poses a potential health risk to visitors to the Mono Basin, and prepared a video documenting such events as seen from the Mono Lake Visitor Center in the spring of 1993. Another invaluable natural resource, Yosemite National Park, is immediately adjacent to the western boundary of the Planning Area.

3.2 Planning Area Prediversion Environment

No ambient air quality monitoring was conducted in Mono Basin prior to 1979, however prediversion air quality conditions can be obtained from historical accounts. A reprint of a 1889 report by Israel C. Russell gives a detailed description of topographic features and visual conditions, as well as extensive geologic interpretations in the Mono Basin.[18] Russell noted that on windy days Mono Lake was streaked with alkaline froth, but his report makes no mention of windblown dust, sand, or salt.

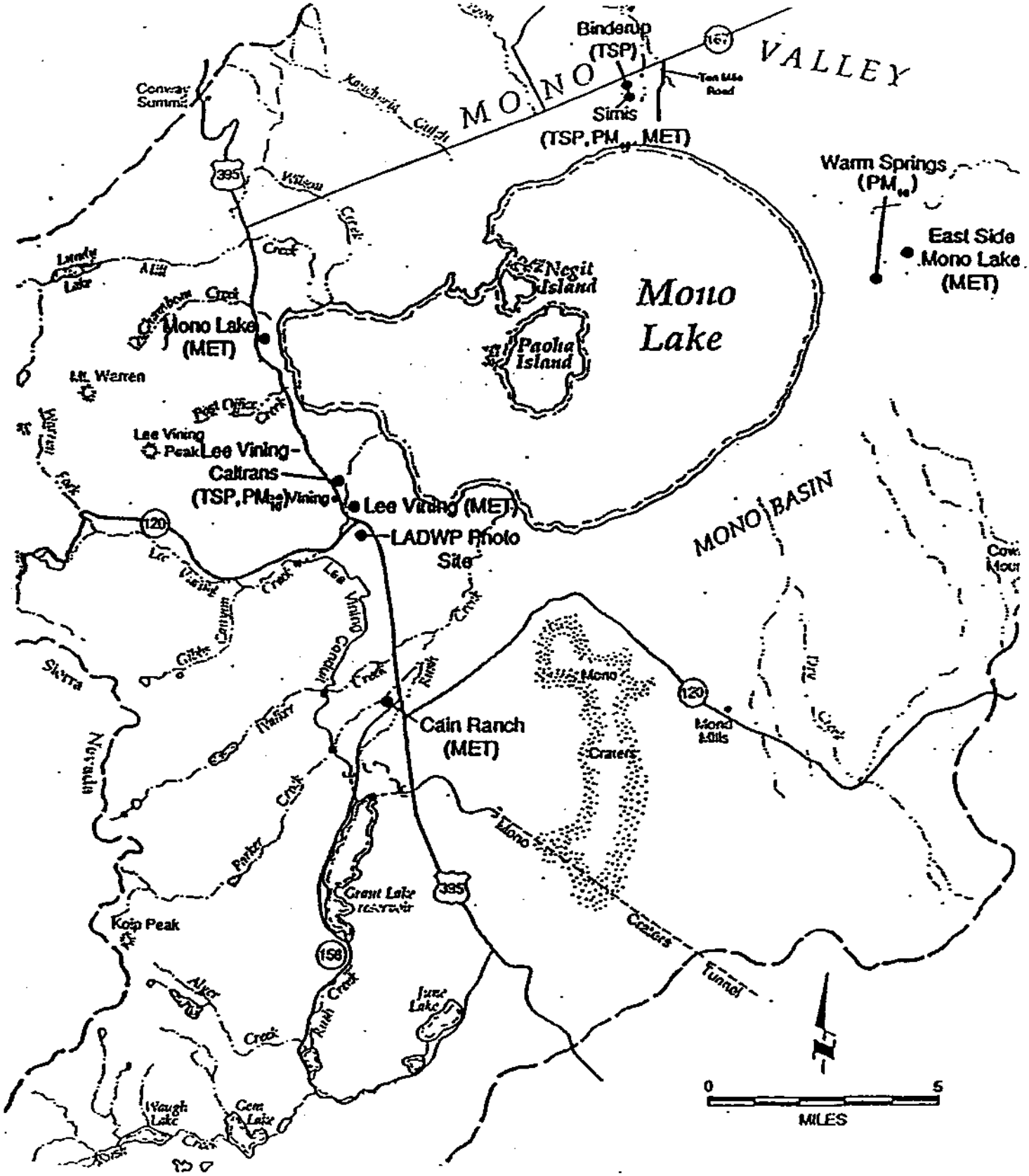
Historical aerial photographs of Mono Lake from 1930 (lake elevation approximately 6,420') and 1940 (lake elevation approximately 6,417') provide additional evidence that efflorescent salt deposits were limited under prediversion conditions. The photographs show very narrow fringes of efflorescent salts along the edges of lagoons near the lake shore, scattered small patches of salt among some sand dunes, and no efflorescent salt visible on the narrow strip of barren sand bordering the north or east shores of the lake. The EIR states that the best available evidence suggests that major dust storm events were probably rare under prediversion conditions and that any dust storms that did occur would have been dominated by silt, clay, and sand particles with only small quantities of salt particles from interstitial salts and water spray from off the lake.[19]

3.3 Monitoring Sites and Data Collection

The District has established air quality and meteorological monitoring sites in the Mono Basin at Simis Ranch-Binderup, Lee Vining, Warm Springs, and Cedar Hill (Figure 3-1). Simis Ranch is located on the northern shore of Mono Lake, approximately one mile north of the shore line. The Lee Vining site is in the town of Lee Vining, on the west side of Mono Lake. The Warm Springs site is on the east side of Mono Lake, one mile east of the lake shore. The monitoring site at Cedar Hill is located about five miles northeast of the lake.

Prior to June 1989, both the Simis Ranch and Lee Vining monitoring sites operated on a one-in-six day schedule for PM-10 data collection. For the period June through September 1989, the Simis Ranch site operated on a five-in-six day schedule. From October 1989 to present, the Simis Ranch site has obtained data on a three-consecutive days in-six schedule. Meteorological data was also collected at the Simis Ranch site on a daily basis. The Warm Springs and Cedar Hill sites were added to the PM-10 monitoring network in 1989 and operated during periods of expected exceedances.

Detailed sampling data from all monitoring sites is contained in Appendix 4. The six-day samples are noted with an asterisk (*). Background PM-10 levels are obtained from Lee Vining, due to its location upwind of the dust source area and the other monitoring sites. Total Suspended Particulate (TSP) data from the Simis site for the period 1979 through 1982 is also provided.



Notes: Parameters monitored at each site are shown in parentheses; see text for definitions.
MET refers to temperature, precipitation, or wind speed data.

Figure 3-1 Monitoring Sites

3.4 PM-10 Violations/Exceedances

Air quality in the area can generally be characterized as good, attributable to the small population, the remoteness of the area from major urban centers, and the relative lack of industrial development. Violations of the 150 $\mu g/m^3$ 24-hour PM-10 Standard have been measured for the period January 1988 through May 1993, as observed at Simis Ranch and Warm Springs. These exceedances are summarized in Table 3-1. It should be noted that the Warm Springs monitoring site did not operate during 1989 for reasons unrelated to air quality and was discontinued in December 1992. Consequently, there is no data from Warm Springs for the 1993 dust episodes that were recorded at Simis Ranch. Due to equipment problems, Simis Ranch did not operate during the first part of 1993 through May 2, 1993, and from February 26, 1994 through August 17, 1994. No violations were recorded at the Lee Vining site, probably due to its location upwind of the lake shore dust source area.

Table 3-1

EXCEEDANCES OF THE 24-HOUR PM-10 NATIONAL AMBIENT AIR QUALITY STANDARD (NAAQS)

	WARM SPRINGS	SIMIS RANCH
Date	PM-10 Concentration ($\mu g/m^3$)	
5/16/88	404	
4/21/89		272
5/23/90	157	
5/8/91	389	
5/16/91	218	
4/12/92		493
6/12/92	362	
12/2/92	265	225
5/3/93	Discontinued	402
5/11/93	Discontinued	981
5/12/93	Discontinued	658

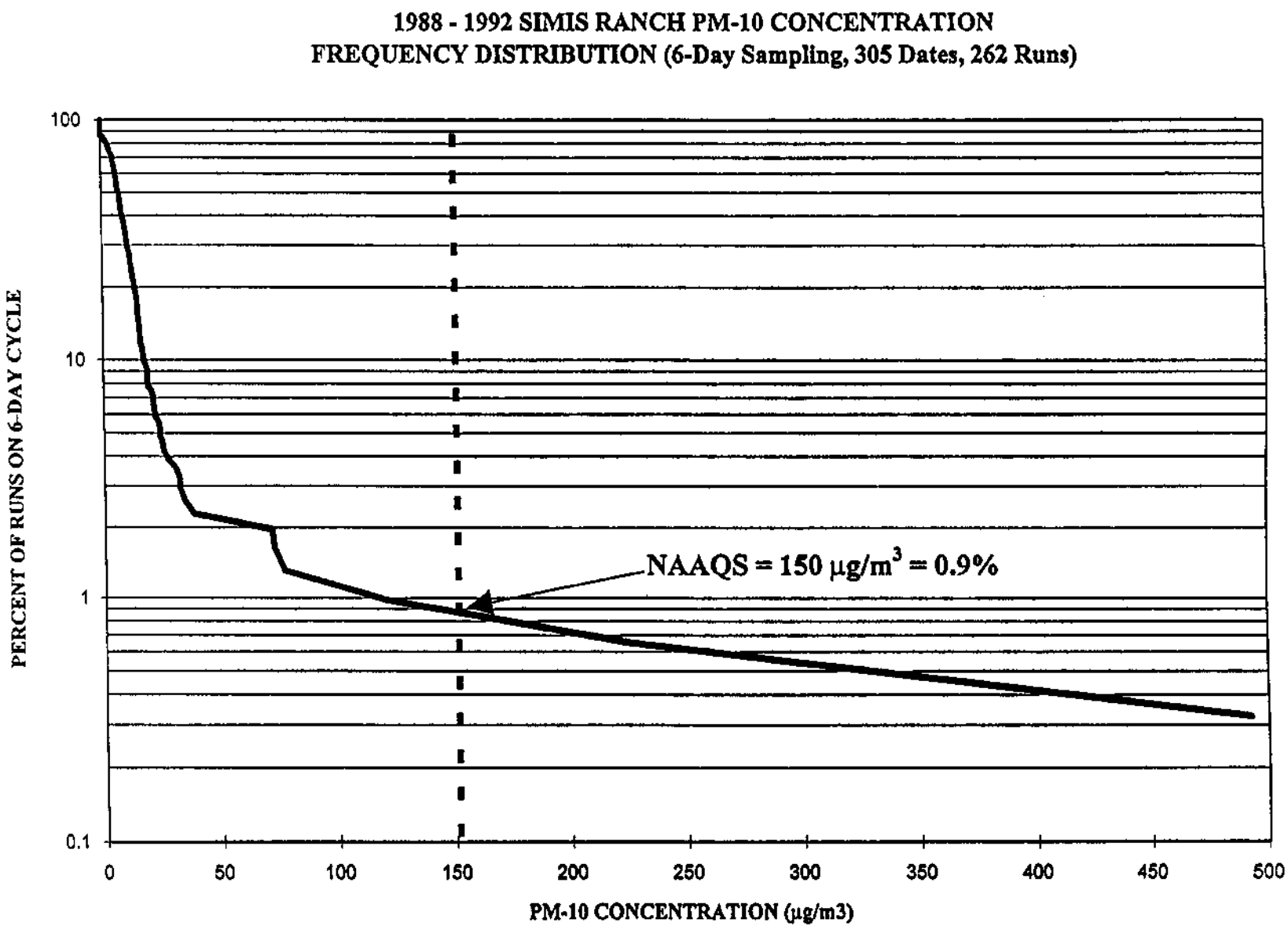
3.5 Expected Number of Exceedances

Sampling at the Simis Ranch site occurred once every sixth day and during predicted episode periods. Because PM-10 sampling did not occur every day, it is uncertain how many times or by how much the 24-hour PM-10 Standard has been exceeded at the Simis Ranch site. To account for the days that were not sampled, the expected number of exceedances can be determined by examining Figure 3-2. This figure shows a frequency distribution of the PM-10 concentration at the Simis Ranch monitoring site. The graph has been developed from the six-day data only and for the years 1988 through 1992. This sampling schedule provides the statistical random sampling convention necessary for the development of this frequency distribution.

As can be determined from Figure 3-2, exceedances can be expected 0.9% of the time. This is equivalent to an average of 3.3 episode days per year that would be expected to exceed the 150 $\mu g/m^3$ 24-hour PM-10 Standard (NAAQS) threshold at the Simis Ranch site. This is shown in Figure 3-3 by converting the frequency of occurrence to the number of days per year. The graph yields the number of expected days per year that various concentrations can be predicted to occur.

During the period from 1988 to 1992, the lake level ranged from 6,373.4 feet elevation to 6,379.6 feet elevation with an annual average elevation of 6,376 feet. As the lake level rises, the expected number of exceedances should decrease.

Figure 3-2


1988 - 1992 SIMIS RANCH PM-10 CONCENTRATION
FREQUENCY DISTRIBUTION (6-Day Sampling, 305 Dates, 262 Runs)
PERCENT OF RUNS ON 6-DAY CYCLE
100
10
1
0.1
NAAQS = 150 µg/m3 = 0.9%
0
50
100
150
200
250
300
350
400
450
500
PM-10 CONCENTRATION (µg/m3)

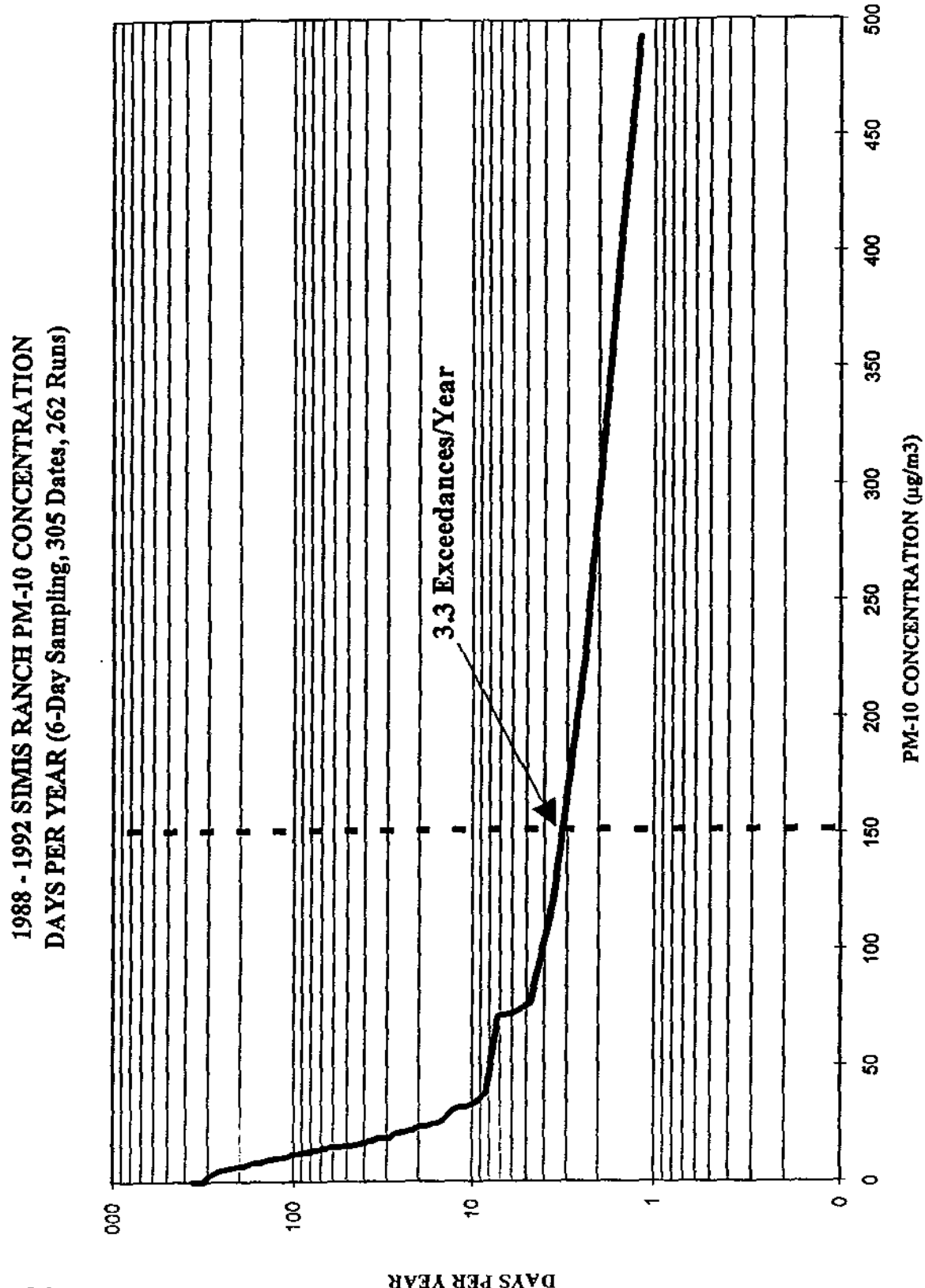

1988 - 1992 SIMIS RANCH PM-10 CONCENTRATION
DAYS PER YEAR (6-Day Sampling, 305 Dates, 262 Runs)
3.3 Exceedances/Year
DAYS PER YEAR
000
100
10
1
0
PM-10 CONCENTRATION (µg/m3)
0
50
100
150
200
250
300
350
400
450
500

Figure 3-3

3.6 Annual Average PM-10 Concentrations

Mono Basin has not violated the 50 $\mu g/m^3$ concentration annual average PM-10 Standard. The annual average is calculated by averaging the quarterly average PM-10 for each year and then averaging the averages for the last three years (1990-1992). This is shown in Table 3-2, which indicates that the annual average for the Mono Basin is 12.34 $\mu g/m^3$.

Table 3-2

SIMIS RANCH
ANNUAL AVERAGE PM-10 CONCENTRATIONS
($\mu g/m^3$)

YEAR	QUARTER				AVERAGE
	1st	2nd	3rd	4th	
1988	6.50	10.52	16.14	7.33	10.12
1989	4.77*	11.26	13.43*	6.47	8.98*
1990	4.00	13.71	12.13	10.07	9.98
1991	8.95	18.72	10.37	5.77	10.95
1992	4.87	14.75	13.60*	31.10	16.08*
1993	NO DATA*	NO DATA*	15.83	11.14	INVALID
1994	6.09*	NO DATA*	5.21*	4.71	INVALID

ANNUAL AVERAGE FOR NAAQS = 12.34 $\mu g/m^3$ (1988-1992)

* Invalid--fewer than 75% of data available for a quarter

The trends show seasonal fluctuations with a general increase in the maximum quarterly values as seen in Figure 3-4. The figure indicates that the emission episodes at Mono Lake occur more frequently during late spring and early winter. This same observation is described in detail in the *Final Mono Lake Air Quality Modeling Study* (Appendix 5).

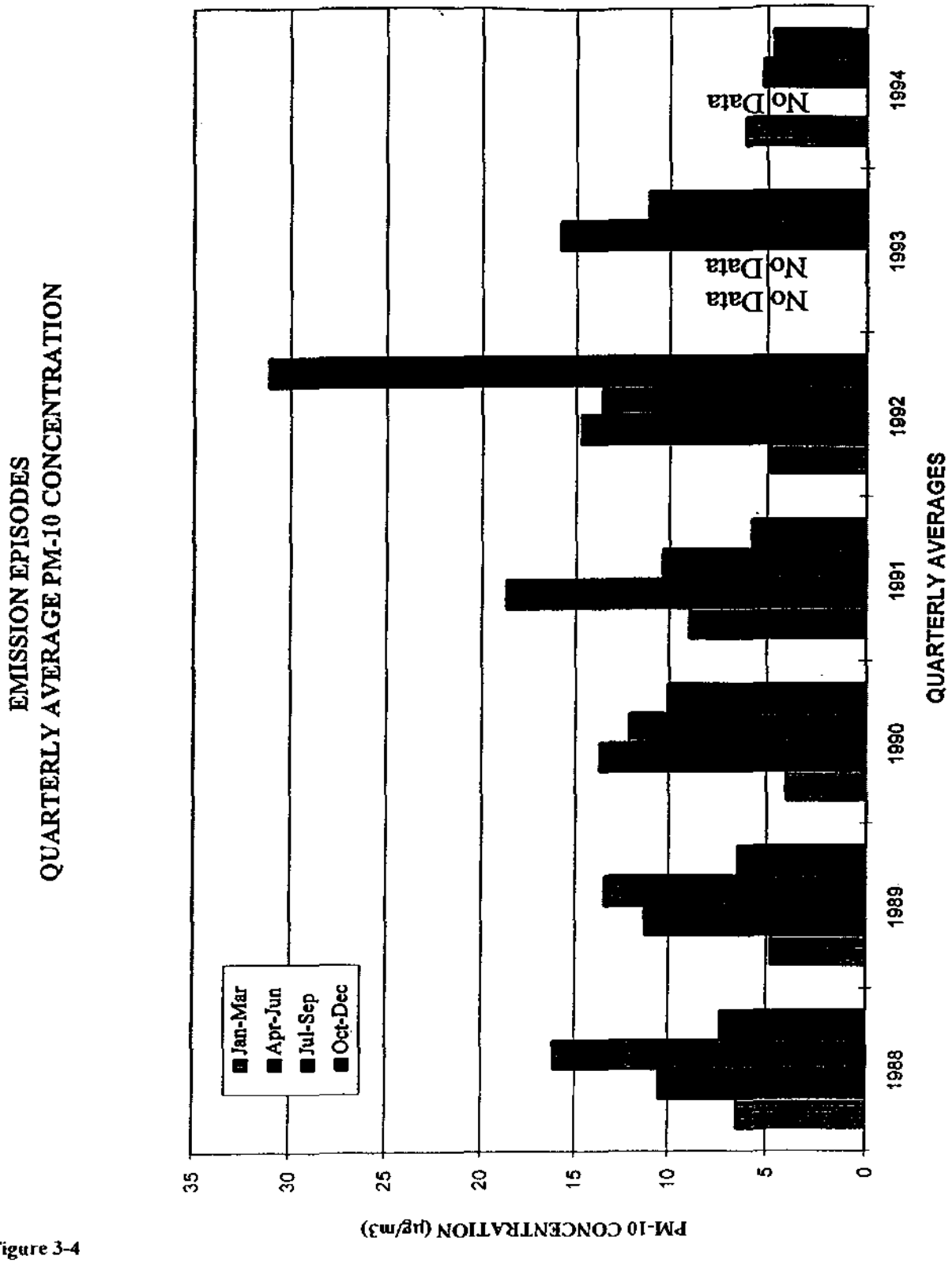

EMISSION EPISODES
QUARTERLY AVERAGE PM-10 CONCENTRATION
PM-10 CONCENTRATION (µg/m3)
QUARTERLY AVERAGES
Jan-Mar
Apr-Jun
Jul-Sep
Oct-Dec
No Data
No Data
No Data
0
5
10
15
20
25
30
35
1988
1989
1990
1991
1992
1993
1994

Figure 3-4

SECTION 4 - EMISSIONS INVENTORY

EMISSIONS INVENTORY SUMMARY
ANNUAL AVERAGE AND PEAK 24-HOUR EMISSION CALCULATIONS
OTHER POTENTIAL EMISSION SOURCES

4.1 Emissions Inventory Summary

The only significant source of PM-10 emissions in the Mono Basin is from lake shore windblown dust resulting from the erosion of efflorescent salt deposits and some exposed soils and sediments along (1) the northern and eastern shores of Mono Lake, (2) the landbridge between the lake's north shore and Negit Island, and (3) the western shoreline of Paoha Island. Efflorescent salts form as shallow saline ground water rises to the surface of permeable sediments through capillary action and evaporates at the soil surface leaving a highly erodible salt crust. As concluded in the EIR, "Most observers consider the salt deposits to be the major source of suspended particulate matter during significant dust storm events."[20] Other sources of PM-10 have been evaluated to meet the EPA requirement that all potential sources, within the expected control area of the plan, be identified and estimated. As displayed in Table 4-1, the individual and cumulative contribution of other sources to the PM-10 problem in the Mono Basin is insignificant compared to lake shore windblown dust.

Table 4-1

MONO BASIN PLANNING AREA PM-10 EMISSIONS SUMMARY

SOURCE	TONS/YEAR	TONS/DAY
Unpaved Roads	149 (2%)	.42 (<1%)
Vehicle Tail Pipe & Tire Wear	31 (<1%)	.08 (<1%)
Residential Wood Burning	18 (<1%)	0 (0%)
Road Cinders	455 (7%)	0 (0%)
Wildfires & Prescribed Burning	229 (4%)	0 (0%)
Landfill Burning	25 (<1%)	0 (0%)
Lake Shore Windblown Dust	5,665 (86%)	588 (99%)
Total	6,572 (100%)	588.5 (100%)

Annual Average PM-10 Emissions

The annual average PM-10 emissions value for lake shore windblown dust is from a modeled source elevation of 6,375'. 1992 is the year used in the calculation of annual average PM-10 emissions, and the lake level in 1992 was at or near the 6,375' elevation.

An examination of the same emission outputs for the other modeled elevations is summarized in Table 4-2. As can be seen from this table, a rise in the lake level would significantly decrease the annual average PM-10 emissions from the Mono Basin. For example, there is a 76% decrease in emissions if the source elevation is at 6,393'. Nonetheless, at all modeled elevations, lake shore windblown dust remains the predominant emissions source.

Table 4-2

ANNUAL AVERAGE PM-10 EMISSIONS
(Tons/Year)

SOURCES	MODELED ELEVATIONS				
	6,375'	6,377'	6,381'	6,387'	6,393'
Unpaved Roads	149 (2.3%)	149 (2.7%)	149 (4.2%)	149 (6.6%)	149 (9.6%)
Vehicle Tail Pipe & Tire Wear	31 (0.5%)	31 (0.6%)	31 (0.9%)	31 (1.4%)	31 (2.0%)
Residential Wood Burning	18 (0.3%)	18 (0.3%)	18 (0.5%)	18 (0.8%)	18 (1.2%)
Road Cinders	455 (6.9%)	455 (8.2%)	455 (12.9%)	455 (20.1%)	455 (29.2%)
Wildfires & Prescribed Burning	229 (3.5%)	229 (4.1%)	229 (6.5%)	229 (10.1%)	229 (14.7%)
Landfill Burning	25 (0.4%)	25 (0.5%)	25 (0.7%)	25 (1.1%)	25 (1.6%)
Lake Shore Windblown Dust	5,665 (86.2%)	4,634 (83.6%)	2,632 (74.4%)	1,359 (60.0%)	650 (41.7%)
Total	6,572	5,541	3,539	2,266	1,557

1 Ton = 907.2 Kg

Peak 24-Hour PM-10 Emissions

In addition to the annual average emissions inventory, a computer modeled emissions value for a 24-hour "worst case" day has been developed for each possible PM-10 source identified.

As indicated above, lake shore windblown dust is the only significant source of PM-10 emissions in the Mono Basin. The modeling results indicate that the peak 24-hour episode for this emission source is May 8, 1991. This represents the design day (see 4.2 for detail). Normally on May 8th (due to time of year and burn day scheduling), no residential wood burning, road cinders, wildfires/prescribed burning, or landfill burning would be present and ambient emissions from these sources would be unlikely. However, if all sources were to have been present on the design day, the calculated amounts of their respective contribution to emissions are shown in Table 4-3. Lake shore windblown emissions still account for approximately 89% of the total emissions for the design day of May 8, 1991--the 24-hour "worst case" episode.

Table 4-3

PEAK 24-HOUR PM-10 EMISSION ESTIMATES
All Potential Sources Calculated

SOURCE	Tons/Day	%
Unpaved Roads	.42	<1%
Vehicle Tail Pipe & Tire Wear	.08	<1%
Residential Wood Burning	.10	<1%
Road Cinders	50	7.6%
Wildfires & Prescribed Burning	10	1.5%
Landfill Burning	12.5	1.9%
Lake Shore Windblown Dust	588	88.9%
Total	661.1	

1 Ton = 907.2 Kg

Table 4-4 shows the peak 24-hour PM-10 emissions contribution by source for May 8, 1991, without residential wood burning, road cinders, wildfires/prescribed burning, and landfill burning.

Table 4-4

PEAK 24-HOUR PM-10 EMISSION ESTIMATES
Design Day Sources Only
May 8, 1991

SOURCE	Tons/Day	%
Unpaved Roads	.42	<1%
Vehicle Tail Pipe & Tire Wear	.08	<1%
Residential Wood Burning	0	0%
Road Cinders	0	0%
Wildfires & Prescribed Burning	0	0%
Landfill Burning	0	0%
Lake Shore Windblown Dust	588	99%
Total	588.5	

1 Ton = 907.2 Kg

4.2 Annual Average and Peak 24-Hour Emission Calculations

This section generally discusses the data sources, methods, and calculations used to estimate the annual average PM-10 emissions and peak 24-hour emissions presented in the above summary. For a detailed presentation of the calculations, refer to Appendix 5 (*Final Mono Lake Air Quality Modeling Study*) and Appendix 6 (Emission Calculations).

It is important to understand the significance of the peak 24-hour emissions value as the basis for the inventory, the modeled predictions, and the demonstration of attainment with the PM-10 Standard. Peak 24-hour emissions are calculated using the same data set as the annual average emission calculations. In nontechnical terms, the calculated peak 24-hour episode represents the design day and can be thought of as the "worst case" air quality conditions which must be remediated to bring the source(s) into compliance with the PM-10 Standard. The design day PM-10 concentration is an essential benchmark used in control measure development and validation of effectiveness. Based upon computer modeling, the 24-hour design day PM-10 concentration for lake shore windblown dust in Mono Basin is 895 $\mu g/m^3$ (at a source elevation of 6,375'). This concentration must be reduced to less than 150 $\mu g/m^3$ to attain the PM-10 Standard and for the planning area to be in compliance with the CAA.

The design day concentration is selected from the sixth highest concentration at the worst air impact site as described in Appendix 5. The design day is May 8, 1991.

Unpaved Roads

There are a total of 422 miles of unpaved roads within the Mono Basin Planning Area. There are 319 miles of roads within the Mono Basin National Forest Scenic Area, of which 287 are unpaved. Outside the scenic area, but within the planning area, are approximately 135 additional miles of unpaved roads.

The soil type is mixed rock, generally granitic in the southwestern, western, and northern portions of the basin. In the southern and eastern portions, the soil is comprised primarily of ash and cinder deposits.

Applying these parameters, the AP-42 methodology for estimating fugitive road dust is used to determine emissions from unpaved roads. The emission factor and equation for the calculations are:

$$\textit{Emissions Factor } e = k(1.7)\,(s/12)\,(S/48)\,(W/2.7)^{0.7}\,(w/4)^{0.5}\,(365-p/365)\ Kg/VKT$$

where:
- k = particle size multiplier
- s = silt content of road surface material (%)
- S = mean vehicle speed (Km/hr)
- W = mean vehicle weight (Mg)
- w = mean number of wheels
- p = number of days with at least 0.254mm (0.01") of precipitation

PM_{10} = *(number of vehicles/year) (VKT) (e)*

where: VKT = [vehicle miles traveled (VMT)] (1.61Km/mile)

The equation yields the following estimates for emissions from unpaved roads:

Annual average PM-10 emissions are 149 Tons.

Peak 24-hour PM-10 emissions are 378 Kg (.42 Tons).

Vehicle Tail Pipe and Tire Wear

Estimated PM-10 emissions from motor vehicle exhaust (gas and diesel) and tire wear are determined using California Air Resources Board data for Mono County. CARB's estimates have been adjusted using traffic counts for the Mono Basin provided by Caltrans.

The following parameters are used in the emission calculation:

e = CARB emission factor per vehicle type
er = emission rate per vehicle type =
(e) [Mono County vehicle miles traveled/day
(VMT/D) per vehicle type]
Rv = ratio of Mono County VMT/D per vehicle type/
total Mono County VMT/D
VMT/D = (ADT) (m)
ADT = average daily travel/highway
m = number of miles/highway

The equation for estimating emissions from this source is:

PM_{10} = *(VMT/D per vehicle type for Mono Basin) (er)*

Estimates of emissions from vehicle tail pipe and tire wear in the Mono Basin Planning Area are:

Annual average PM-10 emissions are 31 Tons.

Peak 24-hour PM-10 emissions are 76.3 Kg (.08 Tons).

Residential Wood Burning

Emissions from residential wood burning are estimated based on data from a wood use survey conducted by the District in preparing the Air Quality Management Plan for the Town of Mammoth Lakes, California.[21]

Emissions for each wood burning device are calculated using the factors and equation below:

PM_{10} *emissions per device* = *(e)* $(Mass_{wood})$

$Mass_{wood}$ = (number of cords) (800 Kg/cord) Jeffery & Pinion Pine

Emission Factors
e = 8.1 g/kg certified wood stoves
e = 14.0 g/kg fireplaces
e = 15.0 g/kg conventional wood stoves, fireplace inserts

The equation yields the following estimates for emissions from residential wood burning:

Annual average PM-10 emissions are 18 Tons.

Peak 24-hour PM-10 emissions are 0. It is assumed that there would be little to no residential wood burning on the design day of May 8, 1991. Therefore, this source would not significantly contribute to cumulative emissions.

Road Cinders

Road cinders are occasionally used in the winter months to aid in traction when the paved roads are slick due to snow cover. The paved roads within the Mono Basin Planning Area upon which road cinders may be applied are shown below. The automobile frequency counts are included for each listed road. The count is expressed as average daily traffic (ADT) and includes traffic traveling in both directions. The winter ADT count is used in calculating the present estimates.

Highway	Winter Average Frequency Count
US 395 outside Lee Vining	3,980 ADT
US 395 in Lee Vining	5,400 ADT
CA 120 East of US 395	400 ADT
CA 120 West of US 395	2,250 ADT
CA 158 North Junction	610 ADT
CA 158 South Junction	1,450 ADT
CA 167 at US 395	410 ADT
CA 167 at Nevada Border	360 ADT

An estimate of emissions from resuspended road cinders in the Mono Basin is derived using the AP-42 methodology for estimating reentrained road dust emissions for paved roads. The emissions factor for road cinders is based upon the Town of Mammoth Lakes General Plan and a Caltrans study of road cinders used in Mammoth Lakes.

Emissions from resuspended road cinders are calculated using the emission factor and equation below:

Emission Factor $e = 2.28\ (sL/0.5)^{0.8}$ *(grams/VKT)*

where: sL = silt loading before use

$PM_{10} = (e)\ (VKT)\ (n)$

where: n = number of cinder applications/month
VKT = (VMT) (1.61Km/mile)
VMT = (ADT) (m)
m = number of miles/highway
ADT = average daily travel/highway

The following estimates for resuspended road cinders are derived:

Annual average PM-10 emissions are 455 Tons.

Peak 24-hour PM-10 emissions are 0. It is assumed that there would be little to no road cinders used on the design day of May 8, 1991. Therefore, this source would not significantly contribute to cumulative emissions.

Open Burning

PM-10 emissions from open burning occur occasionally in the Mono Basin as a result of wildfires, prescribed burning, and landfill burning of vegetative waste. The Forest Service expects to increase the use of prescribed burning in the Mono Basin as part of a timber management program and as a tool to improve ecosystem health. Prescribed burning will also include natural fires that may be allowed to burn in locations that will not affect populated areas.

The Forest Service has estimated future emissions from open burning in the Mono Basin to be about 214 tons of PM-10 per year for historic wildfires and prescribed natural fires, and 15 tons of PM-10 per year for other prescribed burning activities (McKee, April 1995). Peak daily emissions are estimated at about 10 tons of PM-10 per day from these wildfires and prescribed burning activities, assuming that prescribed burning will not take place simultaneously with large wildfires. Prescribed burning is governed under District Rules 408 through 411 (Appendix 7), and requires that a burn plan be submitted to the District. The plan must show (1) that burning will be conducted on a burn day as defined by the California Air Resources Board, (2) that it will be done in a manner that will minimize smoke, (3) that it will not cause or contribute to a violation of the state or federal ambient air quality standards, and (4) that it will not cause a public nuisance.

Burning of vegetative waste at Mono County's Pumice Valley Landfill, located three miles east of US 395 on CA 120, is permitted under District Rule 412 (Appendix 7). Burning is conducted on burn days under a plan approved by the District and the California Air Resources Board (Morgester, 1993). This activity is expected to occur twice per year and PM-10 emissions are estimated at about 12.5 tons per day (e.g., 25 tons of PM-10 per year).

PM-10 emissions from open burning are not expected to occur on high wind days associated with the wind blown dust at Mono Lake. High winds pose an obvious safety hazard for prescribed burning operations. It is noted in the PM-10 Comments in Sampling Data from Monitoring Sites (Appendix 4) when forest fires or brush fires have been present during an observation period. On those days when forest or brush fires were present, PM-10 levels were well below the Standard.

Lake Shore Windblown Dust

The windblown PM-10 emissions are estimated using empirically-derived wind erosion data from wind tunnel tests performed by the District in 1990 at Mono Lake. Using hourly average wind speed data, the amount of PM-10 emissions can be estimated using the following equation:

$$q_a = 2.6 \times 10^{-5} \exp(0.11u)$$

where: q_a is the area source PM_{10} emission factor or vertical flux ($g/m^2/sec$), and u is wind speed in miles per hour (mph) at a 10 meter height.

$q_a = 0$ if the wind speed is below the threshold wind speed of 16 mph.

From this equation, the hourly PM-10 emissions are estimated for the dispersion model. Emissions from the exposed source areas are changed each hour with the changing wind speed and are changed again as the source area sizes vary with the lake level. (Also see Section 5 on Dispersion Modeling)

Table 4-5

ANNUAL AVERAGE PM-10 EMISSIONS
Dust Season Only
(Tons/Year)

YEAR	MODELED ELEVATIONS				
	6,375'	6,377'	6,381'	6,387'	6,393'
1988	6,745	5,518	3,134	1,618	774
1989	4,098	3,354	1,905	983	471
1990	4,042	3,307	1,878	970	464
1991	5,375	4,397	2,497	1,290	616
1992	5,665	4,634	2,632	1,359	650
AVERAGE	5,165	4,242	2,410	1,244	595

Annual average PM-10 emissions are 5,665 Tons (as presented in the Emissions Inventory Summary). Table 4-5 above contains modeled emission estimates for different lake levels or source elevations for the years 1988-1992.

The annual average emission values appearing in Table 8 of Appendix 5 are expressed in Mg/Year. PM-10 emission tonnage in Table 4-5 is derived using the following conversion equation:

(Emission Ton/yr) = (Emission Mg/yr) (1,000 Kg/Mg) (1 Ton/907.2 Kg)

Peak 24-hour PM-10 emissions are 588 Tons/Day (as presented in the Emissions Inventory Summary). This is for a lake level of 6,375'. Table 4-6 below shows peak 24-hour emission estimates for different lake levels or source elevations. Data is extracted from Table 7, Appendix 5.

Table 4-6

PEAK 24-HOUR PM-10 EMISSIONS
Dispersion Modeling Results
Design Day: May 8, 1991
(Tons/Day)

MODELED ELEVATIONS				
6,375'	6,377'	6,381	6,387'	6,393'
588	480	273	141	67

1 Ton = 907.2 Kg

4.3 Other Potential Emission Sources

Prediversion Exposed Lake Bed

The relatively flat west side of Paoha Island is a frequent dust storm emission source area. Lake bed silts, clays, and diatomaceous sediments occur on Paoha Island. Lake bed silts with occasional clayey layers--deposited by the prehistoric Lake Russell--are exposed in streamcuts and probably underlie many of the surface sands in this area. Diatomaceous sediments are microscopic silica shells formed by some types of aquatic algae. Although these sedimentary materials can be transported long distances through wind erosion, they are not considered a significant source of PM-10.

Pumice Sands

Pumice sands are readily apparent along much of the east shore of Mono Lake. The material has a high void ratio and low particle density. As a result, pumice sands are subject to wind erosion, but they are not a significant source of PM-10 emissions.

Volcanic Rock

Sands derived from most of the volcanic rocks in the Mono Basin have a variable density and low quartz content. Volcanic rocks south of Mono Lake are predominantly rhyolitic ash and include obsidian domes and pumice fields. Volcanic rocks on Negit Island are andesitic lavas. Black Point is a basalt cinder cone. These sources of sand are highly resistant to erosion by the wind and are not considered to contribute significantly to PM-10 emissions.

Industrial Sources

1. Permitted Industrial Facilities

The following industrial sources of PM-10 emissions meet the standards for air quality compliance as per the EPA guidelines and have been permitted by the District to operate in the Mono Basin. Permits are on file at the District office.

Company Name	Type of Operation
Hunewill Ready Mix Co.	Sand and Gravel Concrete Batch Plant Asphalt Plant
Marzano & Sons	Sand and Gravel Concrete Batch Plant

2. Non-Permitted Industrial Facilities

The following industrial sources are identified as operating within the Mono Basin and are not required to be permitted by the District.

Company Name	Type of Operation
McCune's Sand & Gravel	Trucking
United States Pumice Co.	Block Pumice Mine Pumice Storage Yard
Construction Specialty	Trucking Road Cinder Mine
June Mountain Ski Area	Ski Area
Southern California Edison	Electric Generating and Distributing
High Sierra Shrimp Plant	Tropical Fish Food Factory
Logging Companies	Timber Harvesting from Inyo National Forest

Agriculture

Livestock production is the dominant agricultural activity within Mono Basin. Sheep and cattle are grazed within the basin during summer months. Due to harsh winters, few livestock remain in the basin year round. Most grazing occurs on land leased from the Los Angeles Department of Water and Power or through use permits issued by the U.S Forest Service or the Bureau of Land Management. Four sheep companies and one cattle company use most of the grazing lands within the Mono Basin.

As per Rule 405 of the Rules and Regulations of the District, agricultural operations associated with livestock production are exempt from Rule 400. This means that such operations are not required to have a permit or to control the discharge of fugitive dust. However, it is estimated that the amount of fugitive dust generated by grazing is negligible.

Home Construction

The population of the Mono Basin Planning Area is approximately 2,600 people and there are a relatively small number of homes. Information from the Mono County Building Department indicates that the following building permits were issued in 1992.

Location	Number of Building Permits
June Lake	39
Lee Vining	9
Mono City	3
Homes along Highway 167	2
Lundy Canyon	2

These permits were issued for new home construction as well as improvements on existing homes. The small number of permits issued indicates that the impact on air quality in the Mono Basin due to home construction is minimal. There are no large home tracks being constructed where substantial areas of disturbed earth are exposed and subject to wind erosion.

Recreational

The Mono Basin provides opportunities for a wide range of recreational activities. The most common are: hiking, cross country and downhill skiing, snowmobiling, off road vehicle travel and motor-cross, boating and fishing, horseback riding, target shooting, sightseeing, photography, and birding. Developed recreational facilities include several interpretive sites and a County Park, where organized community activities occur. The County Park provides a picnic area, playground equipment, and a boardwalk to the lake shore for birding and close views of the tufa. There are no camping facilities within the Mono Basin National Forest Scenic Area, though many campgrounds exist in the mountain regions surrounding Mono Lake.

There is no evidence that any of these activities produce significant contributing sources of PM-10 emissions.

Commercial

In addition to businesses in the communities of Lee Vining and June Lake, there are several lodges, horse packing concessions, and boating and fishing concessions that operate on many of the freshwater, alpine lakes up-stream from Mono Lake. Similar to recreational activities, the comparatively small scale of commercial business activities does not produce significant contributing sources of PM-10 emissions.

Government Agencies

The following governmental agencies have authority within Mono Basin:

Name of Agency	Activities
U.S. Forest Service	Regulation and Management of National Forests
Bureau of Land Management	Regulation and Management of all BLM Public Land
Bonneville Power Administration	Maintains Power Lines in Jurisdiction
California Department of Transportation	Maintains all Federal and State Highways
California Department of Fish and Game	Regulation and Management of Fishing and Hunting
Mono County Public Works	Maintains Land Fill
Mono County Road Department	Maintains all County Roads
Mono County Public Utility Districts	Maintains Water and Sewer Services in June Lake, Mono City, and Lee Vining
Los Angeles Department of Water and Power	Maintains Reservoirs and Aqueduct System

The physical activities of these governmental agencies do not produce significant contributing sources of PM-10 emissions.

SECTION 5 - DISPERSION MODELING

5.1 Introduction

The Mono Basin Planning Area is in violation of the 24-hour PM-10 Standard for ambient air quality as measured at the Simis Ranch and Warm Springs monitoring sites during the period of January 1988 to May 1993. Episodes that result in exceedances of the Standard are accompanied by high winds and the source area responsible for windblown dust emissions is the exposed lake shore of Mono Lake. In order to implement effective control measures that reduce emissions, it is essential to develop techniques (1) to predict the distribution and concentration of windblown PM-10 from the source area, (2) to evaluate the variables that contribute to episodes with serious air quality impacts, and (3) to validate modeled predictions with observed data.

This section describes the application of dispersion modeling techniques to fulfill these objectives. In addition to predicting PM-10 concentrations downwind of exposed lake shore areas, modeling results are used to examine change in predictions based on different lake levels or source elevations. Understanding the correlation between emission concentrations and differing lake levels is germane to strategies for attaining and maintaining the federal PM-10 Standard.

5.2 Dispersion Modeling Overview

Predicting ambient air quality impacts requires an understanding of the transport, dispersion, chemical transformation, and removal processes that affect pollutant emissions after their release into the atmosphere. Computer models provide the most practical method for developing quantitative air quality assessments for multiple scenarios of possible future conditions. Air pollution problems at Mono Lake are dominated by physical processes, rather than by chemical transformations. Gaussian dispersion models are best suited for the analysis of such physical processes and are the logical choice for this setting. Dispersion modeling techniques were utilized by the TRC Environmental Corporation and McCulley, Frick & Gilman, Inc. (1992-1993) in studies designed to predict ambient PM-10 levels at Mono Lake. A summary of the modeling methods, inputs, and results are presented later in this section. The complete report of findings is included in Appendix 5 - *Final Mono Lake Air Quality Modeling Study*.

Dispersion models calculate pollutant concentrations at particular receptor locations by applying appropriate horizontal and vertical dispersion factor equations to the initial pollutant concentration. The proper dispersion factor equations are determined from the position of the receptor relative to both the emission source and the center line of the pollution plume, extending downwind from the emission source. Gaussian dispersion models assume pollutant emissions to be carried downwind in a defined plume that is subject to horizontal and vertical mixing with the surrounding atmosphere. As the plume spreads horizontally and vertically, pollutant concentrations diminish downwind from the emission source. Pollutant mixing with the surrounding atmosphere is greatest at the edge of the plume, resulting in lower pollutant concentrations outward in all directions from the center of the plume. This decrease in concentrations outward from the center is assumed to follow a Gaussian or "normal" statistical distribution. Horizontal and vertical mixing generally occur at different respective rates. Because turbulence in the atmosphere occurs on a variety of spatial and temporal scales, mixing also varies with distance downwind from the emission source.

Gaussian dispersion models estimate the net effect of atmospheric dispersion processes on emissions, but do not mathematically simulate the physical process of turbulent dispersion. These models are generally structured as a series of mathematical terms multiplied together. The initial term in the equation represents the concentration at the plume center line of the emission source. This term is multiplied by a series of three factors that reduce the initial concentration value to account for distance downwind from the emission source, lateral offset from the plume center line, and vertical offset from the plume center line.[22]

5.3 Industrial Source Complex Model (ISC2)

The *Mono Lake Air Quality Modeling Study* investigated two dispersion models--the Industrial Source Complex Short-Term (ISCST) model[23] and the Fugitive Dust Model (FDM).[24] The EPA recently released restructured versions of the original ISC models called ISC2.[25] The ISC models have historically been the regulatory preferred models for assessments associated with fugitive dust.[26] ISC models are also preferred by CARB for calculations of ground level area sources of fine particles or gaseous pollutants.[27] The ISC2 model was selected based on regulatory precedence and proven performance in predicting PM-10 concentrations at Mono Lake.

The ISC2 model is based on the steady-state Gaussian plume formulation. For fugitive dust problems, the ISC2 model is often applied because it includes routines both to simulate area sources and to account for removal of mass at the surface caused by gravitational settling and dry deposition. In addition to prediction of ground level concentrations, the model can be applied to estimate deposition fluxes.

5.4 Emission Factor

Windblown PM-10 emissions from the exposed lake shore areas of Mono Lake are estimated using an empirical emissions factor developed by the District. This mathematical relationship is based on interpretations from a series of wind tunnel tests conducted at Mono Lake during 1990 with a portable wind tunnel erected over characteristic erodible surfaces. During those tests, it was observed that PM-10 emissions are a strong function of wind speed with the velocity threshold value in the range of 16 to 20 mph as measured at a height of 10 meters. It also noted that surface crusting influences the threshold value.

Observations from the wind tunnel tests resulted in the following PM-10 emissions factor:

$$q_a = 2.6 \times 10^{-5} \exp(0.11u)$$

where: q_a is the area source PM_{10} emission factor or vertical flux ($g/m^2/sec$), and u is wind speed (mph).[28]

The emission factor assumes "worst case" conditions for PM-10 emissions from the lake bed, including the availability of a continuous supply of PM-10 sized particles during the storm period. This worst case emission factor is used to simulate the worst storms, specifically those that may violate the PM-10 Standard, and not to simulate every storm. Seasonal and daily changes in the surface crust strength result in conditions that are less erosive than the worst case emissions algorithm and, therefore, the model produces higher average predictions for the five years of modeling results than is observed from the ambient data.

5.5 ISC2 Modeling Input Data

Operation of the ISC2 model requires the following input data files: (1) emission inventory for lake shore windblown dust, (2) meteorological data, (3) background PM-10 concentration estimates, and (4) receptor configuration. This section briefly describes the preparation of these requisite data sets.

Emission Inventory

Emission inventory data for lake shore windblown dust is obtained from the air quality monitoring sites discussed in Section 3.3. (Detailed sampling data is contained in Appendix 4.)

Windblown PM-10 emissions at Mono Lake vary with season due to crust formation, snow cover, and precipitation. As presented later in this section, in order to account for the effect of seasonal variables on actual source area conditions, the modeling predictions are segregated into two basic groupings. These groupings are determined by the input data sets. The first data set includes all days with the potential for nonzero windblown emissions using the criterion that at least one hour of winds exceeds the 16 mph threshold. The second data set includes only those days meeting the wind threshold criterion and falling within the "dust season." For the purposes of this modeling study, the dust season refers to the months of April, May, June, November, and December. Developing the two groupings of modeling results provides a qualitative framework for analyzing conditions which inhibit the erodibility of the lake shore.

The location of emissive source areas is shown in Figure 5-1. The irregular lake shore area, delineated by the contours in the figure, is organized into a series of square source areas aligned in an east-west direction for each designated lake level or source elevation. The modeling study simulates windblown PM-10 emissions from these source areas with lower elevation bounds of 6,375', 6,377', 6,381', 6,387', and 6,393'. It is important to note that the lower limits of the modeled source areas will be somewhat higher in elevation than the actual lake level due to a one vertical foot stable band which has been observed to form above the water line. For example, a modeled lower source elevation of 6,393' will correspond to an actual lake level at about 6,392'.

Meteorological Data

Hourly meteorological data files have been constructed using observations from the Simis Ranch site during 1988 to 1992. The meteorological station located at Simis Ranch collects wind, temperature, and precipitation data. The data set includes only those days with the potential for nonzero windblown emissions. Days with significant gaps in the key meteorological variables have also been eliminated from the simulations.

In addition to wind speed, wind direction, and temperature data, the ISC2 model requires hourly estimates of atmospheric stability class and the depth of the well-mixed layer. Hourly values have been estimated from the average morning and afternoon mixing height using interpolation routines employed by both the EPA's MPRM and RAMNET meteorological pre-processors (with a minimum mixing depth of 100 meters).[29]

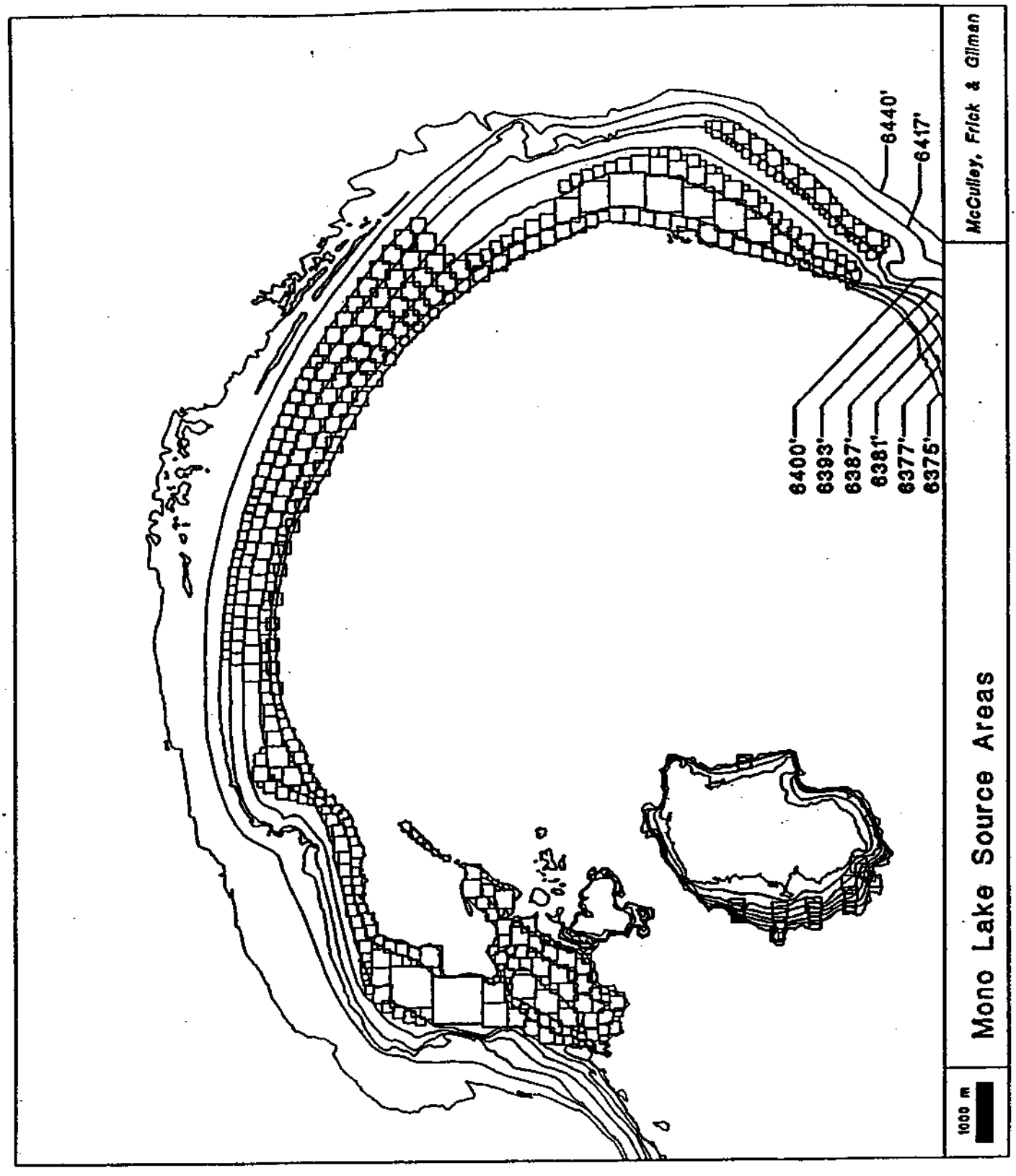


Figure 5-1 Mono Lake Source Areas

Background PM-10 Concentration Estimates

Estimates of background PM-10 levels have been obtained from the Lee Vining site. Examination of wind patterns during periods of high wind velocity indicates that Lee Vining is generally upwind of the dust source areas and the other monitoring stations. Daily values observed at Lee Vining have been added to all model predictions, when available. When data is not available for a specific episode, background PM-10 is assumed to be 13.1 $\mu g/m^3$.[30]

Receptor Configuration

The magnitude of the concentration predictions is significantly influenced by the placement of the receptor grid. Sensitivity tests indicate that concentration predictions drop considerably downwind of the eroding area sources. Based on District consultation, a ring of screening receptors was placed at the 6,417' and 6,440' elevations along the northern shore of Mono Lake and at the monitoring stations at Simis Ranch, Warm Springs, and Cedar Hill (Figure 5-2). At their closest point, these receptors are within about 150 meters of the eroding lake shore. The full receptor network includes the screening receptors plus receptors placed on a one kilometer rectangular grid outside the 6,440' elevation and inside the 6,375' elevation. Additional receptors are also placed on nongrid positions to improve accuracy of the contour plots. The full receptor network set includes 482 receptors. (Figure 5-3)

5.6 Performance Evaluation of ISC2 Modeling Approach

The *Final Mono Lake Air Quality Modeling Study* includes a performance evaluation which compares ISC2 modeled predictions (using the empirical emission factor and programmed source area definitions) with actual ambient PM-10 data. EPA's *Interim Procedures for Evaluating Air Quality Models*[31] was used along with recommended guidelines from CARB. The primary objective of the performance evaluation is to assess whether the modeling methods and approach produce results that adequately simulate measured emissions.

The modeled results are found to overpredict average PM-10 concentrations by about a factor-of-two or more. However, performance of the modeling approach improves significantly when days outside the dust season are excluded from the analysis. The evaluation indicates that the simulations contained in the *Final Mono Lake Air Quality Modeling Study* "[f]orm a conservative basis for assessing the effects of differing lake levels. However, the degree of conservatism is well within recognized guidelines for acceptable model performance in a regulatory application."[32]

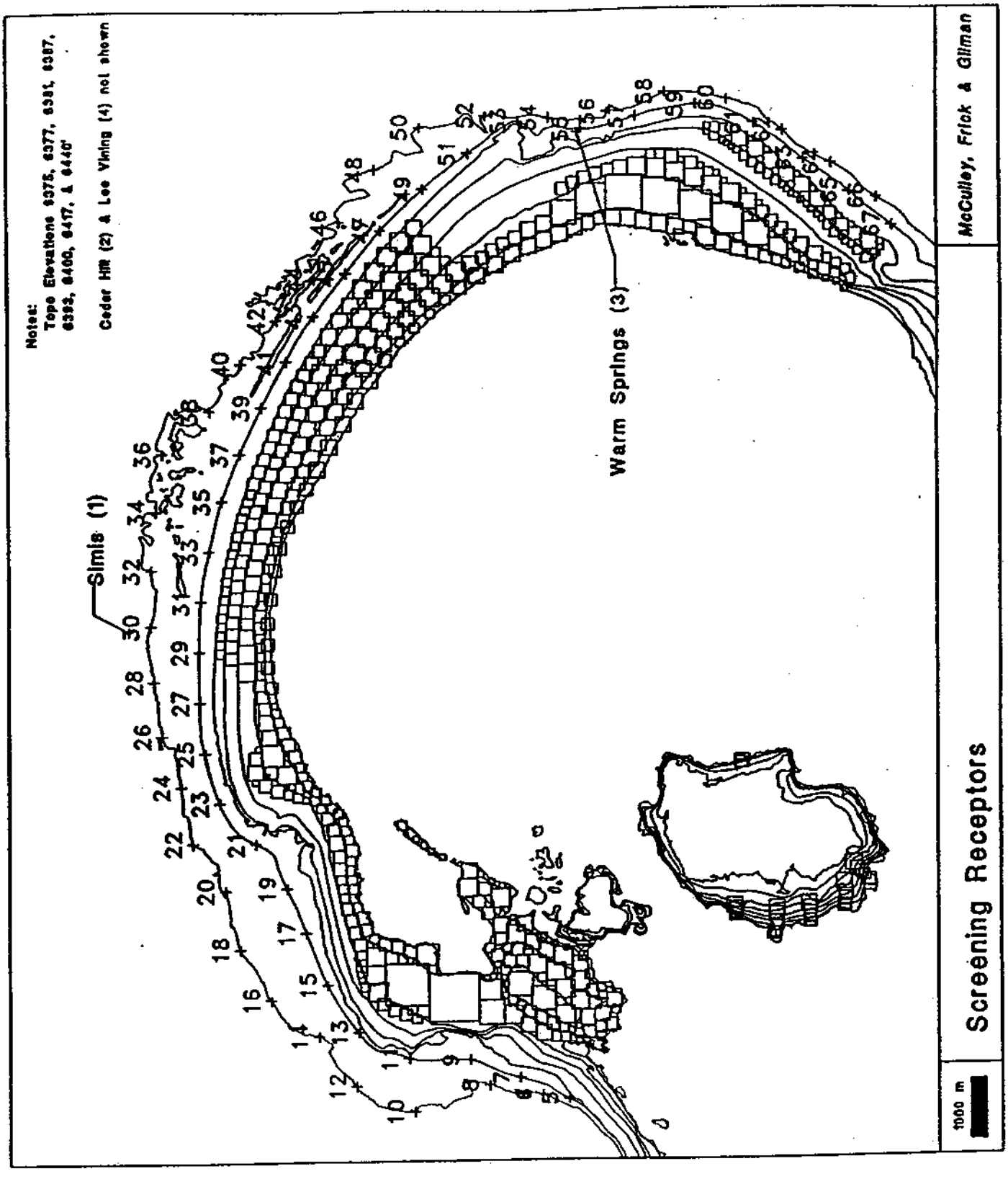


Figure 5-2 Screening Receptors

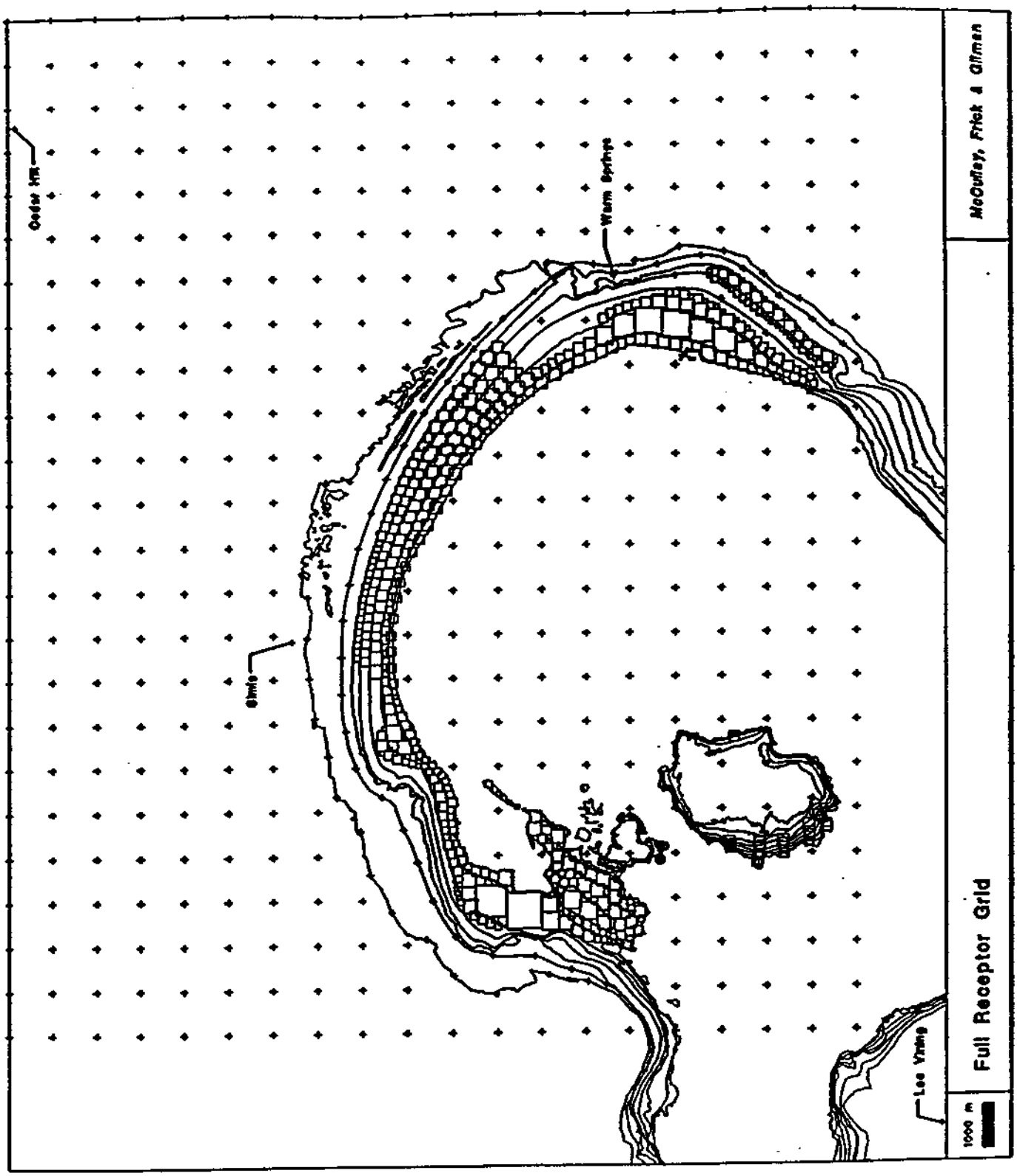


Figure 5-3 Full Receptor Grid

5.7 Dispersion Modeling Results

Dispersion modeling techniques have been applied to predict PM-10 concentrations downwind of exposed lake shore areas for different lower lake levels or source elevations. Predictions for each screening receptor are modeled for every day of the five year meteorological data set where wind velocity exceeded the 16 mph threshold at the Simis Ranch monitoring site. This results in the simulation of 451 days. The highest potential daily emissions range from 708,648 Kg/day to 81,301 Kg/day and occur on June 4, 1988. (Table 7, Appendix 5). This is for lake surface elevations of 6,375' and 6,393' respectively. The measured wind velocity at the Simis Ranch monitoring site for this episode averaged 22 mph and 22 hours were above the entrainment threshold of 16 mph.

Using the same meteorological data set, the highest predicted 24-hour PM-10 concentrations for each of the 67 screening receptors in the network are calculated. The location and date of the top six predictions for all source elevations are shown in
Table 5-1 below.

Receptor site 45, located on the 6,417' topographic contour, experiences the highest 24-hour PM-10 predictions for all but one source elevation. High predictions at this receptor site can be attributed to the close proximity of the eroding lake shore and the exposure of this receptor to wide bands of upwind source areas. Also, this receptor is potentially exposed to emissions under a wide variety of wind directions ranging from south-southeasterly to westerly.

It is important to note that several of the highest predictions in Table 5-1 occur on days outside of the dust season. As discussed earlier, crust formation or other conditions which inhibit erosion would normally be present during these periods and that the model overpredicts the potential impacts based on meteorological data only.

Table 5-1

TOP SIX PM-10 PREDICTIONS
SCREENING RECEPTOR SET

		MODELED ELEVATIONS				
		6,375'	6,377'	6,381'	6,387'	6,393'
Max PM-10	($\mu g/m^3$)	1,588	1,446	1,127	846	550
	Receptor	45	45	45	45	59
	Date	10/23/89	10/23/89	10/23/89	10/23/89	8/26/91
Max 2nd Hi PM-10	($\mu g/m^3$)	1,417	1,304	1,054	784	510
	Receptor	45	45	45	45	45
	Date	6/4/88	6/4/88	6/4/88	6/4/88	4/21/89
Max 3rd Hi PM-10	($\mu g/m^3$)	1,212	1,143	960	734	509
	Receptor	45	45	45	45	45
	Date	4/21/89	4/21/89	4/21/89	4/21/89	6/4/88
Max 4th Hi PM-10	($\mu g/m^3$)	1,182	1,100	921	696	467
	Receptor	45	45	45	45	45
	Date	2/16/90	2/16/90	2/16/90	2/16/90	2/16/90
Max 5th Hi PM-10	($\mu g/m^3$)	1,077	961	762	584	409
	Receptor	45	45	45	45	45
	Date	9/26/89	9/26/89	4/19/88	5/23/90	5/23/90
Max 6th Hi PM-10	($\mu g/m^3$)	1,013	914	762	578	408
	Receptor	45	45	45	45	45
	Date	4/19/88	4/19/88	5/23/90	4/19/88	4/19/88

Receptor locations are shown in Figure 5-2

In order to obtain more realistic predictions that account for actual source area conditions at Mono Lake, the highest predicted 24-hour PM-10 concentrations for all receptors are calculated for days in the dust season only. Applying the new criterion, the location and date of the top six predictions for all source elevations are presented in Table 5-2.

Table 5-2

TOP SIX PM-10 PREDICTIONS
SCREENING RECEPTOR SET
Dust Season Only

		MODELED ELEVATIONS				
		6,375'	6,377'	6,381'	6,387'	6,393'
Max PM-10	($\mu g/m^3$)	1,417	1,304	1,054	784	510
	Receptor	45	45	45	45	45
	Date	6/4/88	6/4/88	6/4/88	6/4/88	4/21/89
Max 2nd Hi PM-10	($\mu g/m^3$)	1,294	1,143	960	734	509
	Receptor	17	45	45	45	45
	Date	6/4/88	4/21/89	4/21/89	4/21/89	6/4/88
Max 3rd Hi PM-10	($\mu g/m^3$)	1,021	914	762	589	409
	Receptor	17	45	45	47	45
	Date	11/13/88	4/19/88	4/19/88	5/8/91	5/23/90
Max 4th Hi PM-10	($\mu g/m^3$)	1,016	897	762	578	408
	Receptor	17	45	45	45	45
	Date	5/23/90	5/23/90	5/23/90	4/19/88	4/19/88
Max 5th Hi PM-10	($\mu g/m^3$)	903	848	727	558	391
	Receptor	45	45	45	45	45
	Date	6/28/92	5/8/91	5/8/91	5/8/91	6/28/92
Max 6th Hi PM-10	($\mu g/m^3$)	895	831	700	540	356
	Receptor	45	45	45	45	45
	Date	5/8/91	6/28/92	6/28/92	6/28/92	5/8/91

Receptor locations are shown in Figure 5-2

Table 5-2 shows that several of the high episodes previously predicted in Table 5-1 are eliminated when the qualitative effects of seasonal crust formation, snow cover, and precipitation are considered in the analysis. Notice again that receptor site 45 is the predominant location for predicted high PM-10 episodes at all source elevations.

"Attainment of the 24-hour PM-10 NAAQS [Standard] is demonstrated when the sixth highest concentration at any receptor over a five year period is less than 150 $\mu g/m^3$. While the top five episodes over five years are of interest, due to the probabilistic nature of the NAAQS the focus of most regulatory analyses is on the sixth highest or design concentration. The highest-sixth highest concentration for the screening receptor grid excluding days outside of the dust season ranged from 895 to 356 $\mu g/m^3$ for the lower source elevations of 6,375' to 6,393', respectively. . . . The majority of the receptors located at the 6,417' and 6,440' levels were predicted to exceed the 150 $\mu g/m^3$ NAAQS until the lower source elevation rose to 6,387'. . . . However even when the lower source elevation was 6,393', large areas along the northeastern and eastern shores remained above 150 $\mu g/m^3$."[33]

Contour plots have been constructed from the May 8, 1991 design day receptor grid concentrations for the 6,393' source elevation (Figure 5-4). The patterns in the contour plots display the areas downwind of the lake shore to about the 6,440' elevation that still exceed the PM-10 Standard (Figure 5-5).

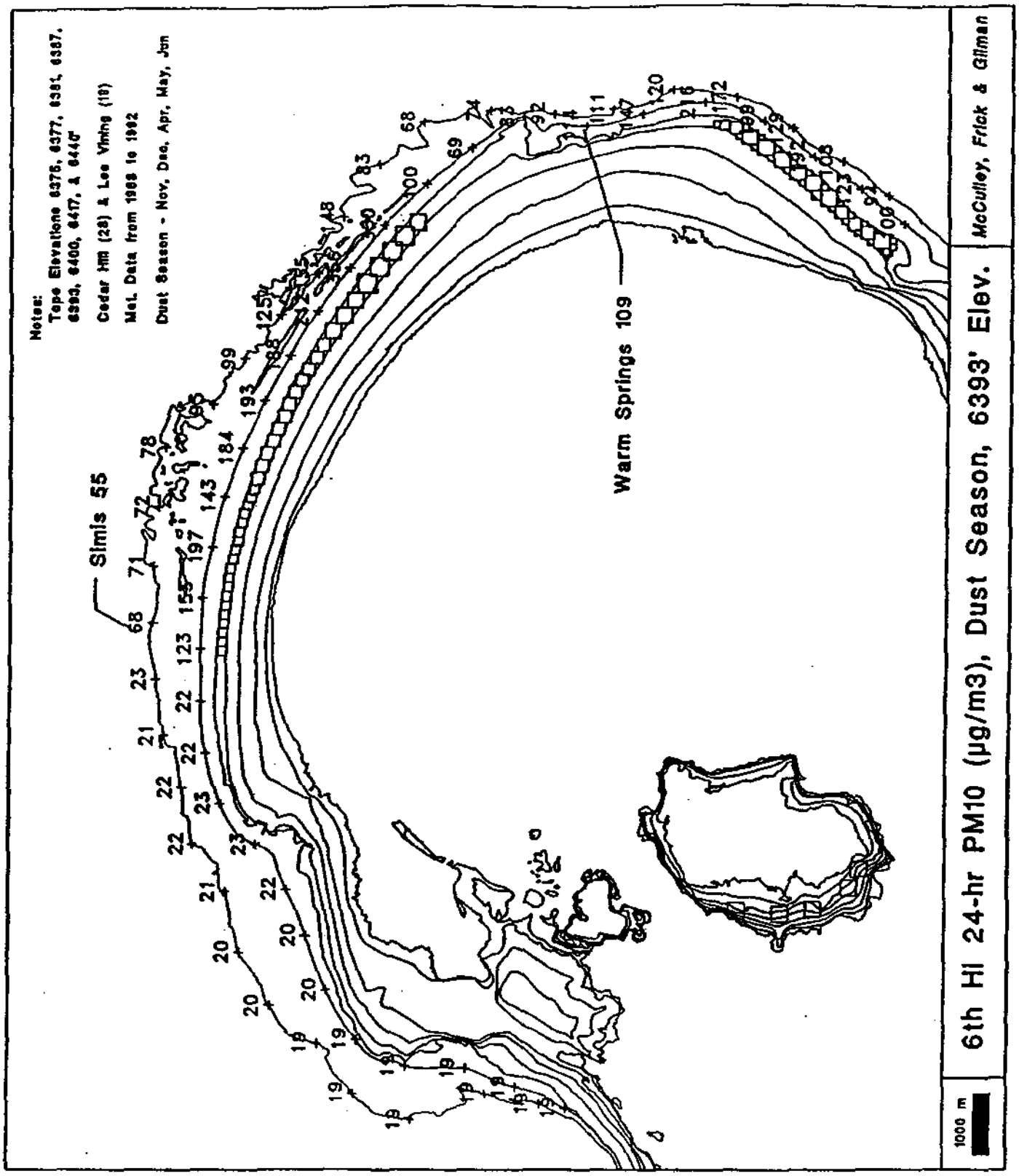


Figure 5-4 Design Day Receptor Grid Concentrations: 6,393' Elevation

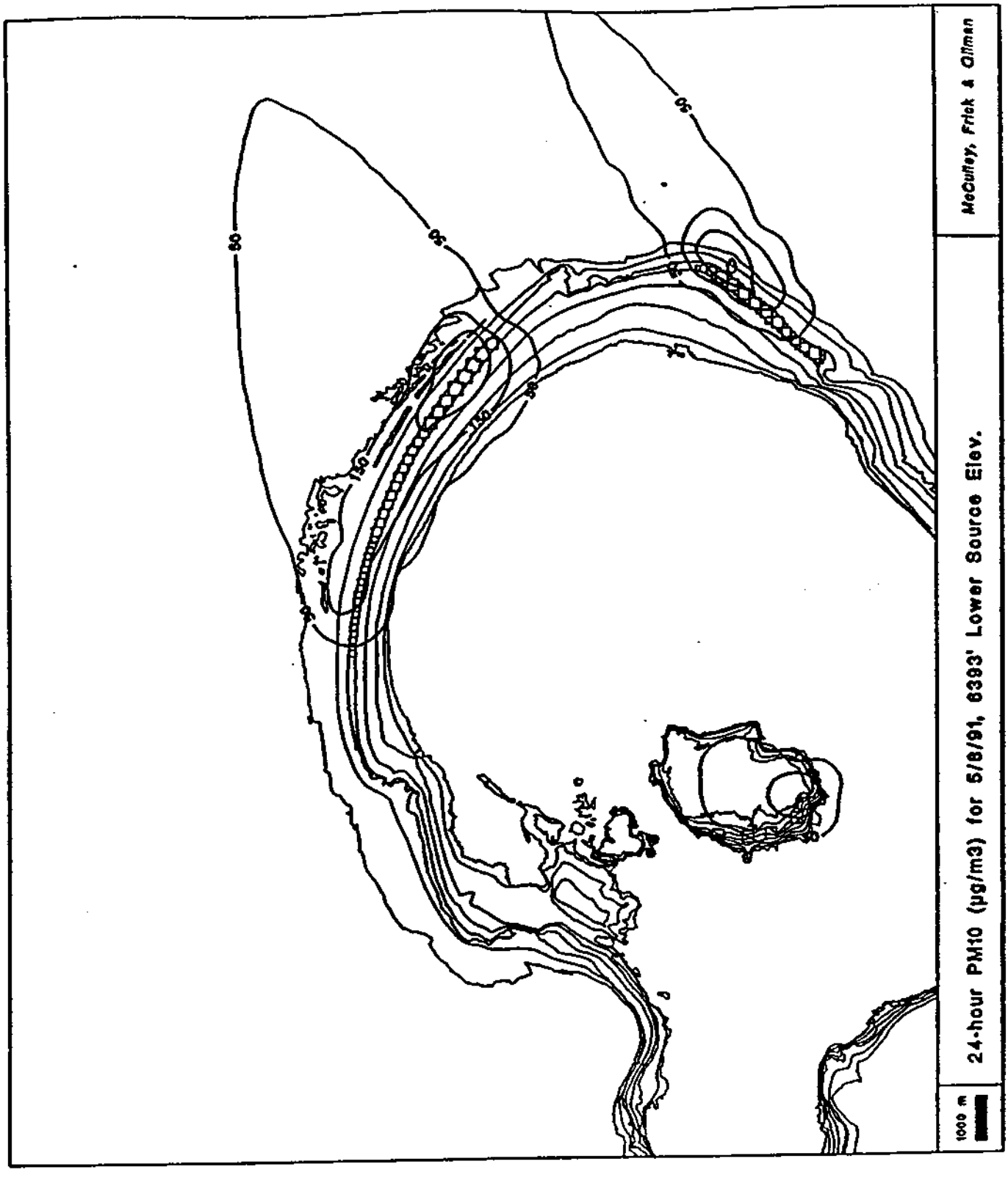


Figure 5-5 Contour Plots for Design Day: 6,393' Elevation

SECTION 6 - GROWTH PROJECTIONS AND DESIGN DAY SOURCE CONTRIBUTIONS

POPULATION GROWTH PROJECTION
EMISSIONS INCREASE PROJECTION
EFFECT OF GROWTH ON THE 24-HOUR DESIGN DAY PM-10 EMISSIONS

6.1 Population Growth Projection

Estimates by the Mono County Planning Department indicate that the number of permanent residents in Mono County, and hence the Mono Basin Planning Area, will increase over the next 50 years. As per the 1990 Census, the population of the Mono Basin Planning Area was 2,599 residents. [The Planning Area is considered the Mono Vista Census Designated Place (CDP)]. The following tables summarize the 1990 Census population distribution.

Table 6-1

MONO COUNTY POPULATION
(1990 Census)

AREA	POPULATION
Unincorporated Population	5,171
Town of Mammoth Lakes	4,785
TOTAL MONO COUNTY	9,956

Table 6-2

MONO BASIN PLANNING AREA POPULATION
MONO VISTA CDP
(1990 Census)

AREA	POPULATION
Lee Vining/Mono City	398
June Lake	581
Other	1,620
TOTAL MONO BASIN PLANNING AREA	2,599

The Mono County Planning Department has developed population projections for Mono County through the year 2040. These projection factors are applied to the Mono Basin Planning Area in order to estimate the future population in 10-year increments. These estimates are shown in Table 6-3.

Table 6-3

MONO COUNTY & MONO BASIN PLANNING AREA POPULATION PROJECTION

AREA	YEAR					
	1992	2000	2010	2020	2030	2040
Mono County	10,526	12,200	15,300	18,700	22,200	25,800
Mono Basin Planning Area	2,788	3,260	3,978	4,807	5,596	6,462
Lee Vining/Mono City	411	487	612	748	887	1,031
June Lake	600	712	893	1,091	1,296	1,506
Other	1,777	2,061	2,473	2,968	3,413	3,925

6.2 Emissions Increase Projection

The projections of annual average PM-10 emissions in the following table are based on the assumption that population-related air pollution sources will increase in direct proportion to population growth.

Table 6-4

ANNUAL AVERAGE PM-10 EMISSIONS INVENTORY PROJECTION
(6,375' Source Elevation)
(Tons/Year)

SOURCES	YEAR					
	1992	2000	2010	2020	2030	2040
Unpaved Roads	149	159	182	199	211	219
Vehicle Tail Pipe & Tire Wear	31	32	37	41	43	45
Residential Wood Burning	18	19	21	23	25	26
Road Cinders	455	503	577	629	668	694
Wildfires & Prescribed Burning	229	229	229	229	229	229
Landfill Burning	25	27	31	34	36	37
Lake Shore Windblown Dust	5,665	5,665	5,665	5,665	5,665	5,665
Total	6,572	6,634	6,742	6,820	6,877	6,915

6.3 Effect of Growth on the 24-Hour Design Day PM-10 Emissions

The same calculations used to produce the emissions inventory estimates in Section 4 are applied to compute the effect of population growth on the 24-hour design day PM-10 emissions. The calculations are based on the assumption that there is no change in water elevation and that no control measures are implemented. The design day emissions by source, projected over 50 years, are shown in Table 6-5.

Table 6-5

PEAK 24-HOUR PM-10 EMISSIONS INVENTORY PROJECTION
Design Day: May 8, 1991
(Tons/Day)

SOURCES	YEAR					
	1992	2000	2010	2020	2030	2040
Unpaved Roads	.42	.49	.56	.61	.64	.67
Vehicle Tail Pipe & Tire Wear	.08	.10	.11	.12	.13	.14
Residential Wood Burning	0	0	0	0	0	0
Road Cinders	0	0	0	0	0	0
Wildfires & Prescribed Burning	0	0	0	0	0	0
Landfill Burning	0	0	0	0	0	0
Lake Shore Windblown Dust	588	588	588	588	588	588
Total	588.50	588.59	588.67	588.73	588.77	588.81

NOTE: Normally on May 8th (due to time of year and burn day scheduling), no residential wood burning, road cinders, wildfires/prescribed burning, or landfill burning would be present and ambient emissions from these sources is unlikely.

The table displays two important facts: (1) Lake shore windblown dust remains the predominant source of emissions impacting air quality; and (2) PM-10 emissions that result from eroding efflorescent salt deposits along the exposed lake shore are independent of any population increase or decrease in the Mono Basin Planning Area.

SECTION 7 - SELECTED CONTROL MEASURE AND FEDERAL PM-10 STANDARD ATTAINMENT DEMONSTRATION

INTRODUCTION
MONO LAKE BASIN WATER DECISION 1631
SUMMARY OF AIR QUALITY IMPACT
DEMONSTRATION OF ATTAINMENT
CLEAN AIR ACT COMPLIANCE

7.1 Introduction

It is clear that the predominant source of PM-10 emissions in the Mono Basin Planning Area is windblown dust, resulting from the erosion of efflorescent salt deposits and sediments from the exposed lake shore of Mono Lake. 4,975 acres of relicted lake bed are now unprotected from the wind--a consequence of water diversions that have lowered the lake level 45 feet since 1941.

The control measure to reduce air pollution from PM-10 emissions in Mono Basin was adopted by the State Water Resources Control Board (SWRCB) on September 28, 1994. The control measure specifies a gradual increase in the water elevation of Mono Lake which will submerge much of the exposed emissive source area–the only feasible method to sufficiently reduce emissions to comply with the federal PM-10 Standard. The SWRCB promulgated its findings in the *Mono Lake Basin Water Right Decision 1631: Amending Water Right Licenses 10191 and 10192, City of Los Angeles, Licensee*. Pertinent sections of the adopted decision are summarized in Table 7-1. The complete Order and Certification is included in Appendix 6.

The decision of the SWRCB establishes water diversion criteria that shall apply over approximately 20 years to ensure that the water level of Mono Lake is restored to at least 6,391 feet and is sustained at or above that elevation (Figure 7-1). Under normal runoff hydrology, an estimated 26 years is required for Mono Lake to rise to this designated elevation. Extremely wet runoff years could result in the lake reaching 6,391 feet in as little as nine years, whereas it may take as long as 38 years under drought conditions (Figure 7-2). As a contingency, the SWRCB has the authority to further limit diversion of water by the Licensee to enforce the decision and its objective of protecting public trust resources. Submerging the exposed lake shore to 6,391 feet or higher will effectively eliminate emissions from lower source elevations characterized by net deflation. Emissions from the 6,391 to 6,400 foot contours will be curtailed through stabilization--a result of declining deposition of particulate matter and expanding natural vegetation cover. As will be demonstrated later in this section, predicted attainment of the PM-10 Standard will be accomplished in the Mono Basin Planning Area.

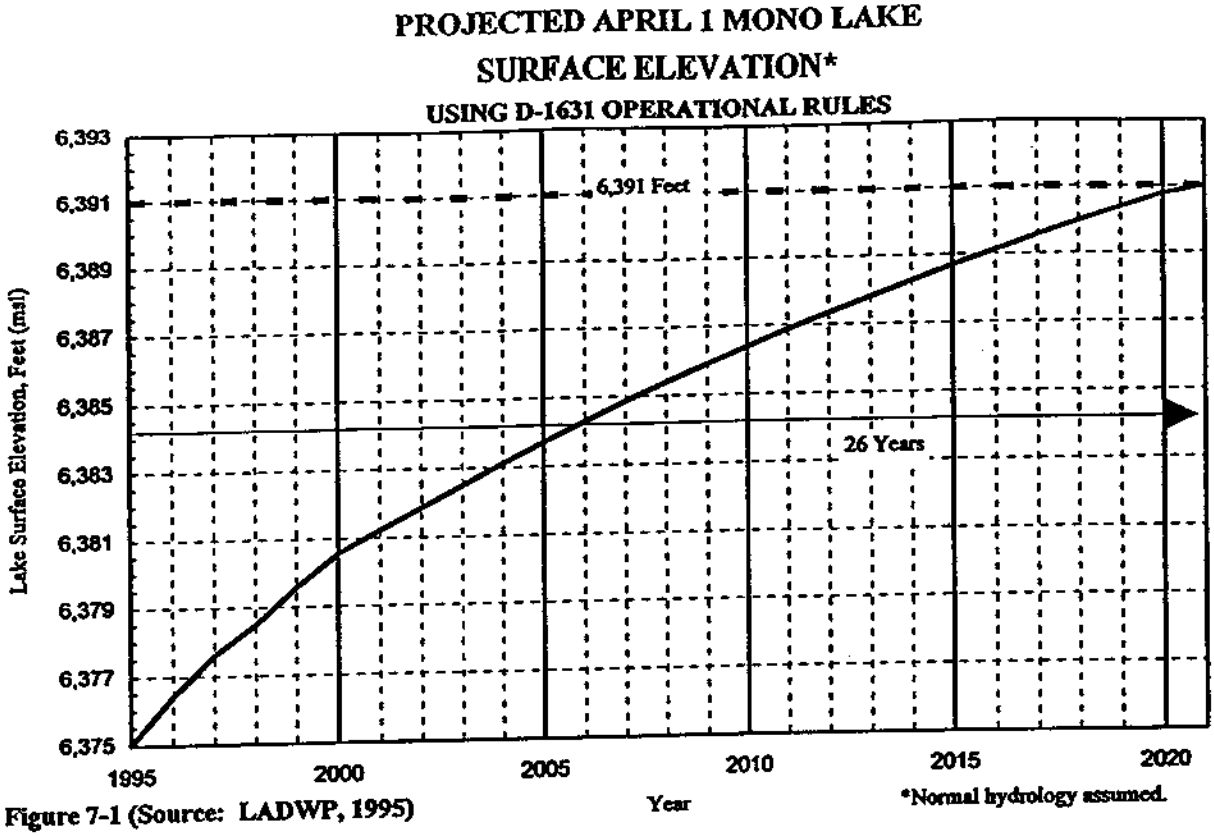


Figure 7-1 (Source: LADWP, 1995)

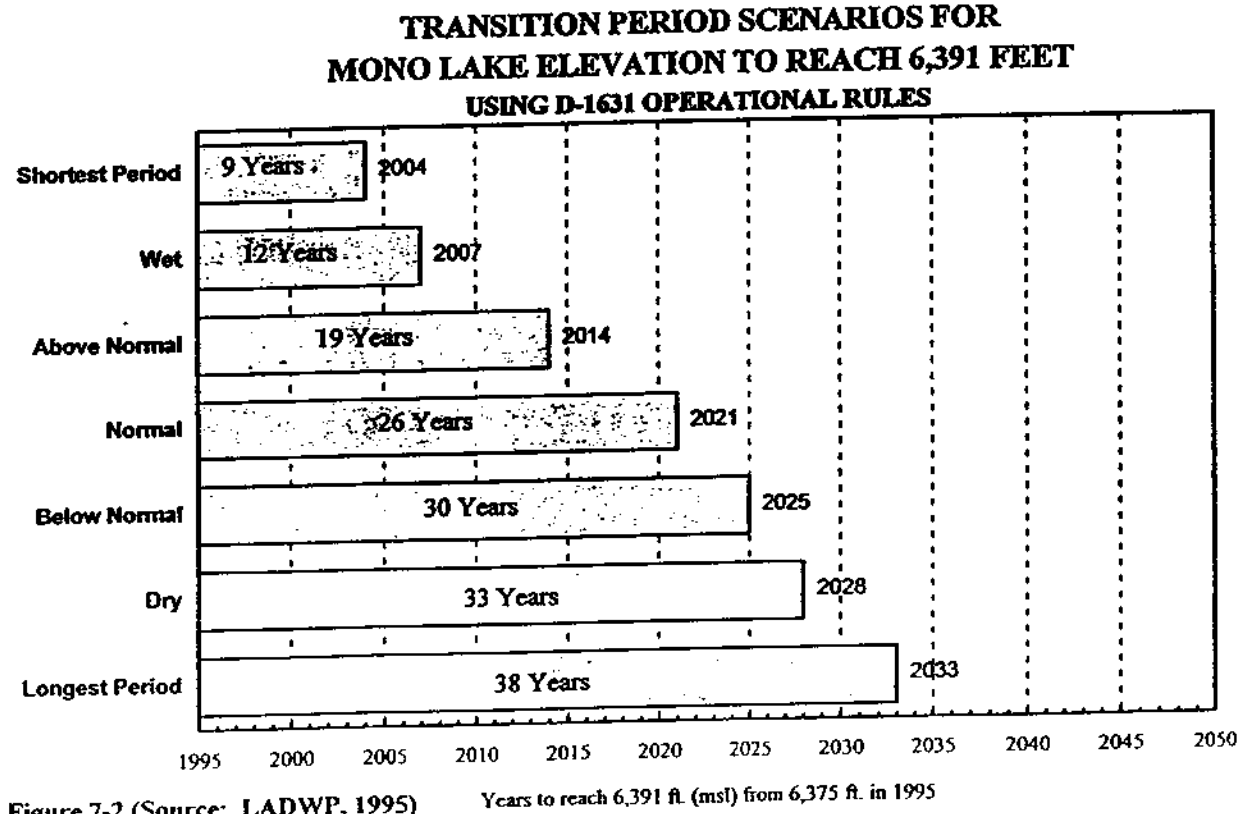


Figure 7-2 (Source: LADWP, 1995)

Assumptions Used to Develop Charts in Figures 7-1 and 7-2

Figure 7-1 Chart: Projected April 1 Mono Lake Surface Elevation

Chart values were calculated using the Los Angeles Aqueduct Simulation Model (LAASM) by using normal Mono Basin hydrology for 26 consecutive years. The simulation used a starting lake elevation of 6,375 feet (msl). Given 26 successive years of normal hydrologic conditions, the lake surface elevation would likely transition from the 1995 elevation of 6,375 feet to the 6,391 foot elevation as shown in the chart.

Figure 7-2 Chart: Transition Period Scenarios for Mono Lake Elevation to Reach 6,391 Feet

The range of transition period scenarios depicted in this chart was developed using the Mono Basin 1940-1993 hydrologic record as a database. A total of 54 independent simulations were made with each simulation using 54 years of hydrologic data. To vary the hydrologic sequence of each simulation, the database was systematically cycled through year-by-year. To facilitate this cycling process, two sets of the 1940-1993 hydrology were used. The second data set was appended to the end of the first data set. The following explanation should help clarify the process used.

The 45 successive simulations were completed as follows. The first simulation used one data set only; it began with 1940 and ended with 1993. However, the second simulation and all subsequent simulations required both data sets. The second simulation used the 1941-1993 data from the first set with 1940 from the second data set completing the 54 year cycle. Moving the starting point up one year with each iteration, 52 more simulation runs were conducted. The 54th and final simulation began with the last year of the first set, 1993, and cycled through 1992 of the second data set. Each simulation used 6,375 feet (msl) as the starting lake surface elevation. After all 54 simulations were completed, the calculated transition periods (years to reach a lake surface elevation of 6,391 feet from a starting point of 6,375 feet) from each simulation were tabulated.

Analyzing the frequency distribution of the tabulated data described above, a reasonable range was determined for the length of the transition period. It was determined that under a wet hydrologic scenario, the transition period may be as short as 12 years and under a dry hydrologic scenario, the transition may take as long as 33 years. In this context, the "Wet" scenario is defined as an upper hydrologic limit that is exceeded (conditions are wetter) only 10 percent of the time. Likewise, the "Dry" scenario is defined as a lower hydrologic limit that is exceeded (conditions are drier) only 10 percent of the time. Under extreme hydrologic conditions (wet or dry), the range is larger (9 years to 38 years). Three other probable scenarios between the "Wet" and "Dry" scenarios were also identified. These are "Above Normal," "Below Normal," and "Normal." These scenarios were also defined by looking at the frequency distribution of the 54 successive simulations. (Source: LADWP)

7.2 *Mono Lake Basin Water Decision 1631*

The Mono Lake decision requires specified actions for the recovery of resources degraded by years of water diversion from tributary streams normally flowing into the lake. The amendment of water right licenses includes the establishment of minimum in-stream flows, as well as periodic higher flows for channel maintenance and flushing. Further, the implementation of defined water diversion criteria will progressively increase the water elevation, thereby protecting aquatic and terrestrial ecosystems, enhancing scenic resources, and improving ambient air quality.

The process for review of Mono Basin water rights involved extensive evidentiary hearings. For that portion on air quality, the SWRCB considered computer modeling results predicting future air quality conditions at differing lake levels. These computer models, along with corroborating expert testimony, provided the SWRCB with the best evidence available for evaluating expected conditions under alternative proposals. The air quality improvement predicted as a result of increasing the water elevation to 6,391 feet or above was a determining factor in the final decision.

"[T]his decision and the process by which it has been reached satisfy the California Supreme Court's objective of taking `a new and objective look at the water resources of the Mono Basin.' (National Audubon Society v. Superior Court, 33 Cal.3d at 452, 189 Cal. Rptr. at 369.) The requirements set forth in the order . . . are in accord with the Court's mandate to protect public trust resources where feasible and the mandate of the California Constitution to maximize the reasonable and beneficial use of California's limited water resources."[34]

Table 7-1

MONO BASIN WATER RIGHT LICENSE AMENDMENTS

MINIMUM IN-STREAM FLOWS

- Establishes specific flow requirements (in cfs) for Lee Vining, Walker, Parker, and Rush Creeks for dry, normal, and wet years.
- Requires that specified flows remain in the stream channel and not be diverted.
- Requires release of water from Grant Lake storage, if necessary, to maintain dry year flow requirements in Rush Creek.

CHANNEL MAINTENANCE AND FLUSHING

- Establishes specific channel maintenance and flushing flow requirements for Lee Vining, Walker, Parker, and Rush Creeks for dry, normal, and wet years.
- Requires that change in flow not exceed specified "ramping rates."

HYDROLOGIC YEAR-TYPE CLASSIFICATION

- Establishes guidelines for determination of hydrologic year-type for April 1-March 31 period, including classification of projected runoff into dry, normal, and wet (LADWP Runoff Forecast Model).

MEASUREMENT OF STREAM FLOW

- Establishes procedures for measurement of stream flow above and below diversion facilities and for maintenance of records.

WATER DIVERSION CRITERIA

- Establishes procedure for measuring the water level of Mono Lake in order to set diversion limits for each April 1-March 31 period.
- Establishes acre-foot diversion limits for varying water levels until lake reaches 6,391 feet.
- Requires reconsideration of license amendments if water level has not reached elevation of 6,391 feet by September 28, 2014.
- Establishes acre-foot diversion limits once water level of Mono Lake attains 6,391 feet.

AUTHORITY

- Recites continuing authority of the State Water Resources Control Board over licenses, pursuant to California Water Code Sections 100 and 275 and common law public trust doctrine.

MONO LAKE BASIN WATER RIGHT DECISION 1631

PERTINENT SECTIONS OF ORDER AND CERTIFICATION

ORDER

IT IS HEREBY ORDERED that Water Right Licenses 10191 and 10192 are amended to include the following conditions:

1. For protection of fish in the specified streams, Licensee shall bypass flows below Licensee's points of diversion equal to the flows specified below or the streamflow at the point of diversion, whichever is less. However, if necessary to meet the dry year flow requirements on Rush Creek, Licensee shall release water from storage at Grant Lake Reservoir under the conditions specified below. The flows provided under this requirement shall remain in the stream channel and shall not be diverted for any other use.

   a. Lee Vining Creek

Dry Year Flow Requirements	
April 1 through September 30	37 cfs
October 1 through March 31	25 cfs

Normal Year Flow Requirements

April 1 through September 30	54 cfs
October 1 through March 31	40 cfs

Wet Year Flow Requirements

April 1 through September 30	54 cfs
October 1 through March 31	40 cfs

b. Walker Creek

Flow Requirements for All Types of Water Years

April 1 through September 30	6.0 cfs
October 1 through March 31	4.5 cfs

c. Parker Creek

Flow Requirements for All Types of Water Years

April 1 through September 30	9.0 cfs
October 1 through March 31	6.0 cfs

d. Rush Creek

Dry Year Flow Requirements

April 1 through September 30	31 cfs
October 1 through March 31	36 cfs

Normal Year Flow Requirements

April 1 through September 30	47 cfs
October 1 through March 31	44 cfs

Wet year Flow Requirements

April 1 through September 30	68 cfs
October 1 through March 31	52 cfs

The dry year flow requirements in Rush Creek shall be maintained, if necessary, by release of stored water from Grant Lake until Grant Lake reaches a volume of 11,500 acre-feet. If Grant Lake storage falls below 11,500 acre-feet,

the instream flow requirement shall be the lesser of the inflow to Grant Lake from Rush Creek or the specified dry year flow requirement.

For normal and wet hydrologic years, the instream flow requirements shall be the requirements specified above or the inflow to Grant Lake from Rush Creek, whichever is less. If during normal and wet hydrologic years the inflow to Grant Lake from Rush Creek is less than the dry year flow requirements, then Licensee shall release stored water to maintain the dry year flow requirements until Grant Lake storage falls to 11,500 acre-feet or less.

2. Licensee shall provide channel maintenance and flushing flows for each stream from which water is diverted in accordance with the flows specified below. In the event that the flows at the Licensee's points of diversion on Lee Vining Creek, Walker Creek and Parker Creek are insufficient to provide the channel maintenance and flushing flow requirements, Licensee shall bypass the highest flows which are expected to be present at its points of diversion for the length of time specified in the tables below, and shall notify as soon as reasonably possible the Chief of the Division of Water Rights of the reason that the normally applicable channel maintenance and flushing flow requirements could not be met. In addition, at times when Licensee is responsible for the change in flow in any of the streams from which water is diverted, Licensee shall adjust the rate of change of flow so as not to exceed the "ramping rate" specified below for each stream. Licensee is not required to compensate for fluctuations in the flow reaching Licensee's point of diversion. The specified ramping rates shall be determined based on the percentage of change in flow from the average flow over the preceding 24 hours.

a. Lee Vining Creek

CHANNEL MAINTENANCE & FLUSHING FLOW REQUIREMENTS LEE VINING CREEK

HYDROLOGIC CONDITION	REQUIREMENT
DRY YEAR	NO REQUIREMENT
NORMAL YEAR	160 CFS FOR A MINIMUM OF 3 CONSECUTIVE DAYS DURING MAY, JUNE OR JULY.
WET YEAR	160 CFS FOR 30 CONSECUTIVE DAYS DURING MAY, JUNE OR JULY
RAMPING RATE - NOT TO EXCEED 20% CHANGE DURING ASCENDING FLOW AND 15% DURING DESCENDING FLOWS PER 24 HOURS	

b. Walker Creek

CHANNEL MAINTENANCE AND FLUSHING FLOWS FOR LOWER WALKER CREEK

HYDROLOGIC CONDITION	REQUIREMENT
DRY YEAR	NO REQUIREMENT
NORMAL YEAR	15 TO 30 CFS FOR 1 TO 4 CONSECUTIVE DAYS BETWEEN MAY 1 AND JULY 31
WET YEAR	15 TO 30 CFS FOR 1 TO 4 CONSECUTIVE DAYS BETWEEN MAY 1 AND JULY 31
RAMPING RATE - NOT TO EXCEED 10% CHANGE IN STREAMFLOW PER 24 HOURS	

c. Parker Creek

CHANNEL MAINTENANCE & FLUSHING FLOWS FOR LOWER PARKER CREEK

HYDROLOGIC CONDITION	REQUIREMENT
DRY YEAR	NO REQUIREMENT
NORMAL YEAR	25 TO 40 CFS FOR 1 TO 4 CONSECUTIVE DAYS BETWEEN MAY 1 AND JULY 31
WET YEAR	25 TO 40 CFS FOR 1 TO 4 CONSECUTIVE DAYS BETWEEN MAY 1 AND JULY 31
RAMPING RATE - NOT TO EXCEED A 10% CHANGE IN STREAMFLOW PER 24 HOURS	

d. Rush Creek

CHANNEL MAINTENANCE & FLUSHING FLOW REQUIREMENTS RUSH CREEK

HYDROLOGIC CONDITION	REQUIREMENT
DRY YEAR	NO REQUIREMENT
DRY-NORMAL YEAR	NO REQUIREMENT
NORMAL YEAR	200 CFS FOR 5 DAYS
WET-NORMAL YEAR	300 CFS FOR 2 CONSECUTIVE DAYS RAMP DOWN TO 200 CFS. MAINTAIN 200 CFS FOR 10 DAYS
WET YEAR	300 CFS FOR 2 CONSECUTIVE DAYS RAMP DOWN TO 200 CFS. MAINTAIN 200 CFS FOR 10 DAYS
RAMPING RATE - NOT TO EXCEED A 10% CHANGE IN STREAMFLOW PER 24 HOURS	

Runoff year definition:

Dry	80-100% exceedence (68.5% of average runoff)
Dry-Normal	60-80% exceedence (between 68.5% and 82.5% of average runoff)
Normal	40-60% exceedence (between 82-5% and 107% of average runoff)
Wet-Normal	20-40% exceedence (between 107% and 136.5% of average runoff)
Wet	0-20% exceedence (greater than 136.5% of average runoff)

The ramping requirement applies to changes in flow made by LADWP. LADWP is not required to compensate for natural fluctuations in flow.

3. For purposes of determining: (1) applicable instream flows for protection of fish on Lee Vining Creek and Rush Creek; and (2) channel maintenance and flushing flow requirements on Lee Vining Creek, Walker Creek, Parker Creek, and Rush Creek, the hydrologic year type classification shall be determined using projected unimpaired runoff for the runoff year April 1 through March 31 as estimated using the LADWP Runoff Forecast Model for the Mono Basin. The unimpaired runoff is the sum of forecasts for the Lee Vining Creek, Walker Creek, Parker Creek, and Rush Creek sub-basins.

Preliminary determinations of the runoff classification shall be made by Licensee in February, March, and April with the final determination made on or about May 1. The preliminary determinations shall be based on hydrologic conditions to date plus forecasts of future runoff assuming median precipitation for the remainder of the runoff year. Instream flow requirements prior to the final determination in May

shall be based on the most recent runoff projection. Following issuance of final determination in May, that hydrologic year classification shall remain in effect until the preliminary runoff determination made in April of the next year. The hydrologic year type classification shall be as follows:

Wet Hydrologic Conditions:	Projected runoff greater than 136.5% of average
Normal Hydrologic Conditions:	Projected runoff between 68.5% and 136.5% of average (inclusive)
Dry Hydrologic Conditions:	Runoff less than 68.5% of average

For purposes of determining the channel maintenance and flushing flow requirements on Rush Creek, the hydrologic year-type determination shall be in accordance with the criteria specified in part "d" of the preceding condition.

4. Licensee shall maintain continuous instantaneous measuring devices at each point of diversion which are satisfactory to the Chief of the Division of Water Rights and which measure the streamflow above the diversion facility and the flow immediately below the diversion facility. Licensee shall maintain detailed records from which the flow above and below the diversion facility, and the quantity of water diverted can be readily determined. Licensee shall report to the Chief of the Division of Water Rights within 72 hours any event when the flows required by this order are not met. As soon as reasonably possible, Licensee shall provide an explanation of why the required flows were not met.

6. In addition to the instream flow requirements for fishery protection, channel maintenance and flushing purposes, diversion of water under this license is subject to the limitations specified below. For purposes of determining the applicable water diversion criteria, the water level of Mono Lake shall be measured on April 1 of each year and the limitation on water diversions shall apply for the one year period of April 1 through March 31 of the succeeding year, except as otherwise specified below. The water level shall be measured at the LADWP gage near Lee Vining Creek or such other gage as is approved by the Chief of the Division of Water Rights.

a. Water diversion criteria applicable until the water level of Mono Lake reaches 6,391 feet:

(1) Licensee shall not export any water from the Mono Basin any time that the water level in Mono Lake is below 6,377 feet above mean sea level, or any time that the water level of Mono Lake is projected to fall below 6,377 feet at any time during the runoff year of April 1 through March 31.

(2) If the water level of Mono Lake is expected to remain at or above 6,377 feet throughout the runoff year of April 1 through March 31 of the succeeding year based on Licensee's final May 1 runoff projections and any subsequent runoff projections, then Licensee may divert up to 4,500 acre-feet of water per year under the terms of this license.

(3) If the water level of Mono Lake is at or above 6,380 feet and below 6,391 feet, then Licensee may divert

up to 16,000 acre-feet of water per year under the terms of this license.

(4) In the event that the water level of Mono Lake has not reached an elevation of 6,391 feet by September 28, 2014, the SWRCB will hold a hearing to consider the condition of the lake and the surrounding area, and will determine if any further revisions to this license are appropriate.

b. Water diversion criteria applicable after the water level of Mono Lake reaches 6,391 feet:

(1) Once the water level of Mono Lake has reached an elevation of 6,391 feet, no diversions shall be allowed any time that the water level falls below 6,388 feet.

(2) Once a water level of 6,391 feet has been reached and the lake level has fallen below 6,391, diversions by Licensee shall be limited to 10,000 acre-feet per year provided that the water level is at or above 6,388 feet and less than 6,391 feet.

(3) When the water level of Mono Lake is at or above 6,391 feet on April 1, Licensee may divert all available water in excess of the amount needed to maintain the required fishery protection flows and the channel maintenance and flushing flows, up to the amounts otherwise authorized under this license.

12. Pursuant to California Water Code Sections 100 and 275 and the common law public trust doctrine, all rights and privileges under this license, including method of diversion, method of use, and quantity of water diverted, are subject to the continuing authority of the State Water Resources Control Board in accordance with law and in the interest of the public welfare to protect public trust uses and to prevent waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion of said water.

The continuing authority of the SWRCB may be exercised by imposing specific requirements over and above those contained in this license with a view to eliminating waste of water and to meeting the reasonable water requirements of licensee without unreasonable draft on the source. Licensee may be required to implement a water conservation plan, features of which may include but not necessarily be limited to (1) reusing or reclaiming the water allocated; (2) using water reclaimed by another entity instead of all or part of the water allocated; (3) restricting diversions so as to eliminate agricultural tailwater or to reduce return flow; (4) suppressing evaporation losses from water surfaces; (5) controlling phreatophytic growth; and (6) installing; maintaining, and operating efficient water measuring devices to assure compliance with the quantity limitations of this license and to determine accurately water use as against reasonable water requirements for the authorized project. No

action will be taken pursuant to this paragraph unless the SWRCB determines, after notice to affected parties and opportunity for hearing, that such specific requirements are physically and financially feasible and are appropriate to the particular situation.

The continuing authority of the SWRCB also may be exercised by imposing further limitations on the diversion and use of water by the Licensee in order to protect public trust uses. No action will be taken pursuant to this paragraph unless the SWRCB determines, after notice to affected parties and opportunity for hearing, that such action is consistent with California Constitution Article X, Section 2; is consistent with the public interest; and is necessary to preserve or restore the uses protected by the public trust.

CERTIFICATION

The undersigned, Administrative Assistant to the Board, does hereby certify that the foregoing is a full and correct copy of a decision duly and regularly adopted at a meeting of the State Water Resources Control Board held on September 28, 1994.

AYE: John Caffrey
James M. Stubchaer
Marc Del Piero
Mary Jane Forster
John W. Brown

NO: None.

ABSENT: None.

ABSTAIN: None.

Maureen Marché
Administrative Assistant to the Board

7.3 Summary of Air Quality Impact

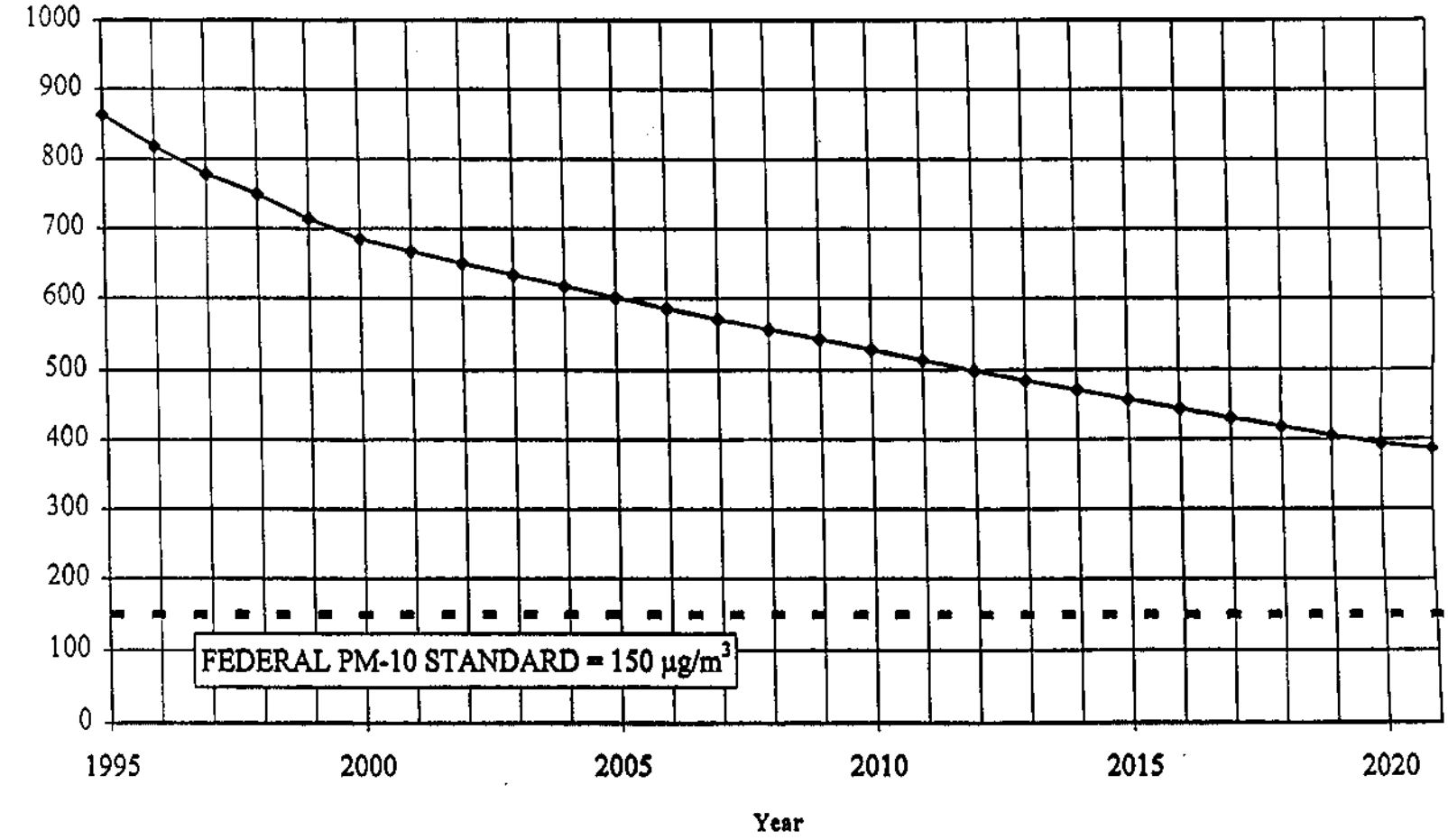
The dispersion modeling results presented in Section 5 indicate that receptor site 45 (on the 6,417 foot topographic contour) experiences the highest predicted 24-hour PM-10 concentrations. This section will describe important technical adjustments to the dispersion modeling results that produce a demonstration of attainment of the 150 $\mu g/m^3$ PM-10 Standard at receptor site 45 with a lake elevation of 6,391 feet, and a lower source boundary at 6,392 feet.

Modeled Impact. The sixth highest concentration for the May 8, 1991 design day at a source elevation of 6,393' is 356 $\mu g/m^3$ (Table 5-2, Dispersion Modeling). As noted in Section 5, the lower limits of a modeled source area will be somewhat higher in elevation than the actual lake level due to a one vertical foot stable band which has been observed to form above the water line. Specifically, a modeled source elevation of 6,393' will correspond to an actual lake level at about 6,392'.

Implementation of the water diversion criteria specified in the SWRCB decision will gradually restore the average water elevation of Mono Lake to approximately 6,391 feet above mean sea level.[35] Figure 7-3 below depicts changes in modeled PM-10 concentrations at receptor site 45 as a function of increasing water elevation.

Figure 7-3

MODELED PM-10 CONCENTRATIONS AT RECEPTOR SITE 45
for Increasing Mono Lake Surface Elevations



* Normal hydrology assumed

Adjusted Impact. The dispersion modeling study assumed that the source areas are spatially homogeneous and vary temporally solely as a function of wind speed. In fact, the higher lake shore areas closer to the prediversion water line have different surface characteristics--and less susceptibility to erosion--than lower areas of the relicted lake bed. Soil observations and sand transport measurements at 10 Mile Road on the North Shore of Mono Lake indicate that the exposed lake shore above 6,390' is a net deposition area, while the zone below that elevation is a net deflation area. (The substrate above 6,390' is comprised of coarser material, not readily suspended at the 16 mph threshold.) This means that as the water elevation increases over time, submerging source areas below the 6,390' contour, the supply of suspended or entrained particulate matter being deposited above the 6,390' contour will decrease.

Additionally, there is evidence of expansion of natural vegetation cover above the 6,390' elevation, especially in the Warm Springs and Simon Springs areas. Vegetation is an effective surface stabilizer, inhibiting wind erosion by catching and retaining particles and increasing resistance to organized flow.

The change in modeled air quality impact due to decreasing deposition from lower-to-higher exposed lake shore areas can be calculated. Modeled PM-10 emissions decrease proportionally with the decrease in size of net deflation source areas. Table 7 in Appendix 5 shows the area size of all lower source elevations (e.g., the exposed source area above each respective water elevation).

The following equation is used to derive the adjusted PM-10 concentration at receptor site 45 as the water elevation increases and submerges areas below 6,391'. It assumes a reduction of 63.4% to attain the Standard:

$$\textit{Adjusted PM-10 (source level)} = \textit{Modeled PM-10 (source level)} - (237\ \mu g/m^3) \times [\textit{Area (6,375')} - \textit{Area (lake level)}] / (2.092 \times 10^7\ m^2)$$

where: 237 = the difference between modeled (387) and attainment (150) PM-10 concentrations; and 2.092×10^7 = the difference in area size between 6,375'and 6,391' source elevations.

At a lake level of 6,391' (lower source level = 6,392'), the air quality at the highest impact site, receptor 45, is 387 $\mu g/m^3$ (interpolated from Table 10, *Final Air Quality Modeling Study*, page 31) and the area size is 3.28×10^6 m^2 (interpolated from Table 7, *Final Air Quality Modeling Study*, page 22). To meet the federal Standard, the impact at receptor 45 must be reduced from 387 to 150 $\mu g/m^3$. Considering the background concentration of 13.1 $\mu g/m^3$ which is used in the model, the source area above 6,392' must decrease its emissions by 63.4%. This would mean that the PM-10 emission rate for the source areas above 6,392'

must be about a third or less of the worst-case emission rate that was used for all areas in the model. As previously discussed, because of the decrease in deposition of erodible material and natural revegetation in the area above 6,392', it is reasonable to believe that the emission rate will be significantly less than what was used in the model and it will be less than a third of the worst-case emission rate.

The 63.4% emission reduction that is needed to attain the federal Standard at 150 $\mu g/m^3$ is determined by the following equation:

Emission
Reduction = 1 - (Standard - Background) / [Modeled Impact (at 6,392') - Background]
= 1 - [(150 $\mu g/m^3$ - 13.1 $\mu g/m^3$) / (387 $\mu g/m^3$ - 13.1 $\mu g/m^3$)]
= 0.634 or 63.4%

This level of reduction or better will be achieved through depletion of deposition material and natural revegetation on the upper playa.

Table 7-2

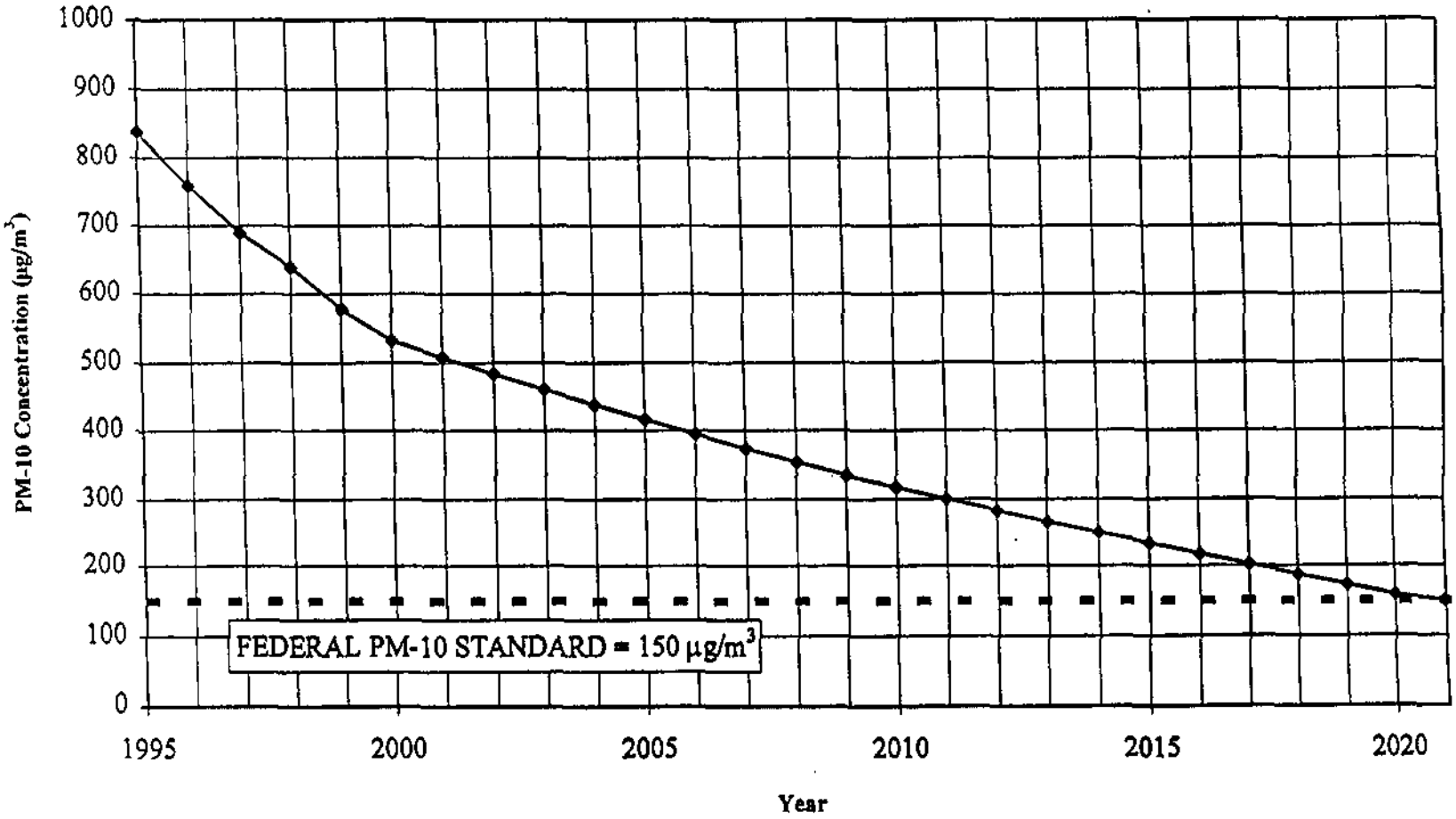
ADJUSTED PEAK 24-HOUR PM-10 CONCENTRATIONS
($\mu g/m^3$)

Water Elevation	Source Area Size (m^2)	Modeled PM-10 at Receptor 45	Adjusted PM-10 at Receptor 45
6,374'	2.42 (10^7)	895 $\mu g/m^3$	895 $\mu g/m^3$
6,376'	1.98 (10^7)	831 $\mu g/m^3$	781 $\mu g/m^3$
6,380'	1.12 (10^7)	700 $\mu g/m^3$	553 $\mu g/m^3$
6,386'	5.80 (10^6)	540 $\mu g/m^3$	332 $\mu g/m^3$
6,391'	3.28 (10^6)	387 $\mu g/m^3$	150 $\mu g/m^3$

Figure 7-4 shows the changes in adjusted PM-10 concentrations at receptor site 45 as a function of increasing water elevation.

Figure 7-4

ADJUSTED PM-10 CONCENTRATIONS AT RECEPTOR SITE 45
for Increasing Mono Lake Surface Elevations



* Normal hydrology assumed

7.4 Demonstration of Attainment

Table 7-2 and Figure 7-3 show estimates of adjusted PM-10 concentrations at receptor site 45. The combined effects of

(1) increasing the water elevation of Mono Lake to 6,391 feet, and

(2) eliminating deposition of particulate matter in the area between the 6,391' to 6,400' elevation,

accomplishes attainment of the PM-10 Standard of 150 $\mu g/m^3$. As depicted in Figure 7-1, the water elevation will have risen to approximately 6,391 feet by the year 2014. The rate of increase will depend in large part on future hydrology. However, once the prescribed elevation is restored, the present analysis indicates that the Mono Basin Planning Area will attain the PM-10 Standard and maintain compliance into the future.

The air quality monitoring program currently operating in the Mono Basin will continue PM-10 data collection in order to measure change in emissions as the water elevation increases. This observed data will be compared to predicted results.

If a contingency measure is required to ensure the targeted water elevation–and, thereby, compliance with the CAA--the SWRCB has the enforcement authority to further limit diversion of water by the Licensee. Decision 1631 includes a provision to consider appropriate revisions to the water right licenses, in the event that the water level of Mono Lake has not reached an elevation of 6,391 feet by September 28, 2014.

7.5 Clean Air Act Compliance

This submittal has been prepared to satisfy all SIP requirements of the federal Clean Air Act Amendments of 1990 in a single, consolidated document.

The Introduction described the normal sequence and longest possible time line for compliance actions, as follows:

Moderate PM-10 (RACM) SIP	June 29, 1995
Best Available Control Measures (BACM) SIP	June 29, 1998
Demonstration of Attainment (DOA) SIP	December 29, 2000
Serious Attainment Date	December 31, 2003
Extension of Attainment Date Initial Five Year	December 31, 2008

Presented below are significant accomplishments-to-date which fulfill required elements of RACM, BACM, and DOA SIP submittals for the Mono Basin as a designated nonattainment area:

- Decision 1631 found that the only feasible control measure to reduce PM-10 emissions in the planning area is to increase the water elevation of Mono Lake.The decision, by operation of law upon adoption, represents an enforceable assurance that the control measure will be implemented.

- Modeling predictions demonstrate that full implementation of the control measure will bring the area into attainment with the NAAQS. If the Standard is not attained by December 31, 2008, a 5% reduction of emissions per year is required. This is 12 years before the demonstrated attainment date when the lake level is expected to reach 6,391 feet. Assuming the ambient impact is proportional to the emissions, there must a 15.9 $\mu g/m^3$ average reduction per year to achieve the 5% reduction requirement. The average reduction for the control measure is estimated at 16.5 $\mu g/m^3$ per year. This means that the Mono Basin is expected to experience a 5.2% reduction per year after December 31, 2008 until it reaches attainment in 2021.

- Predictions of PM-10 concentrations at different source elevations provide quantitative milestones to measure emissions reduction as a function of water elevation--a method to demonstrate "reasonable further progress" (RFP). The District commits to submit RFP reports every three years to track progress toward attainment.

- Serious nonattainment areas are required to apply Best Available Control Technology (BACT) to control emissions from "major sources"--those emitting 70 tons or more of PM-10 per year. Existing District Rule 209-A (Appendix 7) meets this requirement.

In conclusion, this document substantially satisfies the compliance requirements of the Clean Air Act Amendments of 1990. It is not possible to comply with the serious attainment date of December 31, 2003, and additional time will be required. An Extension of Attainment Date--to set said date to be coterminous with the schedule prescribed by the SWRCB decision--is considered reasonable and is herewith requested.

REGULATORY TIME LINE OF CLEAN AIR ACT COMPLIANCE ACTIONS FOR THE MONO BASIN PLANNING AREA

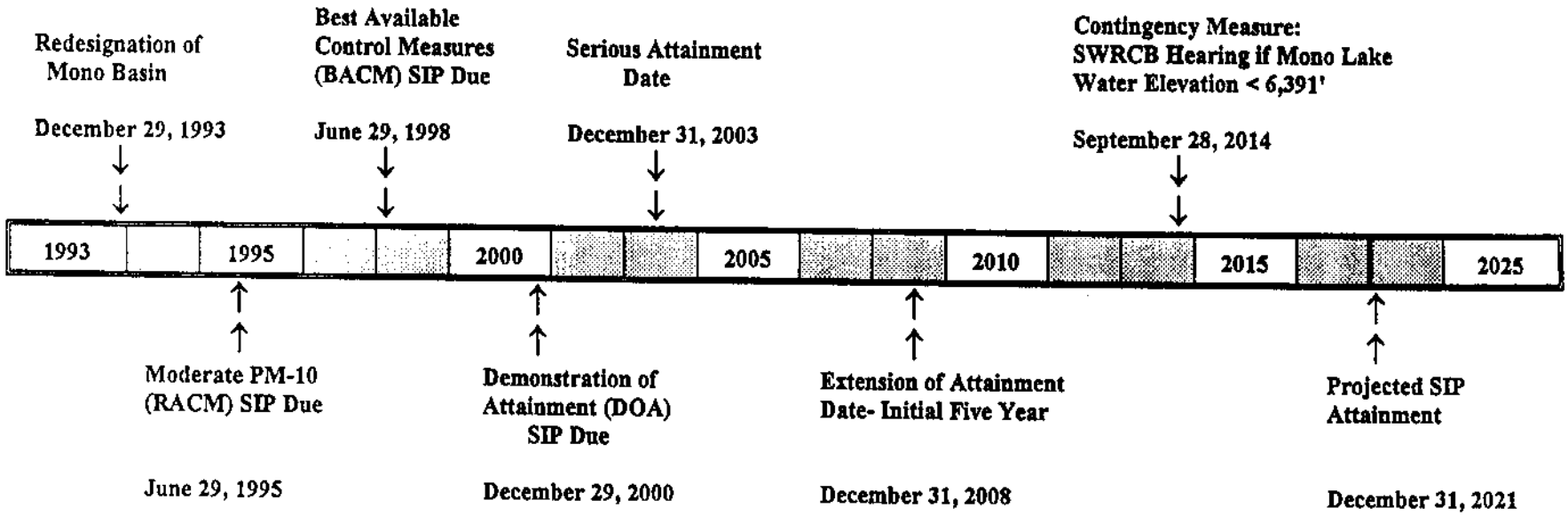


Figure 7-5 Regulatory Time Line

GLOSSARY

Numerical Units

kg	Kilogram (1,000 grams = 1 kg = 2.2 pounds)
km	Kilometer (1,000 meters = 1 km = .62 miles)
Mg	Megagrams (1,000 kilograms)
m^2	Square meter
microgram	1 millionth of a gram (1×10^{-6} grams)
micron	1 millionth of a meter (1×10^{-6} meters)
$\mu g/m^3$	Micrograms per cubic meter
μm	Micron

Glossary of Terms and Abbreviations

ADT	Average Daily Traffic
AP-42	U.S. EPA–Compilation of Air Pollution Emission Factors
BACM	Best Available Control Measures
BACT	Best Available Control Technology
BLM	Bureau of Land Management
CAA	Clean Air Act
CAC	California Administrative Code
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CDP	Census Designated Place
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
Decision 1631	*Mono Lake Basin Water Right Decision 1631: Amending Water Right Licenses 10191 and 10192, City of Los Angeles, Licensee*
Design day	Calculated peak 24-hour episode representing "worst case" air quality conditions which must be remediated to bring the source(s) into compliance with the PM-10 NAAQS
DOA	Demonstration of Attainment
EIR	Environmental Impact Report
EPA	United States Environmental Protection Agency
FDM	Fugitive Dust Model
FR	Federal Register
GBUAPCD	Great Basin Unified Air Pollution District (District)
ISCST	Industrial Source Complex Short-Term Model
LADWP	Los Angeles Department of Water and Power
NAAQS	National Ambient Air Quality Standard (Standard)
NSR	New Source Review
PM-10	Particulate matter less than 10 microns in diameter
RACM	Reasonably Available Control Measures
RFP	Reasonable Further Progress
SIP	State Implementation Plan
SWRCB	State Water Resources Control Board (California)
TSP	Total Suspended Particulate
USFS	United States Forest Service
VMT	Vehicle Miles Traveled

APPENDIX 1 - Endnotes

Endnotes

[1]Great Basin Unified Air Pollution Control District, "Owens Valley PM-10 Planning Area Best Available Control Measures State Implementation Plan," (June 1994), 5.

[2]U.S. Census Bureau, "Summary of General Characteristics of Persons: 1990," (Washington, D.C.: Government Printing Office, 1990).

[3]U.S. Forest Service, Mono Basin National Forest Service Area Comprehensive Management Plan, (Bishop, CA: Inyo National Forest, Pacific Southwest Region, 1989).

[4]Elna S. Bakker, An Island Called California, (Berkeley: University of California Press, 1984), 254.

[5]Jones & Stokes Associates, Environmental Impact Report for the Review of Mono Basin Water Rights of the City of Los Angeles, Draft, (JSA 90-171), prepared for California State Water Resources Control Board, (May 1993), 3H-13.

[6]City of Los Angeles Department of Water and Power, Mono Basin Geology and Hydrology, (Los Angeles: LADWP, Aqueduct Division, 1987).

[7]Jones & Stokes Associates, Environmental Impact Report, 3H-14.

[8]Great Basin Unified Air Pollution Control District et al., "PM-10 State Implementation Plan for the Searles Valley Planning Area," (November 1994), I-4.

[9]C. Pope, and M. Ransom, "Elementary School Absences and PM-10 Pollution in Utah Valley," Environmental Research, (1992).

[10]S. Gomez et al., "Respiratory Health Effects of Alkali Dust in Residents Near Desiccated Old Wives Lake," Archives of Environmental Health, (1992).

[11]W. Ellis, "The Aral: A Soviet Sea Lies Dying," National Geographic 177, (February 1990), 73-92.

[12]Great Basin Unified Air Pollution Control District et al., "Searles Valley ," I-5.

[13]Ibid, I-5.

[14]Ibid, I-5.

[15]Ibid, I-5.

[16]Great Basin Unified Air Pollution Control District, "Owens Valley," 18.

[17]Pierre Saint-Amand et al., "Dust Storms from Owens and Mono Valleys, California," China Lake Naval Weapons Center Report No. NWC TP 6731, (September 1986).

[18]I.C. Russell, "Quaternary History of Mono Valley, California," Reprinted from the Eighth Annual Report of the United States Geological Survey, (1889), 267-394.

[19]Jones & Stokes Associates, Environmental Impact Report, 3H-11.

[20]Ibid, 3H-19.

[21]Great Basin Unified Air Pollution Control District, "Air Quality Management Plan for the Town of Mammoth Lakes," (November 1990), 3-1.

[22]Jones & Stokes Associates, Air Quality Modeling Procedures and Modeling Results, Mono Basin Water Rights EIR Auxiliary Report No. 26, prepared for California State Water Resources Control Board, (May 1993), 1-2.

[23]McCulley, Frick & Gilman, Inc., "Final Mono Lake Air Quality Modeling Study," prepared for Great Basin Unified Air Pollution Control District, Bishop, CA (October 4, 1994), 1.

[24]Ibid, 1.

[25]Ibid, 1.

[26]Ibid, 1.

[27]Ibid, 1.

[28]Duane Ono, "Mono Lake Modeling Emission Erosion Algorithm," Memorandum from Duane Ono (GBUAPCD) to Ken Richmond (TRC Environmental Corporation). (March 23, 1993).

[29]McCulley, Frick & Gilman, Inc., 8.

[30]Ibid, 8.

[31]Ibid, 9.

[32]Ibid, 19.

[33]Ibid, 31-32.

[34]State of California Water Resources Control Board, "Mono Lake Basin Water Right Decision 1631," (September 28, 1994), 196.

[35]Ibid, 195.

APPENDIX 2 - References

References

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APPENDIX 3 - Sampling Data from Monitoring Sites

SIMIS RESIDENCE
LEE VINING
CEDAR HILL
WARM SPRINGS

MONO BASIN SAMPLING DATA

1979 THROUGH 1994

SIMIS RESIDENCE

(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
1	6/13/79					1440	668.96	BINDERUP	site only				
2	7/2/79	*				1440	125.62	until 1/2/82	NO DATA				
3	7/8/79	*											
4	7/14/79	*					68.00						
5	7/20/79	*				1380	109.71						
6	7/26/79	*					116.00						
7	8/1/79	*					66.00						
8	8/10/79	*					71.00						
9	8/13/79	*					89.00						
10	8/19/79	*				1440	266.93						
11	8/25/79	*					58.00						
12	9/1/79						75.00						
13	9/6/79	*				1590	131.69						
14	9/12/79	*				2265	55.00						
15	9/18/79	*				2010	167.41						
16	10/6/79	*				1635	117.25						
17	10/12/79	*				2310	51.00						
18	10/24/79	*				1440	193.18						
19	10/30/79	*											
20	11/5/79	*				1755	36.00						
21	11/17/79	*				1440	481.01						
22	11/23/79	*				1590	52.00						

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
23	12/5/79	*					31.00						
24	12/11/79	*					49.00						
25	12/17/79	*				2915	440.42						
26	12/23/79	*				1440	184.70						
27	1/4/80	*					24.00	Estimated Flow					
28	1/10/80	*					16.00	Time Estimated					
29	1/16/80	*					11.00	Estimated Flow					
30	1/22/80	*					13.00	Estimated Flows					
31	1/28/80	*				3570	37.00						
32	2/3/80	*					22.00						
33	2/9/80	*					28.00	Snow					
34	2/15/80	*					40.00	Strong Wind					
35	3/3/80						16.00						
36	3/10/80	*					19.00						
37	3/28/80	*					17.00						
38	4/3/80	*					53.00						
39	4/9/80	*					21.00						
40	4/16/80						12.00						
41	4/20/80					1505	1824.64						
42	4/21/80	*				1505	65.38						
43	4/27/80	*					13.00						
44	5/9/80	*				1435	52.00						

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
45	5/27/80	*					13.00						
46	6/2/80	*				1440	136.00						
47	6/8/80	*					43.00						
48	6/12/80					1530	264.35	Wind, Sand/Dust					
49	6/20/80	*					81.00						
50	6/26/80	*				N/A	134.00						
51	7/2/80	*					59.00						
52	7/14/80	*				1440	352.00	Fire nearby					
53	7/20/80	*				3015	60.00						
54	3/29/81	*				1440	112.72	Wind, Sand/Dust					
55	11/21/81					1440	9.79	SIMIS site	only for the				
56	12/5/81					1440	4.95	remaning data	sampling.				
57	12/12/81					1440	5.53						
58	12/19/81					1440	8.13						
59	12/26/81					1440	5.43						

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
60	1/2/82					1440	6.97		SNOW				NO DATA
61	2/7/82					1440	8.90						NO DATA
62	2/20/82					1440	5.64						NO DATA
63	2/27/82					1440	12.50						NO DATA
64	3/7/82					1440	6.75						NO DATA
65	3/13/82					1440	7.64						NO DATA
66	3/20/82					1440	3.67						NO DATA
67	3/25/82					1455	672.95	Wind, Sand/Dust					NO DATA
68	4/5/82	*				1440	23.50						NO DATA
69	4/11/82	*				1440	20.05						NO DATA
70	4/23/82	*				1440	26.89						NO DATA
71	5/3/82					1440	16.65						NO DATA
72	5/8/82					1450	21.47						NO DATA
73	5/16/82					1440	14.19						NO DATA
74	6/5/82					1439	18.93						NO DATA
75	6/13/82					1442	18.96						NO DATA
76	6/20/82					1458	22.60						NO DATA
77	6/27/82					1440	34.35						NO DATA
78	7/7/82					1441	28.77						NO DATA
79	7/19/82					1442	30.65			9.5	170		
80	7/26/82					1440	16.23			16.0	280		
81	8/4/82					1440	22.09			10.5	170		

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(Including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
82	8/12/82					1440	18.62			11.5	200		
83	8/19/82					1440	22.35			12.0	140		
84	8/25/82					1440	24.87			9.0	335		
85	9/6/82					1440	21.09			11.0	175		
86	9/12/82					1440	20.26			11.5	290		
87	9/23/82					1440	13.99			9.0	335		Hr(1500-2400) only
88	10/18/82					1440	27.67						NO DATA
89	10/23/82					1440	9.59			4.5	10		Hr(1500-2400) only
90	11/6/82					1440	13.72						NO DATA
91	11/13/82	*				1440	7.95						NO DATA
92	11/20/82					1440	5.14						NO DATA
93	11/27/82					1440	10.14						NO DATA
94	12/11/82					1440	4.09						NO DATA
95	12/12/82					1440	18.45						NO DATA
96	12/25/82	*				1440	2.44						NO DATA
97	1/1/83					1440	9.62						NO DATA
98	1/8/83					1440	11.70						NO DATA
99	1/15/83					1440	20.07						NO DATA
100	5/18/84	*				1440	31.55						NO DATA
101	5/26/84					1440	39.37						NO DATA
102	6/26/84					1418	40.34	Fire Nearby		11.5	270		
103	7/2/84					1500	41.24			15.5	290		

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
104	9/9/84	*				1440	27.29			8.0	305		
105	10/13/84					1440	17.21	Rain		14.0	355		
106	12/8/84	*				1440	8.85						NO DATA
107	5/20/86	*	1389	79.41						19.0	190		
108	5/26/86	*	223	48.82	7.56			RUN SHORTENED		10.0	190		
109	6/1/86	*	0					NO RUN					NO DATA
110	6/7/86	*	0					NO RUN					NO DATA
111	6/13/86	*	70	97.03	4.72			RUN SHORTENED		9.0	247		
112	6/19/86	*	1534	13.23			13.00			12.0	252		
113	6/25/86	*	1467	17.39			17.00			12.0	214		
114	7/1/86	*	1416	18.24						7.0	270		
115	7/7/86	*	1496	14.99						14.0	204		
116	7/13/86	*	1493	19.94						12.0	213		
117	7/19/86	*	1399	17.44						13.0	5		
118	7/25/86	*	746	18.15	9.40			RUN SHORTENED		16.0	337		
119	7/31/86	*	0					NO RUN		8.0	353		Hr(1200-2400) only
120	8/6/86	*	1389	20.92						16.0	185		
121	8/12/86	*	0					NO RUN		11.0	292		
122	8/18/86	*	0					NO RUN		18.0	120		
123	8/24/86	*	0					NO RUN		12.0	182		
124	8/30/86	*	0					NO RUN		12.0	307		
125	9/5/86	*	0					NO RUN		7.0	275		Met Data Missing Hr(1200-1300) only

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
126	9/6/86		1339	26.03						11.0	229		
127	9/10/86		1459	14.13						7.0	334		Met Data Missing Hr(1100-1500) only
128	9/11/86	*	0					NO RUN		8.0	140		
129	9/14/86	*	1351	14.65						18.0	182		
130	9/17/86	*	0					NO RUN		26.0	248		
131	9/22/86		1514	14.21						10.0	63		Met Data Missing Hr(1100-1200) only
132	9/23/86	*	0					NO RUN		9.0	183		
133	9/29/86	*	0					NO RUN		11.0	5		
134	10/5/86	*	0					NO RUN		10.0	65		
135	10/11/86	*	0					NO RUN					NO DATA
136	10/17/86	*	0					NO RUN					NO DATA
137	10/21/86		1478	13.03			13.00						NO DATA
138	10/23/86	*	0					NO RUN					NO DATA
139	10/29/86	*	1440	9.73			10.00						NO DATA
140	11/4/86	*	1440	10.68			11.00						NO DATA
141	11/10/86	*	1443	10.26			10.00						NO DATA
142	11/16/86	*	1212	11.3	9.51			RUN SHORTENED					NO DATA
143	11/22/86	*	1446	7.56			8.00			19.0	341		Hr(1200-2400) only
144	11/28/86	*	0					NO RUN		28.0	191		
145	12/4/86	*	1443	11.45			11.00			17.0	179		
146	12/10/86	*	1144	9.61	7.63			RUN SHORTENED					NO DATA
147	12/16/86	*	1226	12.81	10.91			RUN SHORTENED		5.0	35		Hr(1100-2300) only

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(Including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
148	12/22/86	*	1441	8.73			9.00			20.0	221		
149	12/28/86	*	1441	8.6			9.00			5.0	14		Hr(0900-2400) only
150	1/3/87	*	1441	2.35								0.01	Precipitation data only
151	1/9/87	*	1441	2.86								0.00	Precipitation data only
152	1/15/87	*	900	5.46	3.41			RUN SHORTENED				0.24	Precipitation data only
153	1/21/87	*	1440	5.31								0.02	Precipitation data only
154	1/28/87	*	1303	0.51	0.46			RUN SHORTENED				0.00	Precipitation data only
155	2/2/87	*	1440	37.37								0.00	Precipitation data only
156	2/8/87	*	1144	5.91	4.70			RUN SHORTENED				0.00	Precipitation data only
157	2/14/87	*	1142	1.65	1.31			RUN SHORTENED				0.00	Precipitation data only
158	2/20/87	*	1443	2.84								0.00	Precipitation data only
159	2/26/87	*	1440	3.61								0.01	Precipitation data only
160	3/4/87	*	1409	11.16								0.00	Precipitation data only
161	3/10/87	*	1431	5.39						19.0	181	0.00	Hr(100-200,700,900-2400) only
162	3/16/87	*	1354	1.65						15.0	1	0.00	
163	3/22/87	*	1030	2.16	1.55			RUN SHORTENED		14.0	299	0.00	
164	3/28/87	*	1388	7.80									NO DATA
165	4/3/87	*	1442	11.05						13.0	200	0.00	
166	4/9/87	*	0					NO RUN		10.0	20	–	Met Data Missing Hr(400-500) only
167	4/16/87		1451	26.78						13.0	214	0.01	Hr(100-600, 800-2400) only
168	4/21/87	*	1451	11.78						9.0	34	0.00	Hr(100, 500-2400) only
169	4/26/87		1448	13.35						14.0	219	0.00	Hr(100-600, 800-2400) only

MONO BASIN SAMPLING DATA

1979 THROUGH 1994

SIMIS RESIDENCE

(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
170	4/27/87	*	0					NO RUN		11.0	235	--	
171	5/2/87		1445	12.16						15.0	24	0.00	Hr(100-300, 500-2400) only
172	5/3/87	*	0					NO RUN		13.0	20	--	Met Data Missing Hr(600-700) only
173	5/9/87	*	0					NO RUN		11.0	331	--	Hr(100-400, 800-2200) only
174	5/12/87		1443	14.28						15.0	349	0.00	Hr(100-300, 500, 900-2400) only
175	5/15/87	*	1440	16.90						16.0	11	0.00	Hr(100-500, 900-2300) only
176	5/21/87	*	1442	15.40						9.0	176	0.00	
177	5/27/87	*	1429	21.26						12.0	68	0.00	Hr(100-500, 700-2000, 2200-2400) only
178	6/2/87	*	1440	23.43						12.0	43	0.00	
179	6/8/87	*	1441	13.67						17.0	315	0.00	Hr(100-too, 800-2400) only
180	6/14/87	*	1537	23.68						23.0	212	0.00	Hr(100-400, 700-2400) only
181	6/20/87	*	1135	15.49	12.21			RUN SHORTENED		13.0	248	0.00	
182	6/26/87	*	1469	28.43						17.0	302	0.00	Hr(100-500, 700-2400) only
183	7/2/87	*	0					NO RUN		13.0	203	--	
184	7/8/87	*	352	19.60	4.79			RUN SHORTENED		14.0	13	0.00	
185	7/14/87	*	1440	18.76						17.0	321	0.00	
186	7/15/87		1448	19.71						22.0	297	0.00	Hr(100-600, 800-2400) only
187	7/20/87	*	0					NO RUN		26.0	193	--	
188	7/26/87	*	1348	19.22						22.0	220	0.00	Hr(100-500, 700-2400) only
189	7/29/87		1453	24.79						16.0	211	0.00	
190	8/1/87	*	1159	23.63	19.02			RUN SHORTENED		11.0	241	0.00	Hr(200-400, 800-2400) only
191	8/7/87	*	0					NO RUN		12.0	15	--	

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
192	8/13/87	*	1452	11.11						16.0	272	0.00	Hr(100-600, 800-2400) only
193	8/18/87		1442	18.42						10.0	159	0.00	Hr(100-1200,1600-2400) only
194	8/19/87	*	0					NO RUN		13.0	189	--	Met Data Missing Hr(600-800) only
195	8/24/87		1460	16.45						10.0	347	0.00	Hr(100-1200, 1600-2400) only
196	8/25/87	*	0					NO RUN		13.0	17	--	Met Data Missing Hr(600-700) only
197	8/31/87	*	1461	16.40						8.0	228	0.00	Hr(100-600, 800-2400) only
198	9/6/87	*	1440	58.00				BURNING		9.0	336	0.00	Hr(100-300, 500-2400) only
199	9/12/87	*	1409	36.00						16.0	301	0.00	
200	9/18/87	*	1418	19.00						10.0	14	0.00	
201	9/24/87	*	1432	27.00						9.0	246	0.00	
202	9/30/87	*	1442	9.00						7.0	22	0.00	
203	10/6/87	*	1437	23.36						8.0	154	0.00	
204	10/12/87	*	1421	13.34						17.0	1	0.00	
205	10/18/87	*	1428	12.86						7.0	201	0.00	
206	10/24/87	*	1440	6.10						11.0	219	0.00	
207	10/30/87	*	1441	4.80						8.0	26	0.00	
208	11/5/87	*	1443	4.05				FLOW TOO HIGH		12.0	218	0.00	
209	11/11/87	*	1429	6.36						9.0	25	0.00	
210	11/17/87	*	1441	3.38				SNOW		7.0	60	0.00	
211	11/23/87	*	1442	5.72						5.0	349	0.00	Hr(800-2400) only
212	11/29/87	*	1430	6.06						7.0	29	0.00	Hr(600-1000, 1200-1600, 2400) only
213	12/5/87	*	1440	8.03						14.0	42	0.00	

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
214	12/11/87	*	1441	3.39						7.0	–	0.00	Highest winds from both N and S
215	12/17/87	*	542	1.66	0.62			RUN SHORTENED		5.0	10	0.00	Hr(100-1800) only
216	12/23/87	*	1440	1.27						15.0	22	0.00	Hr(700_1400) only
217	12/29/87	*	1440	4.38						7.0	48	0.00	Hr(700-1800) only
218	1/4/88	*	1440	2.12					No TSP Dat	11.0	42	0.00	
219	1/10/88	*	1441	3.46					Until 4/91	15.0	242	0.00	
220	1/16/88	*	1440	0.33						21.0	213	0.05	Hr(1300-1900) only
221	1/22/88	*	1440	7.68								0.08	Precipitation data only
222	1/28/88	*	1440	9.74						15.0	171	0.00	
223	2/3/88	*	1440	7.95						4.0	200	0.00	Hr(1300-1700) only
224	2/9/88	*	1440	7.68						9.0	1	0.00	Hr(100-200, 500-800, 1100-2400) only
225	2/15/88	*	1440	14.85						14.0	317	0.00	Hr(100-800, 1000-2400) only
226	2/21/88	*	1478	8.36						5.0	316	0.00	Hr(700-800, 1100-2000) only
227	2/25/88		1440	15.00						6.0	27	0.00	Hr(100-800, 1100-2400)only
228	2/27/88	*	1410	8.04						8.0	48	0.00	Hr(700-800, 1100-2000) only
229	3/4/88	*	1446	6.29						8.0	178	0.00	
230	3/10/88	*	1440	5.08						17.0	16	0.00	Hr(1300-1700) only
231	3/16/88	*	1440	6.51						16.0	6	0.00	Hr(100-800,1100-2200) only
232	3/22/88	*	1440	8.06						13.0	304	0.00	Hr(100-800, 1000-2400) only
233	3/28/88	*	1440	8.08						11.0	23	0.00	Hr(1000-2300) only
234	4/3/88	*	1440	11.84						17.0	255	0.00	
235	4/9/88	*	1440	17.22						11.0	111	0.00	

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
236	4/15/88	*	1440	2.81				RAIN		12.0	109	0.03	
237	4/21/88	*	1440	3.60						11.0	--	0.00	Hr(400-2400) only' High winds from NE an
238	4/27/88	*	1440	16.91						19.0	227	0.00	
239	5/3/88	*	1440	10.62						14.0	228	0.00	
240	5/4/88		1451	26.25						22.0	190	0.00	
241	5/9/88	*	1440	10.77						10.0	46	0.00	
242	5/15/88	*	1440	13.51						22.0	223	0.00	
243	5/21/88	*	1440	16.12						12.0	212	0.00	
244	5/27/88	*	1440	10.87						10.0	176	0.00	
245	6/2/88	*	534	4.33	1.61			RUN SHORTENED		17.0	193	0.00	
246	6/8/88	*	1441	5.11						18.0	193	0.00	
247	6/14/88	*	1423	15.77						19.0	148	0.00	
248	6/20/88	*	1368	8.12				BURNING, SHORT RUN		25.0	211	0.22	
249	6/26/88	*	1440	12.71						13.0	323	0.00	
250	7/2/88	*	1440	18.31						11.0	263	0.00	
251	7/8/88	*	1441	14.66						13.0	15	0.00	
252	7/14/88	*	1440	14.83						12.0	340	0.00	
253	7/15/88		329	23.07	5.27			RUN SHORTENED		15.0	334	0.00	
254	7/20/88	*	1440	12.29						11.0	69	0.00	
255	7/21/88		1092	23.34	17.70			RUN SHORTENED		13.0		0.00	
256	7/26/88	*	928	15.41	9.93			RUN SHORTENED		19.0	219	0.00	
257	7/26/88	*	1440	8.35						19.0	219	0.00	

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
258	8/1/88	*	1440	14.63						14.0	169	0.00	
259	8/2/88		820	17.56	10.00			RUN SHORTENED		18.0	241	0.00	
260	8/7/88	*	1440	8.84						18.6	294	0.00	
261	8/8/88		1409	7.42						7.3	--	0.00	Highest winds from NE and SW
262	8/13/88	*	1440	10.38						15.2	215	0.00	
263	8/14/88		1442	15.10						19.6	204	0.00	
264	8/19/88	*	1440	20.43						9.2	235	0.00	
265	8/20/88		1440	23.23						13.8	316	0.00	
266	8/25/88	*	1440	9.44						10.3	--	0.16	Highest winds from NW and S
267	8/26/88		1440	8.35						8.7	284	0.00	
268	8/27/88		809	12.32	6.92			RUN SHORTENED		9.5	197	0.00	
269	8/31/88	*	1440	5.62						13.0	58	0.00	
270	9/1/88		1441	6.60						14.1	--	0.00	Highest winds from NW, SE and S
271	9/2/88		842	5.08	2.97			RUN SHORTENED		13.2	297	0.00	
272	9/6/88	*	1440	32.09						13.5	191	0.00	
273	9/7/88		1440	23.49						9.4	213	0.00	
274	9/12/88	*	1440	24.00						19.3	42	0.00	
275	9/13/88		1441	21.32						8.1	184	0.00	
276	9/18/88	*	1440	30.52						6.6	214	0.00	
277	9/19/88		1440	34.49						22.1	262	0.00	
278	9/24/88	*	1440	17.57						17.1	198	0.00	
279	9/25/88		1440	11.08						13.9	195	0.00	

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(Including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
280	9/30/88	*	1440	10.20						10.0	29	0.00	
281	10/1/88		1440	19.71						8.0	349	0.00	
282	10/6/88	*	1440	12.83									NO DATA
283	10/7/88		1440	10.81									NO DATA
284	10/12/88	*	1440	9.74						9.3	101	0.00	
285	10/13/88		1440	11.90						20.0	216	0.00	
286	10/18/88	*	1440	7.69						5.7	201	0.00	
287	10/19/88		1440	12.82						7.2	--	0.00	Highest winds from SW and E
288	10/24/88	*	1440	13.72						6.5	72	0.00	
289	10/25/88		1440	11.18						5.7	61	0.00	
290	10/30/88	*	1440	11.75						7.0	39	0.00	
291	10/31/88		1276	9.10	8.06			RUN SHORTENED		6.0	32	0.00	
292	11/5/88	*	1440	8.22						19.5	238	0.00	
293	11/6/88		1438	70.80						31.0	258	0.00	
294	11/11/88	*	1440	6.40						9.2	344	0.00	
295	11/12/88		1440	6.80						11.0	235	0.00	
296	11/17/88	*	1440	3.34						18.8	308	0.00	
297	11/18/88		1440	2.50						6.4	359	0.00	
298	11/23/88	*	1440	4.88				SNOW		25.7	175	0.34	
299	11/24/88		1443	2.20						11.7	168	0.07	
300	11/29/88	*	1440	3.30						5.6	46	0.00	
301	11/30/88		1440	3.29						5.6	12	0.02	

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
302	12/5/88	*	1440	3.51						5.3	349	0.00	
303	12/6/88		1440	3.86						7.4	–	0.00	Highest winds from W and NE
304	12/11/88	*	1440	3.91						5.4	32	0.00	
305	12/12/88		1440	7.70						5.5	38	0.00	
306	12/17/88	*	0					NO RUN		10.7	115	0.01	
307	12/23/88	*	1443	6.05						15.3	192	0.05	
308	12/24/88		100	48.79	3.39			RUN SHORTENED		27.9	238	0.30	
309	12/29/88	*	0					NO RUN		5.0	5	0.05	
310	12/30/88		1439	10.01						18.0	244	0.01	
311	1/4/89	*	1440	5.16						5.8	3	0.07	
312	1/5/89		1440	5.34						20.8	192	0.04	
313	1/10/89	*	1440	2.25						24.6	11	0.00	
314	1/11/89		1440	0.80						7.0	32	0.00	
315	1/16/89	*	1441	3.13						3.7	8	0.01	
316	1/17/89		1441	6.26						5.9	34	0.01	
317	1/22/89	*	1440	4.40						18.5	269	0.00	
318	1/23/89		1440	4.78						12.4	221	0.00	
319	1/28/89	*	1280	6.93	6.16					5.3	339	0.00	
320	1/29/89		1440	5.99			318.00			5.8	288	0.00	
321	2/1/89		735	10.61	5.42		402.00	SNOW, EPISODE RUN		24.4	236	0.00	Hr(100-1100, 1400-2400) only
322	2/2/89		1440	13.61			413.00			21.5	246	0.00	
323	2/3/89	*	0				377.67	NO RUN		19.1	211	0.02	

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
324	2/9/89	*	1442	7.54				SNOW		9.1	49	0.05	
325	2/10/89		494	1.91	0.66			RUN SHORTENED		9.5	42	0.04	
326	2/15/89	*	0					NO RUN		7.8	44	0.00	
327	2/21/89	*	0					NO RUN		8.2	18	0.00	
328	2/27/89	*	0					NO RUN		14.8	290	0.00	
329	3/5/89	*	0					NO RUN		5.1	314	0.00	
330	3/11/89	*	0					NO RUN		22.6	190	0.00	
331	3/17/89	*	0					NO RUN		7.4	--	0.00	Highest winds from SE and NE
332	3/23/89	*	0					NO RUN		20.5	250	0.00	
333	3/29/89	*	0					NO RUN		12.2	290	0.00	
334	3/31/89		1440	19.95						14.0	268	0.00	
335	4/1/89		1440	7.71						17.0	253	0.01	
336	4/2/89		1440	7.42						21.1	250	0.00	
337	4/4/89	*	1440	5.83						10.0	--	0.00	Highest winds from SW and NE
338	4/5/89		740	7.59	3.90			RUN SHORTENED		10.0	--	0.00	Highest winds from SW and NW
339	4/10/89	*	0					NO RUN		16.3	263	0.00	
340	4/14/89		1454	30.75						13.8	250	0.00	
341	4/15/89		1440	22.46						15.7	294	0.00	
342	4/16/89	*	1375	7.49						11.5	296	0.00	
343	4/19/89		651	6.98	3.16			RUN SHORTENED		17.0	184	0.00	
344	4/21/89		871	449.44	271.85			EPISODE RUN		29.3	199	0.00	
345	4/22/89	*	1423	18.62						18.4	248	0.00	

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
346	4/26/89		1440	3.96						14.4	77	0.00	
347	4/28/89	*	1442	4.63						12.6	32	0.00	
348	4/29/89		1440	8.39						14.4	209	0.00	
349	4/30/89		1265	12.10	10.63			0.00		9.0	193	0.00	
350	5/2/89		1446	19.77						12.5	325	0.00	
351	5/3/89		1441	11.15						16.1	25	0.00	
352	5/4/89	*	1398	8.33						13.5	28	0.00	
353	5/6/89		1439	15.66						15.1	224	0.00	Hr(100-1200,1500-2400) only
354	5/7/89		1440	30.88						11.4	290	0.00	
355	5/8/89		1424	13.39						15.5	48	0.00	
356	5/10/89	*	1445	5.00						17.1	55	0.00	
357	5/11/89		1440	4.35						13.6	349	0.00	
358	5/12/89		1436	7.42						13.2	336	0.00	
359	5/14/89		738	19.11	9.79			RUN SHORTENED		19.4	327	0.00	
360	5/15/89		1447	15.57						12.4	4	0.00	
361	5/16/89	*	1440	7.69						12.2	10	0.00	
362	5/22/89	*	1426	11.01						22.0	193	0.00	
363	5/26/89		1440	7.96						11.7	220	0.00	
364	5/27/89		1440	10.29						19.1	244	0.00	
365	5/28/89	*	1425	23.53						22.0	253	0.00	
366	5/30/89		1443	3.26						12.5	19	0.00	
367	5/31/89		1440	5.33						9.3	–	0.00	Highest winds from S and NE

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
368	6/1/89		1436	5.75						9.6	2	0.00	
369	6/3/89	*	1444	9.00						14.3	296	0.00	
370	6/4/89		1439	7.54						14.8	89	0.00	
371	6/5/89		985	9.95	6.81			RUN SHORTENED		8.2	–	0.00	Highest winds from S, E and N
372	6/7/89		1422	7.23						13.7	56	0.00	
373	6/9/89	*	1446	9.39						13.9	53	0.00	
374	6/10/89		1438	10.18						12.5	358	0.00	
375	6/11/89		1398	13.01						12.8	65	0.00	
376	6/15/89	*	1443	21.41						21.9	250	0.00	
377	6/16/89		1440	5.60						12.7	287	0.00	
378	6/17/89		1439	8.33						12.2	285	0.00	
379	6/18/89		1434	8.19						11.0	231	0.00	
380	6/19/89		1406	10.20						18.3	224	0.00	
381	6/21/89	*	1445	11.59						12.2	27	0.00	
382	6/22/89		1441	13.21						13.4	313	0.00	
383	6/23/89		1440	15.85						13.7	4	0.00	
384	6/24/89		1439	8.41						18.7	211	0.00	
385	6/25/89		1440	7.14						10.0	27	0.00	
386	6/27/89	*	1440	14.10						16.6	273	0.00	
387	6/28/89		1439	16.93						25.2	190	0.00	
388	6/29/89		1394	9.91						24.6	212	0.00	
389	7/3/89	*	1443	15.14									NO DATA

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
390	7/4/89		1441	10.36									NO DATA
391	7/5/89		1440	11.79									NO DATA
392	7/6/89		1441	9.35									NO DATA
393	7/7/89		1440	15.11									NO DATA
394	7/9/89	*	1442	18.89						11.6	35	0.00	Hr(100-1200,1500-2400) only
395	7/10/89		1441	10.94						11.1	195	0.00	
396	7/11/89		1440	12.30						17.6	213	0.00	
397	7/12/89		900	14.41	9.01			RUN SHORTENED		9.6	234	0.00	
398	7/15/89	*	0					NO RUN					NO DATA
399	7/21/89	*	0					NO RUN					NO DATA
400	7/27/89	*	0					NO RUN					NO DATA
401	8/2/89	*	0					NO RUN					NO DATA
402	8/8/89	*	0					NO RUN					NO DATA
403	8/14/89	*	0					NO RUN					NO DATA
404	8/20/89	*	0					NO RUN					NO DATA
405	8/22/89		785	19.52	10.64			EPISODE RUN					NO DATA
406	8/23/89		1441	19.47									NO DATA
407	8/24/89		1441	7.54									NO DATA
408	8/25/89		1440	7.64									NO DATA
409	8/26/89	*	1440	13.54									NO DATA
410	8/29/89		509	28.01	9.90			EPISODE RUN					NO DATA
411	8/30/89		1440	10.49									NO DATA

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
412	8/31/89		1440	8.59									NO DATA
413	9/1/89	*	1440	10.88									NO DATA
414	9/2/89		877	8.98	5.47			EPISODE RUN					NO DATA
415	9/3/89		1440	9.10									NO DATA
416	9/4/89		1440	12.71									NO DATA
417	9/5/89		645	14.05	6.29			RUN SHORTENED		14.0	247	---	Hr(1600-2400) only
418	9/6/89		1440	19.33						24.6	240	0.00	
419	9/7/89	*	1440	14.86						16.9	7	0.00	
420	9/8/89		735	9.79	5.00			RUN SHORTENED		9.0	19	---	
421	9/9/89		1440	11.18						10.3	345	0.00	
422	9/10/89		1440	11.29						10.0	19	0.00	
423	9/11/89		576	12.00	4.80			EPISODE RUN		13.0	311	---	
424	9/12/89		1440	8.20						8.0	214	0.00	
425	9/13/89	*	1440	7.06						8.6	85	0.00	
426	9/15/89		616	20.46	8.75			RUN SHORTENED		7.0	41	---	
427	9/16/89		1440	14.58						21.9	209	0.00	
428	9/17/89		1440	11.72						27.7	186	0.00	
429	9/18/89		1440	4.82				RAIN		13.1	217	0.00	
430	9/19/89	*	657	5.41	2.47			EPISODE RUN		16.2	349	0.00	
431	9/20/89		1438	6.44						6.4	20	0.00	
432	9/21/89		928	8.00	5.16			RUN SHORTENED		8.9	85	0.00	
433	9/23/89		1445	7.46						7.9	--	0.00	Highest winds from SW and N

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
434	9/24/89		1440	6.56						16.4	208	0.00	
435	9/25/89	*	0					NO RUN		23.7	190	0.00	
436	9/29/89		1444	10.56						22.3	208	0.00	
437	9/30/89		1440	4.61						12.4	9	0.00	
438	10/1/89	*	1440	6.39						14.9	257	0.00	
439	10/2/89		778	10.13	5.47			RUN SHORTENED		20.0	190	0.00	
440	10/3/89		1438	4.49						8.9	46	0.00	
441	10/4/89		1439	6.21						7.3	29	0.00	
442	10/7/89	*	1452	8.91						6.7	47	0.00	
443	10/8/89		1441	8.48						6.4	50	0.00	
444	10/9/89		1440	7.28						6.5	50	0.00	
445	10/13/89	*	1445	7.67						6.9	177	0.00	
446	10/14/89		1440	9.50						9.6	353	0.00	
447	10/15/89		1440	8.03						10.2	11	0.00	
448	10/19/89	*	1449	10.39						14.3	171	0.00	
449	10/20/89		1444	27.29						21.6	219	0.00	
450	10/21/89		1440	13.92						20.1	185	0.00	
451	10/22/89		624	58.90	25.52			EPISODE RUN		27.0	184	0.00	
452	10/23/89		657	38.56	17.59			EPISODE RUN		31.0	201	0.00	
453	10/24/89		1440	68.14						31.0	190	0.00	
454	10/25/89	*	0					NO RUN		13.0	325	0.00	
455	10/31/89	*	1449	7.54						7.0	50	0.00	

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
456	11/1/89		1440	10.41						5.0	--	0.00	Highest winds from S and NE
457	11/2/89		1441	16.77						6.0	48	0.00	
458	11/6/89	*	1440	8.15						12.0	334	0.00	
459	11/7/89		1441	7.69						9.0	61	0.00	
460	11/8/89		1441	6.92						7.0	23	0.00	
461	11/11/89		1446	4.90						8.5	24	0.00	
462	11/12/89	*	1440	4.91						12.1	273	0.00	
463	11/13/89		929	1.49	0.96			RUN SHORTENED		8.0	333	0.00	
464	11/16/89		1452	8.89						4.4	--	0.00	Highest winds from S and N
465	11/17/89		1440	7.01						10.4	29	0.00	
466	11/18/89	*	1441	6.52						5.0	--	0.00	Highest winds from S and N
467	11/23/89		1449	5.45						10.8	261	0.00	
468	11/24/89	*	1441	5.94						14.9	259	0.00	
469	11/25/89		1440	88.39				FLOW TOO LOW		29.5	212	0.23	
470	11/30/89	*	1425	5.53						5.2	42	0.06	
471	12/1/89		1440	5.93						4.6	19	0.03	
472	12/2/89		1434	10.43				FLOW TOO LOW		4.8	36	0.01	
473	12/6/89	*	1449	4.68						4.7	47	0.00	
474	12/7/89		1439	3.20						3.3	--	0.00	Highest winds from S and N
475	12/8/89		1430	5.32						6.2	250	0.00	
476	12/12/89	*	1451	5.41						4.0	--	0.01	Highest winds from S and N
477	12/13/89		1440	5.37						4.9	21	0.00	

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
478	12/14/89		1423	4.42						4.9	–	0.01	Highest winds from W, NW and N
479	12/18/89	*	1449	4.07						5.4	3	0.00	
480	12/19/89		1441	5.29						5.3	37	0.01	
481	12/20/89		1425	2.59						3.6	179	0.01	
482	12/24/89	*	1449	4.90						3.9	345	0.00	
483	12/25/89		1440	3.03						4.7	360	0.01	
484	12/26/89		1441	5.40						4.0	59	0.04	
485	12/29/89		1446	6.20						8.7	26	0.01	
486	12/30/89	*	1441	6.16						5.7	7	0.01	
487	12/31/89		1441	6.35						8.9	28	0.00	
488	1/5/90	*	1450	2.28						5.4	3	0.00	
489	1/6/90		1440	2.30						7.1	57	0.03	
490	1/7/90		1442	0.75						10.0	289	0.00	
491	1/10/90		1449	3.10						7.5	–	0.00	Highest winds from SE and NE
492	1/11/90	*	1440	2.76						7.7	36	0.00	
493	1/12/90		1440	77.11						24.9	172	0.04	
494	1/13/90		1440	1.14				SNOW		15.2	204	0.56	
495	1/17/90	*	0	0.00	0.00			NO RUN		13.0	359	0.01	
496	1/19/90		1443	3.63						4.4	–	0.04	Highest winds from NW and NE
497	1/20/90		1442	3.97				LOW FLOW		3.3	3	0.06	
498	1/23/90	*	1446	5.07						3.0	–	0.08	Highest winds from NW and NE
499	1/24/90		1441	5.11						1.3	–	0.02	Highest winds from NW and NE

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
500	1/29/90	*	1443	1.38						16.3	312	0.00	
501	1/30/90		1435	3.52						19.5	220	0.04	
502	2/4/90	*	1447	1.37						23.5	212	0.00	
503	2/5/90		1436	1.66						3.9	--	0.01	Highest winds from SW and N
504	2/10/90	*	1443	1.13						3.9	--	0.00	Highest winds from SW and NW
505	2/11/90		1420	1.20						5.6	24	0.00	
506	2/15/90		736	4.53	2.32			RUN SHORTENED		16.0	222	0.01	
507	2/16/90	*	1440	21.74						27.4	190	0.26	
508	2/17/90		1428	3.09				SNOW		20.1	195	0.10	
509	2/22/90	*	1450	1.65						4.4	19	0.00	
510	2/23/90		1440	2.49						3.6	205	0.00	
511	2/24/90		1440	2.67						3.8	16	0.00	
512	2/28/90	*	1445	1.49						5.8	180	0.00	
513	3/1/90		1441	5.56						13.3	198	0.00	
514	3/2/90		1440	0.31						6.8	28	0.00	
515	3/6/90	*	0					NO RUN		9.0	181	0.00	
516	3/7/90		1446	1.46						18.0	191	0.00	
517	3/8/90		1440	9.97						21.0	188	0.00	
518	3/9/90		832	2.53	1.46			RUN SHORTENED		6.0	280	0.00	
519	3/10/90		1448	54.45						29.9	216	0.00	
520	3/11/90		1440	1.24						16.7	288	0.00	
521	3/12/90	*	1441	0.80						10.9	40	0.00	

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
522	3/16/90		1445	2.73						6.6	354	0.00	
523	3/17/90		1441	2.60						8.2	–	0.00	Highest winds from S and NW
524	3/18/90	*	1440	4.97						6.8	205	0.00	
525	3/24/90	*	1449	6.92						12.3	264	0.00	
526	3/25/90		1440	7.53						11.5	234	0.00	
527	3/26/90		1440	5.57						13.3	259	0.00	
528	3/30/90	*	1446	6.76						12.6	30	0.00	
529	3/31/90		1441	5.89						10.3	19	0.00	
530	4/1/90		1441	6.57						8.4	–	0.00	Highest winds from SW and E
531	4/4/90		1445	4.56						15.6	1	0.00	
532	4/5/90	*	1441	5.58						17.4	316	0.30	
533	4/6/90		1441	4.46						15.9	312	0.00	
534	4/11/90	*	1460	5.07						12.9	311	0.00	
535	4/12/90		776	6.24	3.36			RUN SHORTENED		9.0	181	0.00	
536	4/15/90		1441	20.34						14.0	212	0.00	
537	4/16/90		1438	9.62						14.5	208	0.00	
538	4/17/90	*	0					NO RUN		12.1	102	0.02	
539	4/22/90		1444	6.75						13.0	297	0.00	
540	4/23/90	*	1440	5.79						19.6	272	0.07	
541	4/24/90		1441	4.91						22.2	356	0.00	
542	4/27/90		800	4.93	2.74			RUN SHORTENED		14.0	304	0.00	
543	4/28/90		50	6.79	0.24			RUN SHORTENED		23.0	293	0.00	

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
544	4/29/90	*	1442	5.72						17.6	4	0.00	
545	5/5/90	*	1441	10.63						10.1	338	0.00	
546	5/6/90		1442	12.98						18.7	241	0.00	
547	5/7/90		1440	7.79						17.8	253	0.00	
548	5/11/90	*	1448	13.22						13.5	296	0.00	
549	5/12/90		1439	13.46						17.1	222	0.00	
550	5/13/90		1377	9.82						11.5	219	0.00	
551	5/14/90		738	19.85	10.17			EPISODE RUN		16.0	282	0.00	
552	5/15/90		1437	17.35						11.2	14	0.00	
553	5/17/90	*	1443	18.88						18.7	237	0.00	
554	5/18/90		1437	12.71						15.3	248	0.00	
555	5/19/90		1441	8.57						15.0	285	0.00	
556	5/20/90		1441	7.24						16.2	227	0.00	
557	5/21/90		1441	16.42						21.7	211	0.00	
558	5/22/90		1443	12.47						21.3	197	0.00	
559	5/23/90	*	1440	76.95						26.0	196	0.06	
560	5/27/90		1445	1.80						16.1	191	0.00	
561	5/28/90		1441	0.53				RAIN		8.3	111	0.17	
562	5/29/90	*	1437	1.66						15.8	262	0.00	
563	6/4/90	*	1443	5.85						14.4	228	0.00	
564	6/5/90		1441	6.78						15.5	297	0.00	
565	6/6/90		1434	5.56						17.1	259	0.00	

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
566	6/10/90	*	1441	10.63						18.8	242	0.00	
567	6/11/90		1441	4.80						13.7	263	0.00	
568	6/12/90		1440	4.95						14.8	319	0.00	
569	6/16/90	*	1428	5.47						13.6	192	0.00	
570	6/17/90		1440	10.49						20.4	204	0.00	
571	6/18/90		1440	9.57						16.4	15	0.00	
572	6/22/90	*	1443	16.51						21.9	212	0.00	
573	6/23/90		1442	13.77						19.3	191	0.00	
574	6/24/90		1440	8.07						19.2	193	0.00	
575	6/28/90	*	1420	7.07						8.8	9	0.00	
576	6/29/90		1440	9.83						19.6	192	0.00	
577	7/3/90		1445	9.61						11.2	213	0.00	
578	7/4/90	*	1440	9.81						15.4	183	0.00	
579	7/5/90		1432	3.76						16.3	189	0.00	
580	7/10/90	*	1446	14.82						10.4	–	0.00	Highest winds from W and E
581	7/11/90		1440	15.54						19.5	324	0.00	
582	7/12/90		1441	11.25						16.9	344	0.01	
583	7/16/90	*	1444	7.92						13.2	297	0.03	
584	7/17/90		1441	8.73						16.4	344	0.01	
585	7/18/90		1440	9.41						12.0	236	0.02	
586	7/22/90	*	1445	9.45						14.2	69	0.00	
587	7/23/90		1440	8.63						14.1	250	0.00	

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
588	7/24/90		1441	8.43						16.8	221	0.00	
589	7/28/90	*	1445	11.47						14.6	343	0.00	
590	7/29/90		1440	13.10						11.2	234	0.00	
591	7/30/90		1440	17.04						15.0	215	0.00	
592	8/3/90	*	1444	16.70						13.9	336	0.00	
593	8/4/90		1440	15.91						12.6	40	0.00	
594	8/5/90		1423	14.37						16.3	305	0.00	
595	8/9/90	*	1444	15.64				FIRE NEARBY		17.7	309	0.00	
596	8/10/90		1441	50.05				FIRE NEARBY		12.0	256	0.00	
597	8/11/90		1442	24.23				FIRE NEARBY		12.3	78	0.00	
598	8/15/90	*	1445	27.10				FIRE NEARBY		11.8	2	0.00	
599	8/16/90		1440	19.31						13.5	222	0.00	
600	8/17/90		1440	18.42				FIRE NEARBY		13.8	249	0.00	
601	8/21/90	*	1447	6.63						10.0	17	0.00	
602	8/22/90		1441	9.47						12.5	17	0.00	
603	8/23/90		1440	13.39						12.0	257	0.00	
604	8/25/90		1448	15.02						25.7	191	0.00	
605	8/26/90		1440	6.82						18.4	191	0.00	
606	8/27/90	*	1440	5.84						14.9	188	0.00	
607	9/2/90	*	1448	11.64						20.4	217	0.00	
608	9/3/90		1441	15.83						21.6	220	0.00	
609	9/4/90		1411	8.20						15.8	211	0.00	

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
610	9/8/90	*	1444	14.43						11.6	209	0.00	
611	9/9/90		1443	12.87						8.8	21	0.00	
612	9/10/90		1440	12.58						7.1	206	0.00	
613	9/14/90	*	1445	16.16						23.0	188	0.00	
614	9/15/90		1440	11.54						11.8	166	0.00	
615	9/16/90		1444	11.57						10.5	--	0.00	Highest winds from W and N
616	9/20/90	*	1448	6.61						10.9	81	0.00	
617	9/21/90		1440	7.59						15.7	118	0.01	
618	9/22/90		1409	3.34						15.2	108	0.00	
619	9/26/90	*	1445	6.70						11.9	58	0.00	
620	9/27/90		1440	6.54						13.8	300	0.07	
621	9/28/90		1440	6.74						14.4	15	0.00	
622	10/2/90	*	1451	8.40						18.0	13	0.00	
623	10/3/90		1440	4.28						9.7	74	0.00	
624	10/4/90		1440	6.01						12.4	240	0.00	
625	10/6/90		1446	8.43						12.5	70	0.00	
626	10/7/90		1440	5.74						16.7	32	0.00	
627	10/8/90	*	1441	4.22						8.2	79	0.00	
628	10/14/90	*	1447	6.37						8.2	298	0.00	
629	10/15/90		1440	5.41						12.1	284	0.00	
630	10/16/90		1441	8.43						15.5	25	0.00	
631	10/18/90		741	9.07	4.67			EPISODE RUN		20.0	180	0.00	

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
632	10/19/90		1440	4.69						20.3	26	0.00	
633	10/20/90	*	1441	2.76						5.9	343	0.00	
634	10/26/90	*	1435	5.87						6.4	30	0.00	
635	10/27/90		1440	9.13						13.2	198	0.00	
636	10/28/90		1449	6.29						8.7	191	0.00	
637	10/30/90		1446	24.57						21.9	194	0.00	
638	10/31/90		1444	43.18						21.1	202	0.00	
639	11/1/90	*	1412	2.65						15.2	10	0.00	
640	11/7/90	*	1446	2.76						7.8	325	0.00	
641	11/8/90		1440	2.18						9.4	8	0.00	
642	11/9/90		1441	3.97						4.8	218	0.00	
643	11/13/90	*	1445	72.58						20.2	176	0.00	
644	11/14/90		1443	13.06						17.4	193	0.00	
645	11/15/90		1440	8.68						6.3	182	0.00	
646	11/17/90		1433	8.74						6.1	40	0.00	
647	11/18/90		1440	7.19						10.7	33	0.00	
648	11/19/90	*	1440	5.76						9.8	182	0.00	
649	11/25/90	*	1447	120.02						27.0	232	0.06	
650	11/26/90		1442	3.47						17.5	322	0.03	
651	11/27/90		1444	5.26						4.5	33	0.07	
652	12/1/90	*	1446	6.14						9.4	320	0.00	
653	12/2/90		1440	4.60						5.4	30	0.00	

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
654	12/3/90		1435	2.69						7.6	47	0.03	
655	12/7/90	*	1448	8.10						3.3	--	0.02	Highest winds from S and N
656	12/8/90		1440	9.53						4.3	32	0.01	
657	12/9/90		1404	5.24						7.7	47	0.01	
658	12/10/90		679	43.27	20.40			EPISODE RUN		17.0	186	0.02	
659	12/11/90		1440	7.11						14.4	62	0.01	
660	12/12/90		1440	4.30						6.6	41	0.00	
661	12/13/90	*	0					NO RUN		19.3	307	0.01	
662	12/18/90		1443	13.14						21.1	260	0.01	
663	12/19/90	*	1418	15.49				SNOW		19.2	265	0.04	
664	12/25/90	*	1448	1.42						5.1	--	0.06	Highest winds from S and N
665	12/26/90		1440	1.29						6.2	--	0.02	Highest winds from S and N
666	12/27/90		1438	2.52						6.1	24	0.03	
667	12/29/90		1451	4.63						6.8	83	0.01	
668	12/30/90		1441	9.44						6.2	44	0.05	
669	12/31/90	*	1444	6.72						3.6	178	0.01	
670	1/6/91	*	1453	6.82						0.2	--	0.04	Highest winds from S and N
671	1/7/91		1439	4.28						6.1	31	0.00	
672	1/8/91		1433	3.34						8.1	45	0.03	
673	1/12/91	*	1455	6.73						10.9	323	0.00	
674	1/18/91	*	1446	4.83						8.6	35	0.03	
675	1/24/91	*	1446	3.88						7.8	6	0.01	

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
676	1/30/91	*	1440	13.13						10.1	49	0.01	
677	2/5/91	*	1448	5.54						11.9	19	0.04	
678	2/11/91	*	1448	7.91						7.7	310	0.00	
679	2/17/91	*	1436	9.75						20.3	9	0.00	
680	2/22/91		1448	12.50						17.2	15	0.00	
681	2/23/91	*	1440	14.54						12.2	18	0.00	
682	2/24/91		1440	13.55						6.3	–	0.00	Highest winds from S and E
683	2/27/91		1444	22.71						10.9	120	0.00	
684	2/28/91		1440	8.72				RAIN		18.5	172	0.00	
685	3/1/91	*	1440	3.65				RAIN		17.9	203	0.12	
686	3/7/91	*	1445	6.54						5.1	24	0.00	
687	3/13/91	*	1440	15.02				SNOW		18.9	76	0.00	
688	3/19/91	*	0					NO RUN		14.8	44	0.16	
689	3/20/91		1445	4.93						12.1	11	0.02	
690	3/25/91	*	1448	11.33				SNOW		19.9	142	0.02	
691	3/31/91	*	1443	15.32						12.0	102	0.00	
692	4/6/91	*	1446	34.27		1446	86.09			19.7	214	0.00	
693	4/12/91	*	1440	12.18		1440	30.46			14.1	10	0.03	
694	4/18/91	*	1446	12.44		1446	26.04			10.3	214	0.00	
695	4/19/91		1445	16.90		1445	25.35			20.9	227	0.00	
696	4/20/91		1440	12.09		1440	24.89			20.3	191	0.00	
697	4/24/91	*	1440	21.04		1440	59.40			21.3	230	0.00	

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
698	4/25/91		1440	10.34		1440	40.50			24.4	316	0.00	
699	4/26/91		1440	7.14		1440	15.98			17.0	301	0.00	
700	4/30/91	*	1440	71.57		1440	151.52			26.3	184	0.00	
701	5/1/91		1440	17.04		1440	44.12			21.9	198	0.00	
702	5/2/91		1441	8.92		1441	41.51			23.2	320	0.00	
703	5/6/91	*	1437	10.22		1437	31.12			15.6	291	0.00	
704	5/8/91		1437	75.05		1437	219.97			31.7	242	0.00	
705	5/9/91		1440	11.55		1440	31.55			20.5	356	0.00	
706	5/10/91		1440	4.79		1440	27.24			11.7	353	0.00	
707	5/12/91	*	1160	9.72	7.83	1456	15.87	SHORT PM-10 RUN		9.8	266	0.00	
708	5/16/91		1440	100.20		1440	191.88			28.3	190	0.00	
709	5/17/91		1441	10.17		1441	36.67			20.1	274	0.00	
710	5/18/91	*	1441	2.76		1441	20.47			15.0	329	0.00	
711	5/24/91	*	1438	12.99		1438	26.17			24.1	256	0.00	
712	5/25/91		1442	9.92		1442	16.30			20.1	235	0.00	
713	5/26/91		1428	9.74		1428	35.49			18.7	357	0.00	
714	5/29/91		1440	6.17		1440	16.96			21.4	223	0.00	
715	5/30/91	*	1440	18.82		1440	38.75			26.3	11	0.01	
716	5/31/91		1441	3.49		1441	10.65			19.7	4	0.00	
717	6/5/91	*	1439	14.19		1439	29.70			9.2	221	0.00	
718	6/11/91	*	0					NO RUN	NO RUN	9.5	209	0.00	
719	6/14/91		1440	13.09		1440	24.65			6.8	27	0.00	

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
720	6/15/91		1442	10.86		1443	22.73			5.0	244	0.00	
721	6/17/91	*	0					NO RUN	NO RUN	6.2	211	0.00	
722	6/23/91	*	1435	10.18		1435	26.29			20.6	189	0.00	
723	6/29/91	*	1432	3.84		1432	5.77			10.9	6	0.01	
724	7/5/91	*	1438	12.35		1438	26.97			23.1	215	0.00	
725	7/11/91	*	1430	12.51		1430	30.66			12.7	343	0.00	
726	7/17/91	*	1433	10.57		1433	20.77			17.0	216	0.00	
727	7/23/91	*	1426	12.53		1426	32.66			15.0	8	0.06	
728	7/29/91	*	1440	12.82		1440	29.34			15.5	217	0.00	
729	8/4/91	*	1435	11.80		1435	23.17			16.6	346	0.00	
730	8/10/91	*	1447	9.24		1447	20.51			17.3	218	0.00	
731	8/16/91	*	1436	11.17		1436	16.95			14.1	349	0.00	
732	8/22/91	*	1431	15.55		1431	23.65	NEW SAMPLER		9.8	335	0.00	
733	8/28/91	*	1440	8.12		1440	25.89			9.4	70	0.00	
734	9/3/91	*	0					NO RUN	NO RUN	17.2	335	0.00	
735	9/9/91	*	1440	10.30					NO RUN	21.5	196	0.01	
736	9/15/91	*	1433	9.94		1433	17.13			11.9	28	0.00	
737	9/21/91	*	668	18.86	8.75	1440	15.79	EPISODE PM-10 RUN		14.3	16	0.00	
738	9/26/91		1440	3.90		1440	14.35			19.8	214	0.00	
739	9/27/91	*	1440	10.36		1440	15.52			8.3	278	0.00	
740	9/28/91		1442	10.86		1442	14.66			8.7	48	0.00	
741	10/3/91	*	1436	9.96		1436	16.35			7.5	--	0.00	Highest winds from S and N

MONO BASIN SAMPLING DATA

1979 THROUGH 1994

SIMIS RESIDENCE

(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
742	10/9/91	*	1435	9.62		1435	17.50			18.0	82	0.00	
743	10/15/91	*	1445	9.72		1445	16.83			8.2	29	0.00	
744	10/16/91		1440	10.91		1440	19.78			13.7	224	0.00	
745	10/17/91		638	8.90	3.94	1440	4.10	EPISODE PM-10 RUN		13.7	264	0.00	
746	10/21/91	*	1444	8.25		1444	18.71			14.2	256	0.00	
747	10/22/91		1440	58.97		1440	111.10			31.8	248	0.00	
748	10/23/91		1430	26.20		1430	66.51			25.5	222	0.00	
749	10/25/91		1440	5.93		1440	13.12			17.4	188	0.00	
750	10/26/91		1444	4.89		1444	8.09	RAIN & SNOW		20.0	208	1.32	
751	10/27/91	*	1438	3.32		1438	1.86			15.3	35	0.12	
752	11/2/91	*	1423	3.55		1423	5.49			6.1	--	0.00	Highest winds from S and N
753	11/8/91	*	1443	4.83		1443	1.47			18.6	198	0.00	
754	11/14/91	*	0					NO RUN	NO RUN	16.0	23	0.01	
755	11/20/91	*	1450	4.42		1450	2.85			22.7	271	0.00	
756	11/26/91	*	1438	1.64		1438	8.75			5.5	13	0.00	
757	11/27/91		1439	58.45		1439	101.18			31.8	355	0.00	
758	11/28/91		1444	4.59		1444	15.53			15.3	10	0.04	
759	12/2/91	*	0					NO RUN	NO RUN	11.7	24	0.01	
760	12/8/91	*	1445	4.56		1445	2.03			5.9	--	0.00	Highest winds from S and N
761	12/14/91	*	1436	5.39		1436	4.49			3.5	44	0.01	
762	12/20/91	*	1441	3.98		1441	3.88			4.9	354	0.01	
763	12/26/91	*	1436	5.77		1436	3.37			7.8	50	0.00	

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
764	1/1/92	*	1442	2.49		1442	1.85			2.3	44	0.01	Hr(100-1900) only
765	1/7/92	*	1438	3.44		1438	1.69			8.0	302	0.02	
766	1/13/92	*	1432	5.33		1432	3.21			5.0	17	0.02	
767	1/19/92	*	1434	6.73		1434	3.18			3.9	232	0.03	
768	1/25/92	*	1445	6.13		1445	3.74			9.2	230	0.03	
769	1/31/92	*	1440	4.75		0			NO RUN	15.3	145	0.00	
770	2/6/92	*	1449	3.26		1449	1.16	SNOW		5.3	--	0.01	Highest winds from W and N
771	2/12/92	*	1439	0.55		1439	1.02	SNOW		18.0	166	0.11	
772	2/18/92	*	1445	4.95		1445	1.87			10.2	39	0.00	
773	2/24/92	*	1438	5.00		1438	6.57			6.9	208	0.00	
774	3/1/92	*	906	11.14	7.01			RUN SHORTENED	NO RUN	22.6	190	0.00	
775	3/7/92	*	0					NO RUN	NO RUN	9.4	244	0.02	
776	3/13/92	*	1440	11.75		1440	12.63			19.3	205	0.00	
777	3/14/92		1436	25.55		1436	40.92			28.1	209	0.00	
778	3/19/92	*	0					NO RUN	NO RUN	10.5	132	0.00	
779	3/20/92		1445	11.75		1445	14.55			8.3	228	0.00	
780	3/25/92	*	1433	6.73		1433	2.23			15.6	154	0.00	
781	3/31/92	*	1450	2.19		1450	4.38			16.6	23	0.06	
782	4/6/92	*	0					NO RUN	NO RUN	13.9	182	0.00	
783	4/12/92	*	1441	493.10		1441	958.75			27.1	190	0.00	
784	4/18/92	*	1447	6.05		1447	17.15			16.1	40	0.00	
785	4/24/92	*	1440	7.96		1440	21.06			7.3	10	0.00	

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
786	4/29/92		630	173.77	76.02	1440	135.97	EPISODE PM-10 RUN		24.2	224	0.00	
787	4/30/92	*	1440	21.35				NO TSP RUN	NO RUN	18.8	191	0.00	
788	5/6/92	*	1440	8.28		1440	40.65			16.0	96	0.00	
789	5/12/92	*	1439	11.85		1439	17.25			12.9	219	0.00	
790	5/16/92		1448	7.45		1448	26.84			15.8	290	0.00	
791	5/17/92		1440	14.88		1440	24.99			23.9	224	0.00	
792	5/18/92	*	1440	14.74		1440	22.72			25.4	219	0.00	
793	5/19/92		1440	16.08		1440	34.39			27.3	220	0.00	
794	5/20/92		1440	5.92		1440	13.44			19.8	312	0.00	
795	5/24/92	*	1444	24.99		1444	24.16			14.4	319	0.00	
796	5/30/92	*	1444	14.45		1444	24.47			15.8	284	0.00	
797	6/5/92	*	1440	17.26		1440	33.30			18.0	163	0.00	
798	6/11/92	*	1448	32.29		1448	65.94			23.9	170	0.00	
799	6/12/92		1441	22.34		1441	50.94			30.4	238	0.00	
800	6/13/92		1439	11.36		1439	14.25			15.9	264	0.00	
801	6/17/92	*	1444	6.91		1444	15.20			13.1	165	0.00	
802	6/23/92	*	1435	10.60		1435	16.45			20.0	189	0.08	
803	6/29/92	*	1440	38.17		1440	72.94			23.2	223	0.00	
804	7/5/92	*	1446	8.87		1446	24.44			20.8	210	0.00	
805	7/11/92	*	1442	13.54		1442	25.64			18.1	244	0.00	
806	7/12/92		1440	3.07		1440	9.96			9.8	318	0.25	
807	7/13/92		1439	13.74		1439	13.81			12.8	122	0.14	

MONO BASIN SAMPLING DATA
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SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
808	7/17/92	*	1443	8.22		1443	11.64			17.8	218	0.00	
809	7/23/92	*	1440	6.78		1440	13.87			13.7	16	0.00	
810	7/29/92	*	1444	15.78		1444	23.59			10.6	266	0.00	
811	8/4/92	*	1440	15.02		1440	19.34			10.6	326	0.00	
812	8/10/92	*	1442	11.85		1442	19.57			8.9	201	0.00	
813	8/16/92	*	1444	15.60		1444	20.72			12.1	42	0.00	
814	8/22/92	*	1450	18.96		1450	48.29			20.8	5	0.00	
815	8/28/92	*	0					NO RUN	NO RUN	13.0	234	0.00	
816	9/3/92	*	0					NO RUN	NO RUN	25.5	193	0.01	
817	9/4/92		1440	6.78		1440	14.28			11.0	30	0.00	
818	9/5/92		1440	5.89		1440	16.05			15.3	234	0.00	
819	9/9/92	*	1450	25.41		1450	37.49	FIRE NEARBY		9.2	41	0.00	
820	9/15/92	*	1444	9.02		1444	20.32			16.7	197	0.00	
821	9/18/92		1447	7.19		1447	10.82			14.4	3	0.00	
822	9/19/92		1440	12.11		1440	17.01			11.1	335	0.00	
823	9/20/92		1440	12.76		1440	15.88			10.7	39	0.00	
824	9/21/92	*	0					NO RUN	NO RUN	11.6	86	0.00	
825	9/23/92		1441	7.83		1441	17.55			18.2	230	0.00	
826	9/24/92		1438	11.64		1438	27.72			19.1	229	0.00	
827	9/27/92	*	0					NO RUN	NO RUN	11.8	79	0.00	
828	10/1/92		1445	68.27		1445	146.26			28.0	182	0.00	
829	10/2/92		1440	25.44		1440	61.99			28.6	216	0.00	

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1979 THROUGH 1994
SIMIS RESIDENCE
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			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
830	10/3/92	*	0					NO RUN	NO RUN	15.7	39	0.00	
831	10/9/92	*	1440	13.73		1440	20.47			12.5	15	0.00	
832	10/15/92	*	1440	12.03		1440	19.72			5.7	23	0.00	
833	10/20/92		579	52.47	21.10	1440	46.99	EPISODE PM-10 RUN		19.1	186	0.00	
834	10/21/92	*	1441	22.11		1441	37.54			23.8	181	0.00	
835	10/22/92		1440	10.01		1440	10.98			10.3	77	0.00	
836	10/27/92	*	1442	10.08		1442	11.89			8.8	182	0.00	
837	10/28/92		1442	8.95		1442	11.55			11.7	243	0.00	
838	10/29/92		649	22.61	10.19	1440	26.68	EPISODE PM-10 RUN		27.4	210	0.02	
839	10/30/92		1436	6.80		1436	9.18			16.1	212	0.18	
840	11/2/92	*	0					NO RUN	NO RUN	18.0	334	0.00	
841	11/8/92	*	1432	24.04		1432	49.95			18.3	293	0.00	
842	11/14/92	*	1440	9.04		1440	10.53			7.5	35	0.00	
843	11/19/92		1437	9.39		1437	15.86			17.6	312	0.00	
844	11/20/92	*	0					NO RUN	NO RUN	13.5	10	0.00	
845	11/21/92		1446	4.95		1446	12.65			8.4	44	0.00	
846	11/22/92		1440	10.17		0.00	0.00			22.1	302	0.00	
847	11/23/92		1425	6.94		1425	10.71			9.6	43	0.00	
848	11/26/92	*	1448	7.79		1448	5.72			6.0	36	0.00	
849	12/2/92	*	1440	224.62		1440	397.78			28.0	204	0.00	
850	12/6/92		1450	8.29		1450	6.72			11.3	157	0.00	
851	12/7/92		1436	4.10		1436	3.09			16.5	157	0.00	

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
852	12/8/92	*	0					NO RUN	NO RUN	33.3	226	0.27	
853	12/14/92	*	1426	6.48		1426	7.06			7.4	41	0.07	
854	12/20/92	*	1442	7.05		1442	4.27					0.03	NO WIND DATA
855	12/26/92	*	1431	5.33		1431	2.07					0.07	NO WIND DATA
856	1/1/93	*	0					NO RUN		27.9	209	0.02	
857	1/7/93	*	0					NO RUN		14.2	42	0.16	
858	1/13/93	*	0					NO RUN		24.1	184	0.15	
859	1/19/93	*	0					NO RUN		3.2	10	0.06	
860	1/25/93	*	0					NO RUN		3.5	42	0.08	Hr(100-200, 1100-2200) only
861	1/31/93	*	0					NO RUN		6.1	321	0.03	
862	2/6/93	*	0					NO RUN		4.9	29	0.00	
863	2/12/93	*	0					NO RUN		5.3	5	0.01	
864	2/18/93	*	0					NO RUN		12.2	155	0.20	
865	2/24/93	*	0					NO RUN		13.4	331	0.17	
866	3/2/93	*	0					NO RUN		4.6	14	0.00	
867	3/8/93	*	0					NO RUN		4.4	6	0.00	
868	3/14/93	*	0					NO RUN		10.4	323	0.04	
869	3/20/93	*	0					NO RUN		8.7	340	0.00	
870	3/26/93	*	0					NO RUN		14.2	334	0.67	
871	4/1/93	*	0					NO RUN		24.5	165	0.02	
872	4/7/93	*	0					NO RUN		9.5	176	0.00	
873	4/13/93	*	0					NO RUN		13.4	306	0.00	

MONO BASIN SAMPLING DATA
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SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
D		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
874	4/19/93	*	0					NO RUN		8.7	201	0.00	
875	4/25/93	*	0					NO RUN		14.4	233	0.00	
876	5/1/93	*	0					NO RUN		12.7	24	0.00	
877	5/3/93		710	814.50	401.59			EPISODE RUN		35.8	237	0.00	
878	5/4/93		1431	13.06						19.6	4	0.00	
879	5/7/93	*	0					NO RUN		27.1	300	0.00	
880	5/11/93		1439	981.31						27.7	211	0.00	
881	5/12/93		1427	658.07						31.5	216	0.00	
882	5/13/93	*	677	163.08	76.67			EPISODE RUN		29.9	195	0.00	
883	5/14/93		1436	17.49						24.2	216	0.00	
884	5/19/93	*	0					NO RUN		24.6	196	0.00	
885	5/25/93	*	739	54.53	27.98			EPISODE RUN		31.2	164	0.00	
886	5/26/93		1438	23.86						26.3	203	0.00	
887	5/27/93		678	23.05	10.85			EPISODE RUN		22.7	223	0.00	
888	5/28/93		1431	10.34						20.5	187	0.00	
889	5/31/93	*	0					NO RUN		22.1	187	0.00	
890	6/4/93		1444	45.48						22.8	173	0.00	
891	6/5/93		1427	7.24						19.5	290	0.00	
892	6/6/93	*	0					NO RUN		15.5	310	0.00	
893	6/12/93	*	0					NO RUN		15.7	17	0.00	
894	6/15/93		1443	50.15						16.9	249	0.00	
895	6/18/93	*	0					NO RUN		11.3	28	0.00	

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
896	6/22/93		1445	9.67						15.7	312	0.00	
897	6/24/93	*	0							10.8	32	0.00	
898	6/28/93		678	22.01	10.36			EPISODE RUN		32.6	245	0.00	
899	6/29/93		1433	16.07						15.0	310	0.00	
900	6/30/93	*	0					NO RUN		15.6	316	0.00	
901	7/2/93		1449	21.00						24.6	236	0.00	
902	7/3/93		1438	19.00						14.4	301	0.00	
903	7/6/93	*	0					NO RUN		12.5	4	0.00	
904	7/12/93	*	1440	15.00						16.3	307	0.00	
905	7/18/93	*	1450	21.00						19.9	197	0.00	
906	7/24/93	*	1446	17.00						11.3	16	0.00	
907	7/30/93	*	1446	14.00						19.2	188	0.00	
908	8/5/93	*	1441	13.00						15.9	4	0.05	
909	8/11/93	*	1441	19.00						18.2	183	0.00	
910	8/17/93	*	1440	13.00						7.6	168	0.00	
911	8/23/93	*	1440	17.00						13.6	212	0.00	
912	8/29/93	*	1440	18.00						15.8	25	0.00	
913	9/4/93	*	1442	22.00						11.9	352	0.00	
914	9/10/93	*	1444	17.00						11.5	288	0.00	
915	9/16/93	*	1446	26.00						24.5	262	0.00	
916	9/22/93	*	1435	13.00						16.3	254	0.00	
917	9/28/93	*	1447	12.00						9.5	102	0.00	

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
918	10/4/93	*	1443	34.00						18.0	188	0.00	
919	10/10/93	*	1447	23.00						21.0	220	0.00	
920	10/16/93	*	1446	8.00						16.0	308	0.00	
921	10/22/93	*	1438	11.00						8.0	41	0.00	
922	10/28/93	*	1417	9.00						16.0	20	0.00	
923	11/3/93	*	1444	12.00						9.3	2	0.00	
924	11/9/93	*	1440	15.00						10.1	152	0.00	
925	11/10/93		620	11.00	4.74			EPISODE RUN		24.5	186	0.00	
926	11/11/93		1430	11.00						14.8	188	0.00	
927	11/15/93	*	0					NO RUN		7.0	345	0.02	
928	11/21/93	*	1434	10.00						11.5	226	0.04	
929	11/27/93	*	1442	18.00						5.4	57	0.03	
930	11/28/93		617	14.00	6.00			EPISODE RUN		25.6	195	0.00	
931	11/29/93		1422	10.00						21.2	188	0.16	
932	12/3/93	*	0					NO RUN		6.8	52	0.03	
933	12/9/93	*	1443	7.00						10.3	139	0.00	
934	12/15/93	*	1443	2.00						14.1	287	0.07	
935	12/21/93	*	1422	6.00						5.6	329	0.02	
936	12/27/93	*	1444	12.00						5.7	37	0.01	
937	1/2/94	*	1427	19.00						7.4	16	0.01	
938	1/8/94	*	1443	19.00						18.9	223	0.02	
939	1/14/94	*	1431	13.00						5.2	185	0.02	

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
940	1/20/94	*	245	5.00	0.85			RUN SHORTENED		7.7	47	0.02	
941	1/26/94	*	1430	6.00						10.9	58	0.03	
942	2/1/94	*	1426	4.00						9.1	41	0.01	
943	2/7/94	*	1440	2.00						17.3	182	0.65	
944	2/13/94	*	1420	4.00						6.7	25	0.03	
945	2/19/94	*	1442	14.00						13.2	180	0.01	
946	2/25/94	*	1425	10.00						8.4	20	0.00	
947	3/3/94	*	0					NO RUN		12.3	289	0.00	
948	3/9/94	*	0					NO RUN		11.7	279	0.00	
949	3/15/94	*	0					NO RUN		17.2	174	0.00	
950	3/21/94	*	0					NO RUN		31.8	238	0.00	
951	3/27/94	*	0					NO RUN		13.2	29	0.00	
952	4/2/94	*	0					NO RUN		14.0	189	0.00	
953	4/8/94	*	0					NO RUN		18.0	248	0.00	
954	4/14/94	*	0					NO RUN		19.0	16	0.00	
955	4/20/94	*	0					NO RUN		21.0	214	0.00	
956	4/26/94	*	0					NO RUN		17.0	6	0.00	
957	5/2/94	*	0					NO RUN		16.0	281	0.00	
958	5/8/94	*	0					NO RUN		20.0	38	0.03	
959	5/14/94	*	0					NO RUN		23.0	169	0.00	
960	5/20/94	*	0					NO RUN		9.0	326	0.00	
961	5/26/94	*	0					NO RUN		15.0	233	0.00	

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
962	6/1/94	*	0					NO RUN		10.0	18	0.00	
963	6/7/94	*	0					NO RUN		11.0	–	0.00	Highest winds from W and N
964	6/13/94	*	0					NO RUN		17.0	239	0.00	
965	6/19/94	*	0					NO RUN		9.0	67	0.00	
966	6/25/94	*	0					NO RUN		22.0	251	0.00	
967	7/1/94	*	0					NO RUN		21.0	241	0.00	
968	7/7/94	*	0					NO RUN		11.0	47	0.00	
969	7/13/94	*	0					NO RUN		12.0	261	0.00	
970	7/19/94	*	0					NO RUN		13.0	11	0.00	
971	7/25/94	*	0					NO RUN		16.0	211	0.00	
972	7/31/94	*	0					NO RUN		21.0	211	0.00	
973	8/6/94	*	0					NO RUN		18.0	258	0.00	
974	8/12/94	*	0					NO RUN		20.0	193	0.00	
975	8/18/94	*	1433	16.00						14.0	258	0.00	
976	8/24/94	*	1434	10.00						16.0	185	0.00	
977	8/30/94	*	1431	10.00						12.0	339	0.00	
978	9/5/94	*	1443	10.00						15.0	197	0.00	
979	9/11/94	*	1370	10.00						18.0	201	0.00	
980	9/17/94	*	1460	12.00						9.0	163	0.00	
981	9/23/94	*	1459	11.00						16.0	207	0.00	
982	9/29/94	*	1367	5.00						14.0	294	0.01	
983	10/5/94	*	1440	3.00						12.0	315	0.03	

MONO BASIN SAMPLING DATA
1979 THROUGH 1994
SIMIS RESIDENCE
(including BINDERUP prior to 1/2/82)

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/Hr	Degrees	Inches	
984	10/11/94	*	1448	8.00						10.0	186	0.00	
985	10/17/94	*	1435	3.00						10.0	63	0.00	
986	10/23/94	*	1445	8.00						11.0	98	0.00	
987	10/29/94	*	1445	7.00						9.0	48	0.00	
988	11/4/94	*	1355	3.00						10.0	47	0.00	
989	11/10/94	*	1421	2.00						16.0	178	0.02	
990	11/16/94	*	1372	6.00						21.0	303		No Precipitation Data
991	11/22/94	*	1390	4.00						6.0	15		No Precipitation Data
992	11/28/94	*	1351	5.00						8.0	332		No Precipitation Data
993	12/4/94	*	1163	8.00						20.0	182		No Precipitation Data
994	12/10/94	*	1446	2.00						10.0	28		No Precipitation Data
995	12/16/94	*	1422	3.00						6.0	17		No Precipitation Data
996	12/22/94	*	1446	5.00						7.0	9		No Precipitation Data
997	12/28/94	*	1434	6.00						23.0	182		No Precipitation Data

SAMPLING DATA
MONO BASIN
1981 THROUGH 1994
LEE VINING

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Dir. of Max. Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	inute	µg/m3	µg/m3	inute	µg/m3			Miles/H	Degrees	Inches	
1	1/10/81	*				N/A	44.27						No Precipitation Data at this site
2	1/16/81	*				1440	33.28						No Meteorological Data until 12/8/85
3	1/22/81	*				1430	31.57						
4	1/28/81	*				1447	42.29						
5	2/3/81	*				1443	14.88						
6	2/9/81	*				1442	45.41						
7	2/15/81	*				1451	34.63						
8	2/21/81	*				1423	22.44						
9	2/27/81	*				1428	30.64						
10	3/5/81	*				1453	21.03						
11	3/11/81	*				1446	27.69						
12	3/17/81	*				1437	25.02						
13	3/23/81	*				1400	25.85						
14	3/29/81	*				1460	20.69						
15	4/4/81	*				1428	22.14						
16	4/10/81	*				1442	23.15						
17	4/16/81	*				1454	23.92						
18	4/22/81	*				1429	16.20						
19	4/28/81	*				1409	17.66						
20	5/4/81	*				1404	46.87						
21	5/10/81	*				1434	31.59						
22	5/16/81	*				1434	53.90						
23	5/22/81	*				1436	38.39						

SAMPLING DATA
MONO BASIN
1981 THROUGH 1994
LEE VINING

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Dir. of Max. Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	inute	µg/m3	µg/m3	inute	µg/m3			Miles/H	Degrees	Inches	
24	5/28/81	*				1430	21.08						
25	6/3/81	*				1420	25.56						
26	6/9/81	*				1431	16.51						
27	6/15/81	*				1442	19.09						
28	6/21/81	*				1441	30.36						
29	6/27/81	*				1425	49.76						
30	7/3/81	*				1445	38.30						
31	7/9/81	*				1455	34.16						
32	7/15/81	*				1452	42.97						
33	7/21/81	*				1436	33.46						
34	7/27/81	*				1438	39.32						
35	8/2/81	*				1444	26.05						
36	8/8/81	*				1398	62.06						
37	8/14/81	*				1579	40.37						
38	8/20/81	*				N/A	N/A						
39	8/26/81	*				N/A	N/A						
40	9/1/81	*				1382	63.54						
41	9/7/81	*				1419	38.09						
42	9/13/81	*				1449	23.06						
43	9/19/81	*				1443	30.88						
44	9/25/81	*				1434	18.88						
45	10/1/81	*				1428	36.42						
46	10/7/81	*				1441	38.80						

SAMPLING DATA
MONO BASIN
1981 THROUGH 1994
LEE VINING

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Dir. of Max. Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	inute	µg/m3	µg/m3	inute	µg/m3			Miles/H	Degrees	Inches	
47	10/13/81	*				1379	19.24						
48	10/19/81	*				1414	35.81						
49	10/25/81	*				N/A	N/A						
50	10/31/81	*				N/A	N/A						
51	11/6/81	*				1434	28.78						
52	11/12/81	*				1443	64.46						
53	11/18/81	*				1443	39.31						
54	11/24/81	*				N/A	N/A						
55	11/30/81	*				N/A	N/A						
56	12/6/81	*				1417	17.60						
57	12/12/81	*				1434	20.91						
58	12/18/81	*				1445	22.23						
59	12/24/81	*				1230	34.20						
60	12/30/81	*				1537	11.75						
61	1/5/82	*				1430	6.52						
62	1/11/82	*				1372	7.53						
63	1/17/82	*				1915	9.13						
64	1/23/82	*				1562	38.55						
65	1/29/82	*				1449	46.09						
66	2/4/82	*				1455	25.78						
67	2/10/82	*				1459	52.76						
68	2/16/82	*				1487	17.77						
69	2/22/82	*				1451	17.67						

SAMPLING DATA
MONO BASIN
1981 THROUGH 1994
LEE VINING

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Dir. of Max. Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	inute	µg/m3	µg/m3	inute	µg/m3			Miles/H	Degrees	Inches	
70	2/28/82	*				1537	11.33						
71	3/6/82	*				1452	30.61						
72	3/12/82	*				1423	26.65						
73	3/18/82	*				1446	15.14						
74	3/24/82	*				1569	32.12						
75	3/30/82	*				1780	5.81						
76	4/5/82	*				0			NO RUN				
77	4/6/82					1476	13.05						
78	4/11/82	*				1440	5.59						
79	4/17/82	*				1420	30.39						
80	4/23/82	*				1431	28.71						
81	4/29/82	*				1434	28.54						
82	5/5/82	*				1426	19.31						
83	5/11/82	*				0			NO RUN				
84	5/12/82					1425	21.75						
85	5/17/82	*				0			NO RUN				
86	5/23/82	*				1431	25.35						
87	5/29/82	*				3679	10.11						
88	6/4/82	*				1433	59.91						
89	6/10/82	*				1423	31.44						
90	6/16/82	*				1442	27.59						
91	6/22/82	*				1448	19.49						
92	6/28/82	*				0			NO RUN				

SAMPLING DATA
MONO BASIN
1981 THROUGH 1994
LEE VINING

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Dir. of Max. Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	minute	µg/m3	µg/m3	minute	µg/m3			Miles/H	Degrees	Inches	
93	6/29/82	*				1447	4.79						
94	7/4/82	*				1430	16.90						
95	7/10/82	*				1436	26.94						
96	7/16/82	*				1422	28.04						
97	7/22/82	*				1421	34.06						
98	7/28/82	*				1428	21.89						
99	8/3/82	*				1418	27.34						
100	8/9/82	*				1434	29.39						
101	8/15/82	*				1429	21.20						
102	8/21/82	*				1419	14.29						
103	8/27/82	*				1433	20.04						
104	9/2/82	*				2883	23.38						
105	9/8/82	*				0			NO RUN				
106	9/14/82	*				1433	32.42						
107	9/20/82	*				1441	17.35						
108	9/26/82	*				1450	3.26						
109	10/2/82	*				705	38.42		SHORT RUN				
110	10/8/82	*				1430	22.36						
111	10/14/82	*				1442	25.58						
112	10/20/82	*				1427	30.00						
113	10/26/82	*				1435	9.01						
114	11/1/82	*				1435	19.05						
115	11/7/82	*				1445	14.93						

SAMPLING DATA
MONO BASIN
1981 THROUGH 1994
LEE VINING

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Dir. of Max. Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	inute	µg/m3	µg/m3	inute	µg/m3			Miles/H	Degrees	Inches	
116	11/13/82	*				1415	26.97						
117	11/19/82	*				N/A	23.73						
118	11/25/82	*				1477	40.98						
119	12/1/82	*				1429	56.85						
120	12/7/82	*				N/A	16.80						
121	12/13/82	*				N/A	53.56						
122	12/19/82	*				1431	39.23						
123	12/25/82	*				0			NO RUN				
124	12/31/82	*				0			NO RUN				
125	1/6/83	*				1435	32.69						
126	1/12/83	*				1444	61.17						
127	5/12/84	*				1436	19.24						
128	5/18/84	*				1453	15.00						
129	5/25/84					1451	19.96						
130	5/30/84	*				1437	45.22						
131	6/5/84	*				1432	18.57						
132	6/11/84	*				1445	22.81						
133	6/17/84	*				1459	42.33						
134	6/23/84	*				1435	38.97						
135	6/29/84	*				1455	34.55						
136	7/5/84	*				1427	48.41						
137	7/11/84	*				1445	40.03						
138	7/17/84	*				1449	38.59						

SAMPLING DATA
MONO BASIN
1981 THROUGH 1994
LEE VINING

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Dir. of Max. Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	minute	µg/m3	µg/m3	minute	µg/m3			Miles/H	Degrees	Inches	
139	7/23/84	*				576	38.59						
140	7/29/84	*				1445	25.17						
141	8/4/84	*				1441	25.40						
142	8/10/84	*				1427	27.40						
143	8/16/84	*				1441	14.91						
144	8/22/84	*				1452	17.18						
145	8/28/84	*				1369	25.77						
146	9/3/84	*				1442	29.32						
147	9/9/84	*				1444	68.33						
148	9/15/84	*				1445	19.29						
149	9/21/84	*				1441	13.24						
150	9/27/84	*				1433	23.39						
151	10/3/84	*				1438	16.18						
152	10/9/84	*				1406	27.55						
153	10/15/84	*				1460	11.71						
154	10/21/84	*				1445	14.06						
155	10/27/84	*				1460	25.72						
156	11/2/84	*				1426	59.80		Sand & Dust				
157	11/8/84	*				120	9.39		Equip. problem.				
158	11/15/84					1439	24.10						
159	11/20/84	*				1440	14.10						
160	11/27/84					1437	13.61						
161	12/2/84	*				1494	26.04						

SAMPLING DATA
MONO BASIN
1981 THROUGH 1994
LEE VINING

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Dir. of Max. Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	minute	µg/m3	µg/m3	minute	µg/m3			Miles/H	Degrees	Inches	
162	12/8/84	*				1415	25.92						
163	12/14/84	*				1396	34.75						
164	12/21/84					1394	96.61						
165	12/26/84	*				1475	42.18						
166	1/1/85	*				1448	50.95						
167	1/7/85	*				1423	16.98						
168	1/13/85	*				1425	63.16						
169	1/19/85	*				1412	40.14						
170	1/25/85	*				1433	37.09						
171	1/31/85	*				1449	41.01						
172	2/6/85	*				1467	41.29						
173	2/13/85	*				1457	38.41						
174	2/18/85	*				1398	38.25						
175	2/24/85	*				0			Equip. Problem				
176	3/2/85	*				1426	21.19						
177	3/8/85	*				0			NO RUN				
178	3/9/85					1426	33.92						
179	3/14/85	*				1407	33.84						
180	3/20/85	*				1441	25.32						
181	3/26/85	*				1400	19.11						
182	4/1/85	*				1396	19.62						
183	4/7/85	*				1429	24.95						
184	4/13/85	*				1424	29.77						

SAMPLING DATA
MONO BASIN
1981 THROUGH 1994
LEE VINING

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA				
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Dir. of Max. Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	minute	µg/m3	µg/m3	minute	µg/m3			Miles/H	Degrees	Inches	
185	4/19/85	*				1412	100.83						
186	4/25/85	*				1446	42.18						
187	5/1/85	*				1444	151.38		Const. Nearby				
188	5/7/85	*				1452	61.84		Const. Nearby				
189	5/13/85	*				1420	55.92		Const. Nearby				
190	5/19/85	*				1424	68.78		Const. Nearby				
191	5/25/85	*				1428	44.80		Const. Nearby				
192	5/31/85	*				1440	70.20		Const. Nearby				
193	6/6/85	*				1454	24.06						
194	6/12/85	*				1416	189.59		Const. Nearby				
195	6/18/85	*				1440	163.94		Const. Nearby				
196	6/24/85	*				1423	280.99		Const. Nearby				
197	6/30/85	*				1432	324.47		Const. Nearby				
198	7/6/85	*				1443	56.48						
199	7/13/85					1445	65.05						
200	7/18/85	*				1437	51.52						
201	7/24/85	*				1427	39.35						
202	7/30/85	*				1416	35.90						
203	8/5/85	*				1419	88.36						
204	8/11/85	*				1434	72.86						
205	8/17/85	*				1441	49.29						
206	8/23/85	*				1426	70.42						
207	8/29/85	*				1443	115.97						

SAMPLING DATA
MONO BASIN
1981 THROUGH 1994
LEE VINING

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Dir. of Max. Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	minute	µg/m3	µg/m3	minute	µg/m3			Miles/H	Degrees	Inches	
208	9/4/85	*				1435	17.25						
209	9/10/85	*				1472	16.26						
210	9/16/85	*				1416	20.39						
211	9/22/85	*				1429	22.98						
212	9/28/85	*				0			NO RUN				
213	10/4/85	*				1460	25.78						
214	10/10/85	*				1435	18.53						
215	10/16/85	*				1401	21.92						
216	10/22/85	*				1430	28.67						
217	10/28/85	*				1424	21.53						
218	11/3/85	*				1429	27.23						
219	11/9/85	*				1456	28.57		Sand & Dust				
220	11/15/85	*				1441	14.31						
221	11/21/85	*				1432	11.97						
222	11/27/85	*				1427	11.75						
223	12/3/85	*				0			NO RUN				
224	12/4/85					1454	41.76						
225	12/9/85	*				1444	10.20		NO RUN	11.0	15		
226	12/15/85	*				1446	40.39			4.0	190		
227	12/21/85	*				1452	62.94			3.0	0		
228	12/27/85	*				1442	58.21			2.5	273		
229	1/2/86	*				1443	30.00			7.0	270		
230	1/8/86	*				1423	56.67			3.5	—		Highest winds from N and S

SAMPLING DATA
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			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Dir. of Max. Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	minute	µg/m3	µg/m3	minute	µg/m3			Miles/H	Degrees	Inches	
231	1/14/86	*				1429	78.73			22.0	165		
232	1/20/86	*				1446	30.63			14.5	260		
233	1/26/86	*				1445	35.90			5.5	190		
234	2/1/86	*				1429	10.54			9.5	225		
235	2/7/86	*				1433	15.70			5.0	193		
236	2/13/86	*				1433	17.60			22.5	250		
237	2/19/86	*				0			NO RUN	12.0	280		
238	2/25/86	*				1437	66.20			5.5	190		
239	3/3/86	*				1427	24.43			8.5	155		
240	3/9/86	*				1461	16.84			30.5	260		
241	3/15/86	*				755	16.13			24.0	160		
242	3/21/86	*				1451	28.91			10.5	255		
243	3/27/86	*				1445	36.13			8.5	180		
244	4/2/86	*				1437	13.75			16.0	5		
245	4/8/86	*				1406	7.34			12.0	280		
246	4/14/86	*				1458	20.20			13.0	170		
247	4/20/86	*				1404	11.12			8.5	---		Highest winds from N and S
248	4/26/86	*				1424	13.52			10.5	360		
249	5/2/86	*				1460	23.86			25.0	155		
250	5/8/86	*				1447	15.57			12.5	360		
251	5/14/86	*				1445	21.34			11.0	285		
252	5/20/86	*				1378	37.62			15.5	205		
253	5/26/86	*				1408	26.27			14.5	260		

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			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Dir. of Max. Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	minute	µg/m3	µg/m3	minute	µg/m3			Miles/H	Degrees	Inches	
254	6/1/86	*				1438	19.92			15.0	357		
255	6/7/86	*				1443	18.41			16.0	268		
256	6/13/86	*				1436	37.06			16.0	269		
257	6/19/86	*				1428	26.38			15.0	257		
258	6/25/86	*				1427	34.21			15.0	267		
259	7/1/86	*				1429	49.83			14.0	258		
260	7/7/86	*				1423	61.19			18.0	159		
261	7/13/86	*				1418	68.22			21.0	267		
262	7/19/86	*				1440	36.95			8.0	348		
263	7/25/86	*				1417	25.12			14.0	343		
264	7/31/86	*				1434	47.00			10.0	10		
265	8/6/86	*				1417	47.23			17.0	260		
266	8/12/86	*				1433	34.25			15.0	262		
267	8/18/86	*				1441	47.61			15.0	195		
268	8/24/86	*				1433	53.07			16.0	170		
269	8/30/86	*				1444	26.94			13.0	267		
270	9/5/86	*				0			NO RUN	15.0	5		
271	9/6/86					1433	41.23			16.0	7		
272	9/11/86	*				1436	42.81			10.0	4		
273	9/17/86	*				1457	32.51			13.0	19		
274	9/23/86	*				1450	49.95			11.0	11		
275	9/29/86	*				1441	24.73			7.0	4		
276	10/5/86	*				1443	25.56			6.0	—		Highest winds from N and S

SAMPLING DATA
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			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Dir. of Max. Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	inute	µg/m3	µg/m3	inute	µg/m3			Miles/H	Degrees	Inches	
277	10/11/86	*				1466	38.55			10.0	342		
278	10/17/86	*				1429	47.98			20.0	256		
279	10/23/86	*				1442	21.73			9.0	176		
280	10/29/86	*				1438	100.31			17.0	153		
281	11/4/86	*				1428	39.39			7.0	194		
282	11/10/86	*				1428	31.82			8.0	195		
283	11/16/86	*				1443	26.28			14.0	267		
284	11/22/86	*				1423	20.65			19.0	346		
285	11/28/86	*				1445	41.35			18.0	167		
286	12/4/86	*				1438	42.71			17.0	194		
287	12/10/86	*				1439	15.55		FILTER WE	2.0	243		
288	12/16/86	*				0			NO RUN	4.0	198		
289	12/22/86	*				1412	26.93			24.0	1		
290	12/28/86	*				1441	48.87			4.0	345		Met Data Missing Hr(400-500)
291	1/3/87	*				1462	37.51			21.0	31		
292	1/9/87	*				1368	29.54		FILTER WE	4.0	241		Hr(300-2000, 2300-2400) only
293	1/15/87	*				1409	12.52			—	—		No Met Data This Date
294	1/21/87	*				1439	65.46			1.0	—		Hr(400-500, 800-2400) only
295	1/28/87	*				1437	47.54			15.0	—		No Wind Direction Data This Date
296	2/2/87	*				1428	61.22			28.0	—		No Wind Direction Data This Date
297	2/8/87	*				1440	22.33			7.0	180		
298	2/14/87	*				1443	25.31			18.0	205		
299	2/20/87	*				1410	17.58			12.0	331		Hr(000-500, 600-2400) only

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			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Dir. of Max. Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	minute	µg/m3	µg/m3	minute	µg/m3			Miles/H	Degrees	Inches	
300	2/26/87	*				1443	121.29			7.0	185		Hr(000-200, 600-2000) only
301	3/4/87	*				1425	49.27			24.0	150		
302	3/10/87	*				1447	29.94			19.0	154		Wind Direction Missing Hr(300-400)
303	3/16/87	*				1394	23.86			9.0	352		
304	3/22/87	*				1415	52.74			18.0	346		
305	3/28/87	*				1428	21.29			14.0	6		
306	4/3/87	*				1429	14.79			12.0	237		
307	4/9/87	*				1438	21.09			7.0	354		
308	4/15/87	*				1440	37.84			13.0	244		
309	4/21/87	*				1433	18.04			12.0	213		
310	4/27/87	*				1450	23.32			18.0	259		
311	5/3/87	*				2906	14.29			7.0	—		Highest winds from N and S
312	5/9/87	*				0			NO RUN	17.0	260		
313	5/12/87					1444	32.38			20.0	248		
314	5/15/87	*				1449	18.91			19.0	237		
315	5/21/87	*				1436	14.61			9.0	43		
316	5/27/87	*				1455	12.47			11.0	343		
317	6/2/87	*				1430	28.59			8.0	330		
318	6/8/87	*				1449	17.88			23.0	250		
319	6/14/87	*				1469	51.26			23.0	190		
320	6/20/87	*				1416	39.26			19.0	239		
321	6/26/87	*				1441	53.57			21.0	223		
322	7/2/87	*				1430	39.56			17.0	236		

SAMPLING DATA
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			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Dir. of Max. Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	minute	µg/m3	µg/m3	minute	µg/m3			Miles/H	Degrees	Inches	
323	7/8/87	*				0			NO RUN	10.0	341		
324	7/14/87	*				155	38.29			17.0	233		
325	7/20/87	*				0			NO RUN	25.0	140		
326	7/26/87	*				1456	43.90			19.0	154		
327	7/30/87	*				1420	45.18			20.0	143		
328	8/1/87	*				1430	49.80			20.0	241		
329	8/7/87	*				1446	42.34			6.0	—		Highest winds from N and S
330	8/13/87	*				1462	47.97			26.0	233		
331	8/19/87	*				1451	37.67			10.0	169		
332	8/25/87	*				1428	38.25			8.0	174		
333	8/31/87	*				1441	37.73			10.0	348		
334	9/6/87	*				1440	124.00		FIRE NEARB	—	—		No Met Data This Date
335	9/12/87	*				1440	55.00			14.0	216		
336	9/18/87	*				1440	34.00			11.0	247		
337	9/24/87	*				1440	49.00			19.0	240		
338	9/30/87	*				1440	28.00			7.0	172		
339	10/6/87	*				1440	38.00			19.0	262		
340	10/12/87	*				1440	20.00			13.0	340		
341	10/18/87	*				1440	20.00			7.0	188		
342	10/24/87	*				1440	14.00			8.0	91		Wind Speed Missing Hr(600-700)
343	10/30/87	*				1440	16.00			12.0	197		
344	11/5/87	*				1440	7.00			17.0	222		
345	11/11/87	*				1440	35.00			6.0	197		

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			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Dir. of Max. Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	minute	µg/m3	µg/m3	minute	µg/m3			Miles/H	Degrees	Inches	
346	11/17/87	*				1440	10.00		SNOWING	14.0	223		
347	11/23/87	*				1440	32.00			6.0	190		
348	11/29/87	*				1440	31.00			6.0	190		Met Data Missing Hr(000-100)
349	12/5/87	*				1440	27.00			6.0	328		
350	12/11/87	*				1440	13.00			8.0	—		Highest winds from N and S
351	12/17/87	*				1440	32.00			6.0	160		Hr(700-2000) only
352	12/23/87	*				1440	12.00			10.0	337		Hr(400-1100) only
353	12/29/87	*				1440	21.00			5.0	195		Hr(0-100, 200-300, 700-1500) only
354	1/4/88	*				1431	16.26			12.0	194		
355	1/10/88	*				1437	32.16			33.0	267		
356	1/16/88	*				1439	45.11			—	—		No Met Data This Date
357	1/22/88	*				1425	70.27			7.0	180		Hr(100-200, 700-2400) only
358	1/28/88	*				1382	59.35			17.0	167		
359	2/3/88	*	0					NO RUN	NO RUN	6.0	192		Hr(500-1500, 1600-1900) only
360	2/9/88	*	0					NO RUN	NO RUN	9.0	186		
361	2/15/88	*	1440	25.20				NEW SAMPLER - PM-10 BEGINS		8.0	268		
362	2/21/88	*	1440	14.78						6.0	189		
363	2/27/88	*	1440	10.88						12.0	220		
364	3/4/88	*	1440	13.98						10.0	260		
365	3/10/88	*	1440	7.11						9.0	75		Hr(100-200, 500-1300) only
366	3/16/88	*	1440	12.28						16.0	346		
367	3/22/88	*	1440	10.63						21.0	261		
368	3/28/88	*	1440	13.36						12.0	80		

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			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Dir. of Max. Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	minute	µg/m3	µg/m3	minute	µg/m3			Miles/H	Degrees	Inches	
369	4/3/88	*	1441	9.51						13.0	268		
370	4/9/88	*	1440	16.90						8.0	187		
371	4/15/88	*	1440	5.57						8.0	364		
372	4/21/88	*	1440	7.19						24.0	263		
373	4/27/88	*	1440	17.14						19.0	191		
374	5/3/88	*	1440	11.17						14.0	256		
375	5/9/88	*	1440	12.26						8.0	331		
376	5/15/88	*	1440	7.35						17.0	197		
377	5/21/88	*	1440	12.89						22.0	263		
378	5/27/88	*	1441	11.40						15.0	249		
379	6/2/88	*	1440	7.12						12.0	94		
380	6/8/88	*	1441	6.95						26.0	155		
381	6/14/88	*	1440	14.12						11.0	—		Highest winds from S and W
382	6/20/88	*	1440	8.52						29.0	209		
383	6/26/88	*	1440	10.11						20.0	268		
384	7/2/88	*	1440	14.52						22.0	268		
385	7/8/88	*	100	24.91	1.73			RUN SHORTENED		13.0	266		
386	7/14/88	*	0					NO RUN		23.0	262		
387	7/20/88	*	1440	17.85						17.0	268		
388	7/26/88	*	1440	13.58						26.0	263		
389	8/1/88	*	1440	18.43						24.0	264		
390	8/7/88	*	1440	12.95						20.0	328		
391	8/13/88	*	1440	11.55						22.0	—		Highest winds from S and W

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			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Dir. of Max. Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	minute	µg/m3	µg/m3	minute	µg/m3			Miles/H	Degrees	Inches	
392	8/19/88	*	1440	22.62						18.0	264		
393	8/25/88	*	1440	13.98						18.0	179		
394	8/31/88	*	1440	9.94						21.0	243		
395	9/6/88	*	1440	35.82						25.0	259		
396	9/12/88	*	1440	24.43						17.0	66		
397	9/18/88	*	1440	27.49						11.0	176		
398	9/24/88	*	1440	14.92						22.0	155		
399	9/30/88	*	1440	14.95						8.0	187		
400	10/6/88	*	1440	13.36						15.0	203		
401	10/12/88	*	1440	15.76						10.0	176		
402	10/18/88	*	1440	15.51						15.0	266		
403	10/24/88	*	1440	15.21						10.0	185		
404	10/30/88	*	1440	15.43						8.0	---		Highest winds from N and S
405	11/5/88	*	1440	15.88						22.0	145		
406	11/11/88	*	1440	13.54						10.0	268		
407	11/17/88	*	1440	6.68						18.0	246		
408	11/23/88	*	1440	5.58				SNOWING		26.0	276		
409	11/29/88	*	1440	41.28						8.0	190		
410	12/5/88	*	1440	25.58						7.0	189		
411	12/11/88	*	1440	30.59						6.0	189		
412	12/17/88	*	0					NO RUN		11.0	332		
413	12/23/88	*	1440	17.60				SNOWING		9.0	287		
414	12/29/88	*	1440	32.59				SNOWING		7.0	190		

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			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Dir. of Max. Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	inute	µg/m3	µg/m3	inute	µg/m3			Miles/H	Degrees	Inches	
415	1/4/89	*	1440	16.26						20.0	288		No Precipitation Data
416	1/10/89	*	1440	7.16						46.4	252		
417	1/16/89	*	1441	29.82						5.1	192		
418	1/22/89	*	1440	6.06						21.8	270		
419	1/28/89	*	1440	23.43						8.0	184		
420	2/2/89		1440	37.63				SNOW		47.9	261		
421	2/3/89	*	0					NO RUN		36.0	261		
422	2/9/89	*	1440	11.91				SNOW		3.7	313		
423	2/15/89	*	1440	34.27						5.3	334		
424	2/21/89	*	1440	13.80						8.2	270		
425	2/27/89	*	1440	9.44						11.1	246		
426	3/5/89	*	1440	8.93						19.6	255		
427	3/11/89	*	1440	12.59						16.5	187		
428	3/17/89	*	1441	3.87						18.7	297		
429	3/23/89	*	1440	9.46						25.2	257		
430	3/29/89	*	1440	10.34						12.0	331		
431	4/4/89	*	1440	9.15						9.6	86		
432	4/10/89	*	1440	16.37						45.4	258		
433	4/16/89	*	1440	4.58						22.3	256		
434	4/21/89		914	28.86	18.32			EPISODE RUN		27.6	195		
435	4/22/89	*	0					NO RUN		31.0	256		
436	4/28/89	*	1441	7.36						13.5	314		
437	5/4/89	*	1440	9.84						14.9	6		

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			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Dir. of Max. Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	inute	µg/m3	µg/m3	inute	µg/m3			Miles/H	Degrees	Inches	
438	5/10/89	*	1440	6.38						17.5	154		
439	5/16/89	*	1440	11.30						9.4	—		Highest winds from S and N
440	5/22/89	*	1440	7.82						20.5	186		
441	5/28/89	*	1440	4.40						31.8	257		
442	6/3/89	*	1440	8.11						12.7	290		
443	6/9/89	*	1440	9.97						20.6	274		
444	6/15/89	*	1440	14.50						16.5	168		
445	6/21/89	*	1440	14.39						10.2	182		
446	6/27/89	*	1440	11.32						22.5	264		
447	7/3/89	*	1440	14.33						24.0	246		
448	7/9/89	*	1440	12.04						15.4	187		
449	7/15/89	*	1440	10.40						20.0	250		
450	7/21/89	*	1440	14.49						13.2	220		
451	7/27/89	*	1440	13.94						17.1	262		
452	8/2/89	*	1440	13.26						17.4	263		
453	8/8/89	*	1441	14.22						4.9	—		Highest winds from S and N
454	8/14/89	*	1440	22.98						18.0	257		
455	8/20/89	*	1441	14.84						15.0	275		
456	8/26/89	*	1440	15.42						12.7	238		
457	9/1/89	*	1440	13.81						14.0	273		Hr(100-600, 800-2400) only
458	9/7/89	*	1440	22.34						14.0	65		
459	9/13/89	*	1440	12.40						7.9	345		
460	9/19/89	*	1440	5.77						17.5	337		

SAMPLING DATA
MONO BASIN
1981 THROUGH 1994
LEE VINING

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Dir. of Max. Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	minute	µg/m3	µg/m3	minute	µg/m3			Miles/H	Degrees	Inches	
461	9/25/89	*	1440	11.80						22.3	187		Hr(100, 300-2400) only
462	10/1/89	*	1440	6.21						9.6	272		
463	10/7/89	*	1440	13.75						6.1	330		
464	10/13/89	*	1440	10.56						8.4	188		
465	10/19/89	*	1440	16.08						20.1	154		
466	10/25/89	*	1440	6.51						20.0	258		Hr(100-900, 1300-2400) only
467	10/31/89	*	1440	15.56						10.0	186		
468	11/6/89	*	1440	13.55						13.0	242		
469	11/12/89	*	1440	6.27						18.8	269		
470	11/18/89	*	1440	17.57						8.7	189		
471	11/24/89	*	1440	3.97						25.8	267		
472	11/30/89	*	1440	21.12						4.4	203		
473	12/6/89	*	1440	22.75						9.0	187		
474	12/12/89	*	1438	23.15						5.0	---		Highest winds from S and N
475	12/18/89	*	1443	16.86						9.5	185		
476	12/24/89	*	1440	20.35						6.2	191		
477	12/30/89	*	1441	23.37						6.5	192		
478	1/5/90	*	1440	26.33						7.9	187		
479	1/11/90	*	0					NO RUN		11.0	184		
480	1/13/90		1440	7.49				SNOW		14.2	188		
481	1/17/90	*	0					NO RUN		18.0	342		
482	1/19/90		1441	33.84						4.5	223		
483	1/23/90	*	1440	21.07						4.1	166		

SAMPLING DATA
MONO BASIN
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LEE VINING

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Dir. of Max. Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	minute	µg/m3	µg/m3	minute	µg/m3			Miles/H	Degrees	Inches	
484	1/29/90	*	1441	8.23						42.3	262		
485	2/4/90	*	1440	11.63						20.7	347		
486	2/10/90	*	1440	15.99						6.1	189		
487	2/16/90	*	1441	15.10				SNOW		24.3	160		
488	2/22/90	*	1441	36.83						4.9	192		
489	2/28/90	*	1440	13.04						12.6	237		
490	3/6/90	*	0					NO RUN		8.0	188		
491	3/7/90		1440	11.34						19.6	140		
492	3/12/90	*	1440	6.23						9.8	335		
493	3/18/90	*	1441	7.18						14.7	253		
494	3/24/90	*	1440	10.66						19.7	264		
495	3/30/90	*	1439	12.77						11.6	81		
496	4/5/90	*	1441	11.50						16.9	357		
497	4/11/90	*	1441	6.37						19.9	282		
498	4/17/90	*	1440	9.85						11.9	110		
499	4/23/90	*	1440	6.81						30.0	261		
500	4/29/90	*	1440	8.33						18.2	263		
501	5/5/90	*	1441	10.43						19.8	260		
502	5/11/90	*	1440	13.68						18.6	260		
503	5/15/90		1440	19.35						11.0	345		
504	5/17/90	*	1440	19.30						29.8	260		
505	5/23/90	*	1440	15.95						23.5	--		Highest winds from S and W
506	5/29/90	*	1440	4.95						30.5	260		

SAMPLING DATA
MONO BASIN
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			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Dir. of Max. Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	inute	µg/m3	µg/m3	inute	µg/m3			Miles/H	Degrees	Inches	
507	6/4/90	*	1440	4.19						14.7	252		
508	6/10/90	*	1440	8.94						19.5	265		
509	6/16/90	*	1441	5.53						14.5	178		
510	6/22/90	*	1440	19.30						29.5	154		
511	6/28/90	*	1440	7.68						14.0	157		
512	7/4/90	*	1440	9.72						13.9	139		
513	7/10/90	*	1440	15.89						13.6	348		
514	7/16/90	*	1440	12.20						17.6	352		
515	7/22/90	*	1440	13.14						17.0	52		
516	7/28/90	*	1440	16.23						18.7	342		
517	8/3/90	*	1440	19.30						14.2	262		
518	8/9/90	*	1441	19.20				BURNING		20.3	223		
519	8/15/90	*	1440	40.54				BURNING		26.4	260		
520	8/21/90	*	1440	11.56						10.0	266		
521	8/27/90	*	1440	5.29						25.2	159		
522	9/2/90	*	1440	8.76						24.3	154		
523	9/8/90	*	1440	13.93						18.9	162		
524	9/14/90	*	1440	8.23						28.9	158		
525	9/20/90	*	1440	7.96						9.6	23		
526	9/26/90	*	1440	9.74						16.6	158		
527	10/2/90	*	1440	7.63						12.7	53		
528	10/8/90	*	1440	8.17						9.5	188		
529	10/14/90	*	1440	6.45						18.7	249		

SAMPLING DATA
MONO BASIN
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			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Dir. of Max. Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	inute	µg/m3	µg/m3	inute	µg/m3			Miles/H	Degrees	Inches	
530	10/20/90	*	1440	9.80						6.5	191		
531	10/26/90	*	1441	12.24						9.3	182		
532	11/1/90	*	1440	4.33						18.1	352		
533	11/7/90	*	1441	12.65						7.5	187		
534	11/13/90	*	1440	7.68						15.5	154		
535	11/19/90	*	1441	10.20						9.3	275		
536	11/25/90	*	1441	24.07						25.8	252		
537	12/1/90	*	1440	12.90						10.0	185		
538	12/7/90	*	1440	35.85						4.0	—		Highest winds from S and NW
539	12/13/90	*	1440	8.98						19.2	254		
540	12/19/90	*	1440	19.76						21.1	265		
541	12/25/90	*	1440	8.57						5.8	200		
542	12/31/90	*	1441	30.20						5.7	191		
543	1/6/91	*	1440	12.00						1.4	186		
544	1/12/91	*	1440	19.03						8.2	186		
545	1/18/91	*	1440	15.76						13.5	269		
546	1/24/91	*	1440	15.52						8.2	186		
547	1/30/91	*	1440	30.05						4.4	—		Highest winds from S and N
548	2/5/91	*	1440	7.10						10.4	344		
549	2/11/91	*	1440	12.25						14.4	266		
550	2/17/91	*	1440	8.08						17.9	340		
551	2/23/91	*	1440	20.25						6.6	18		
552	3/1/91	*	1440	5.14				SNOW		21.4	258		

SAMPLING DATA
MONO BASIN
1981 THROUGH 1994
LEE VINING

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Dir. of Max. Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	minute	µg/m3	µg/m3	minute	µg/m3			Miles/H	Degrees	Inches	
553	3/7/91	*	868	8.13	4.90			RUN SHORTENED		10.0	55		
554	3/13/91	*	0							26.0	256		
555	3/15/91		1440	6.12				SNOW		22.0	251		
556	3/19/91	*	0							13.0	228		
557	3/20/91		1440	9.31						9.8	213		
558	3/25/91	*	1440	5.23				SNOW		14.2	146		
559	3/31/91	*	1440	12.58						14.7	153		
560	4/6/91	*	1440	21.97						38.0	265		
561	4/12/91	*	1440	9.88						12.2	356		
562	4/18/91	*	1440	10.04						11.9	186		
563	4/24/91	*	1440	8.57						23.3	214		
564	4/30/91	*	1440	21.07						20.0	180		
565	5/6/91	*	1440	5.96						15.8	240		
566	5/12/91	*	1440	8.98						15.0	261		
567	5/18/91	*	1440	3.67						14.5	262		
568	5/24/91	*	1440	12.74						26.9	257		
569	5/30/91	*	1440	11.02						27.9	248		
570	6/5/91	*	1440	15.52						17.6	246		
571	6/11/91	*	1439	15.69						19.5	258		
572	6/17/91	*	1440	8.82						13.8	273		
573	6/23/91	*	1440	9.80						21.3	160		
574	6/29/91	*	1440	5.23						8.0	—		Highest winds from S and N
575	7/5/91	*	1440	13.72						14.6	177		

SAMPLING DATA
MONO BASIN
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LEE VINING

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Dir. of Max. Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	minute	µg/m3	µg/m3	minute	µg/m3			Miles/H	Degrees	Inches	
576	7/11/91	*	1440	16.90						15.0	254		
577	7/17/91	*	1440	10.30						19.9	150		
578	7/23/91	*	1440	15.05						15.7	255		
579	7/29/91	*	1440	14.88						18.1	254		
580	8/4/91	*	1440	12.63						14.3	336		
581	8/10/91	*	1440	8.77						16.1	205		
582	8/16/91	*	1440	12.07						14.8	334		
583	8/22/91	*	1440	14.00						14.9	256		
584	8/28/91	*	1440	8.69						9.0	177		
585	9/3/91	*	1440	12.31						8.1	—		Highest winds from SE and NW
586	9/9/91	*	1440	7.72						16.0	186		
587	9/15/91	*	1440	10.54						9.8	180		
588	9/21/91	*	1440	16.74						10.0	177		
589	9/27/91	*	1440	13.20						19.1	252		
590	10/3/91	*	1380	10.16						7.3	182		
591	10/9/91	*	1440	14.97						8.5	309		
592	10/15/91	*	1440	10.62						11.1	245		
593	10/21/91	*	1440	20.03						25.6	260		
594	10/27/91	*	1440	6.76						12.1	339		
595	11/2/91	*	1440	12.63						7.7	178		
596	11/8/91	*	1439	7.89						15.0	159		
597	11/14/91	*	1440	7.64						19.3	338		
598	11/20/91	*	1440	9.57						26.4	251		

SAMPLING DATA
MONO BASIN
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			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Dir. of Max. Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	minute	µg/m3	µg/m3	minute	µg/m3			Miles/H	Degrees	Inches	
599	11/26/91	*	1440	13.60						11.2	249		
600	12/2/91	*	1440	16.25						10.9	355		
601	12/8/91	*	1440	12.55						9.7	344		
602	12/14/91	*	1440	28.88						2.5	—		No Prevailing Wind Direction
603	12/20/91	*	0					NO RUN		6.0	183		
604	12/26/91	*	1440	19.95						18.1	205		
605	1/1/92	*	1441	6.35						3.2	187		
606	1/7/92	*	1440	12.79						8.0	314		
607	1/13/92	*	1440	35.40						5.0	191		
608	1/19/92	*	0					NO RUN		4.0	193		
609	1/25/92	*	1440	25.10						23.3	288		
610	1/31/92	*	1440	17.78						8.6	162		
611	2/6/92	*	1440	8.45				SNOW		4.8	184		
612	2/12/92	*	0					NO RUN		12.0	164		
613	2/18/92	*	1440	16.90						5.7	336		
614	2/24/92	*	1440	16.09						6.3	184		
615	3/1/92	*	1440	6.03						15.2	143		
616	3/7/92	*	1440	8.05						8.2	7		
617	3/13/92	*	1440	19.87						15.3	177		
618	3/19/92	*	1440	15.53						11.6	162		
619	3/25/92	*	1440	8.13						11.7	119		
620	3/31/92	*	1440	9.17						14.0	16		
621	4/6/92	*	1440	7.48						16.1	267		

SAMPLING DATA
MONO BASIN
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			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Dir. of Max. Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	minute	µg/m3	µg/m3	minute	µg/m3			Miles/H	Degrees	Inches	
622	4/12/92	*	1440	6.52						20.2	146		
623	4/18/92	*	1440	8.37						12.6	337		
624	4/24/92	*	1440	7.97						13.2	256		
625	4/30/92	*	1440	12.55						19.8	144		
626	5/6/92	*	1440	9.49						9.8	52		
627	5/12/92	*	1440	13.11						12.4	251		
628	5/18/92	*	1440	14.80						22.4	146		
629	5/24/92	*	1440	12.39						12.8	258		
630	5/30/92	*	1440	12.07						12.5	260		
631	6/5/92	*	1440	17.38						10.3	137		
632	6/11/92	*	1440	19.23						25.1	147		
633	6/17/92	*	1440	7.97						8.7	101		
634	6/23/92	*	1440	14.24						15.4	243		
635	6/29/92	*	1440	6.11						18.4	146		
636	7/5/92	*	1440	6.45						13.9	156		
637	7/11/92	*	1440	21.91						26.5	259		
638	7/17/92	*	1440	7.19						15.9	247		
639	7/23/92	*	1440	6.78						9.4	10		
640	7/29/92	*	1440	20.34						11.9	261		
641	8/4/92	*	1440	16.54						18.5	255		
642	8/10/92	*	1440	11.41						10.0	262		
643	8/16/92	*	1440	17.78						13.8	258		
644	8/22/92	*	1440	15.38									No Met Data Available

SAMPLING DATA
MONO BASIN
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			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Dir. of Max. Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	minute	µg/m3	µg/m3	minute	µg/m3			Miles/H	Degrees	Inches	
645	8/28/92	*	1441	20.66									No Met Data Available
646	9/3/92	*	1440	9.51									No Met Data Available
647	9/9/92	*	1440	28.36									No Met Data Available
648	9/15/92	*	1440	9.43						10.8	212		Hr(1100-2400) only
649	9/21/92	*	1440	8.19						5.7	322		
650	9/27/92	*	1440	9.34						6.3	183		
651	10/3/92	*	1440	6.78						8.5	47		
652	10/9/92	*	1440	15.63						7.7	179		
653	10/15/92	*	1440	17.86						16.4	259		
654	10/21/92	*	1440	6.53						15.6	187		
655	10/27/92	*	1440	10.67						12.1	143		
656	11/2/92	*	1440	7.61						18.0	355		
657	11/8/92	*	1440	16.87						27.8	242		
658	11/14/92	*	1440	13.31						5.8	183		
659	11/20/92	*	1440	8.85						13.4	358		
660	11/26/92	*	1440	20.17						4.1	340		
661	12/2/92	*	1440	11.33						18.6	155		
662	12/8/92	*	1440	7.11						29.6	256		
663	12/14/92	*	1440	32.74						3.5	197		
664	12/20/92	*	1440	27.37						3.2	194		
665	12/26/92	*	1440	5.46									No Met Data Available
666	1/1/93	*	0					NO RUN		21.0	187		
667	1/7/93	*	0					NO RUN		9.4	232		

SAMPLING DATA
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			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Dir. of Max. Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	minute	µg/m3	µg/m3	minute	µg/m3			Miles/H	Degrees	Inches	
668	1/13/93	*	0					NO RUN		17.1	168		
669	1/19/93	*	0					NO RUN		2.2	118		
670	1/25/93	*	0					NO RUN		---	---		No Met Data Available
671	1/31/93	*	0					NO RUN		3.9	187		Hr(1200-2400) only
672	2/6/93	*	0					NO RUN		4.0	186		Hr(0-8,2100-2400) only
673	2/12/93	*	0					NO RUN		4.3	184		
674	2/18/93	*	0					NO RUN		14.2	199		
675	2/24/93	*	0					NO RUN		---	---		No Met Data Available
676	3/2/93	*	0					NO RUN		---	---		No Met Data Available
677	3/8/93	*	0					NO RUN		---	---		No Met Data Available
678	3/14/93	*	0					NO RUN		16.1	244		Hr(1600-2400) only
679	3/20/93	*	0					NO RUN		6.4	186		
680	3/26/93	*	0					NO RUN		---	---		No Met Data Available
681	4/1/93	*	0					NO RUN		---	---		No Met Data Available
682	4/7/93	*	0					NO RUN		---	---		No Met Data Available
683	4/13/93	*	0					NO RUN		---	---		No Met Data Available
684	4/19/93	*	0					NO RUN		---	---		No Met Data Available
685	4/25/93	*	0					NO RUN		---	---		No Met Data Available
686	5/1/93	*	0					NO RUN		11.4	257		
687	5/3/93		740	41.17	21.16			EPISODE RUN		35.1	254		
688	5/7/93	*	0					NO RUN		19.2	267		
689	5/11/93		1440	23.16						26.4	198		
690	5/13/93	*	0					NO RUN		27.6	151		

SAMPLING DATA
MONO BASIN
1981 THROUGH 1994
LEE VINING

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Dir. of Max. Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	inute	µg/m3	µg/m3	inute	µg/m3			Miles/H	Degrees	Inches	
691	5/19/93	*	0					NO RUN		13.4	239		
692	5/25/93	*	759	9.00				EPISODE RUN		22.4	150		
693	5/31/93	*	0					NO RUN		18.3	258		
694	6/4/93		1440	1.60						15.1	153		
695	6/6/93	*	0					NO RUN		23.3	267		
696	6/12/93	*	0					NO RUN		8.8	34		
697	6/18/93	*	0					NO RUN		5.9	190		
698	6/24/93	*	0					NO RUN		9.2	176		
699	6/30/93	*	0					NO RUN		13.6	255		
700	7/6/93	*	1440	14.00						10.0	266		
701	7/12/93	*	1440	24.00						20.3	254		
702	7/18/93	*	1440	10.00						17.5	242		
703	7/24/93	*	1440	9.00						12.6	264		
704	7/30/93	*	1440	8.00						13.9	258		
705	8/5/93	*	1440	12.00						10.8	161		
706	8/11/93	*	1440	31.00						14.5	192		
707	8/17/93	*	1440	9.00						8.9	169		
708	8/23/93	*	1441	6.00						13.0	268		
709	8/29/93	*	1440	13.00						13.5	143		
710	9/4/93	*	1440	15.00						17.8	256		
711	9/10/93	*	1440	15.00						20.1	256		
712	9/16/93	*	1058	19.00	13.96			RUN SHORTENED		20.7	264		
713	9/22/93	*	1440	10.00						13.7	256		

SAMPLING DATA
MONO BASIN
1981 THROUGH 1994
LEE VINING

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Dir. of Max. Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	minute	µg/m3	µg/m3	minute	µg/m3			Miles/H	Degrees	Inches	
714	9/28/93	*	1440	13.00						10.2	183		
715	10/4/93	*	1440	17.00						15.0	188		
716	10/10/93	*	1440	11.00						18.8	181		
717	10/16/93	*	1440	7.00						16.5	258		
718	10/22/93	*	1440	10.00						8.0	186		
719	10/28/93	*	1440	11.00						11.8	343		
720	11/3/93	*	1440	14.00						8.1	189		
721	11/9/93	*	1440	13.00						11.7	189		
722	11/15/93	*	1440	28.00						7.6	183		
723	11/21/93	*	1440	14.00						12.8	233		
724	11/27/93	*	1440	15.00						4.1	173		
725	12/3/93	*	1440	22.00						9.4	172		
726	12/9/93	*	1440	10.00						13.9	139		
727	12/15/93	*	1440	8.00						17.8	344		
728	12/21/93	*	1440	17.00						4.8	255		
729	12/27/93	*	1440	12.00						8.1	183		
730	1/2/94	*	1440	15.00						4.0	347		
731	1/8/94	*	1440	6.00						19.1	263		
732	1/14/94	*	1440	21.00						4.0	344		
733	1/20/94	*	1440	20.00						7.2	187		
734	1/26/94	*	1440	9.00						6.3	39		
735	2/1/94	*	1440	17.00						5.8	189		
736	2/7/94	*	1440	3.00				SNOW		13.8	171		

SAMPLING DATA
MONO BASIN
1981 THROUGH 1994
LEE VINING

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Dir. of Max. Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	minute	µg/m3	µg/m3	minute	µg/m3			Miles/H	Degrees	Inches	
737	2/13/94	*	1440	15.00						5.5	185		
738	2/19/94	*	1440	8.00						11.0	186		
739	2/25/94	*	1440	10.00						11.4	189		
740	3/3/94	*	1440	12.00						13.4	271		
741	3/9/94	*	1440	6.00						16.1	247		
742	3/15/94	*	1440	8.00						12.5	223		
743	3/21/94	*	1440	8.00						13.0	300		
744	3/27/94	*	1440	11.00						7.4	186		
745	4/2/94	*	1440	6.00						14.6	254		
746	4/8/94	*	1440	3.00						13.4	263		
747	4/14/94	*	0					NO RUN		14.9	60		
748	4/15/94		1440	13.00						9.6	267		
749	4/20/94	*	1440	19.00						16.2	186		
750	4/26/94	*	0					NO RUN		17.9	339		
751	5/2/94	*	1440	12.00						18.0	259		
752	5/8/94	*	1441	6.00						17.0	7		
753	5/14/94	*	1440	21.00						18.0	198		
754	5/20/94	*	1440	7.00						9.0	256		
755	5/26/94	*	1998	12.00				LIGHTNING CAUSED OVERRUN		15.0	194		
756	6/1/94	*	1440	5.00						9.0	348		
757	6/7/94	*	1440	6.00						15.0	284		
758	6/13/94	*	1440	2.00						23.0	276		
759	6/19/94	*	0					NO RUN		8.0	—		Highest winds from SW and NW

SAMPLING DATA
MONO BASIN
1981 THROUGH 1994
LEE VINING

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Dir. of Max. Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	inute	µg/m3	µg/m3	inute	µg/m3			Miles/H	Degrees	Inches	
760	6/25/94	*	1440	7.00						13.0	273		
761	7/1/94	*	1440	6.00					12.0798	5.4	266		
762	7/7/94	*	1440	11.00						8.3	2		
763	7/13/94	*	1440	16.00						20.6	260		
764	7/19/94	*	1440	15.00						7.8	15		
765	7/25/94	*	1440	9.00						14.8	186		
766	7/31/94	*	1440	10.00						21.7	150		
767	8/6/94	*	1440	12.00						11.4	272		
768	8/12/94	*	1110	11.00	8.48			BRUSHES FAILED		14.5	196		
769	8/18/94	*	1441	19.00						18.8	244		
770	8/24/94	*	1440	12.00						18.3	187		
771	8/30/94	*	1441	10.00						15.9	258		
772	9/5/94	*	0					NO RUN		12.5	174		
773	9/11/94	*	1440	10.00						21.0	147		
774	9/17/94	*	1440	11.00						12.5	258		
775	9/23/94	*	1440	10.00						17.9	205		
776	9/29/94	*	1438	4.00						12.8	279		
777	10/5/94	*	1440	5.00						11.0	353		
778	10/11/94	*	1440	8.00						14.8	253		
779	10/17/94	*	1427	6.00						8.3	185		
780	10/23/94	*	1440	12.00						6.3	356		
781	10/29/94	*	1440	11.00						9.4	182		
782	11/4/94	*	1440	5.00						13.0	266		

SAMPLING DATA
MONO BASIN
1981 THROUGH 1994
LEE VINING

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Dir. of Max. Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	inute	µg/m3	µg/m3	inute	µg/m3			Miles/H	Degrees	Inches	
783	11/10/94	*	1440	4.00				SNOW		12.1	348		
784	11/16/94	*	1440	9.00						17.2	238		
785	11/22/94	*	1439	18.00						7.4	182		
786	11/28/94	*	1440	26.00						9.6	178		
787	12/4/94	*	1440	4.00									No Met. Data Available
788	12/10/94	*	1440	10.00									No Met. Data Available
789	12/16/94	*	1440	29.00									No Met. Data Available
790	12/22/94	*	1440	23.00									No Met. Data Available
791	12/28/94	*	1440	4.00				SNOW					No Met. Data Available

SAMPLING DATA
MONO BASIN
1989 THROUGH 1991

CEDAR HILL

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Vector Bearing	Total Precipitation This Day	Meteorological Data Comments
n		*	Minute	µg/m3	µg/m3	inute	µg/m3			Miles/H	Degrees	Inches	
1	10/20/89		633	26	11.28			RUN SHORTENED					No Precipitation Data at this site
2	10/21/89		1440	15.78									No Met Data this date.
3	10/22/89		1440	59									No Met Data this date.
4	10/23/89		1440	96.12									No Met Data this date.
5	10/24/89		1440	19.15									No Met Data this date.
6	11/11/89		1440	2.43									No Met Data this date.
7	11/12/89	*	1440	3.35									No Met Data this date.
8	11/16/89		1440	5.62									No Met Data this date.
9	11/17/89		1440	5.61						8.0	329		Hours (1800-2400) only.
10	11/18/89	*	1440	5.13						7.0	236		
11	11/23/89		1440	3.72						11.0	290		
12	11/24/89	*	1440	2.93						13.0	270		
13	11/25/89		1440	25.77						35.0	222		
14	12/8/89		1440	2.57						8.0	257		
15	12/9/89		1440	1.68						14.0	276		
16	12/12/89	*	1440	3.14						6.0	220		
17	12/29/89		1440	4.37						14.0	1		
18	12/30/89	*	1440	2.59						6.0	230		
19	12/31/89		1440	2.71						7.0	222		
20	1/10/90		1440	1.86						15.0	228		
21	1/11/90	*	1440	2.59						11.0	158		
22	1/12/90		1440	6.58						25.0	208		
23	1/13/90		1440	1.06				SNOW		10.0	226		

SAMPLING DATA
MONO BASIN
1989 THROUGH 1991

CEDAR HILL

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Vector Bearing	Total Precipitation This Day	Meteorological Data Comments
n		*	Minute	µg/m3	µg/m3	inute	µg/m3			Miles/H	Degrees	Inches	
24	1/14/90		1226	0.98	0.83			RUN SHORTENED		5.0	352		
25	2/15/90		447	0.77	0.24			RUN SHORTENED		16.0	285		
26	2/16/90	*	1440	22.63				SNOW		23.0	195		
27	2/17/90		1440	1.09						21.0	214		
28	3/1/90		1440	2.00						12.0	219		
29	3/10/90		1440	50.06						29.0	209		
30	3/11/90		1440	1.83						15.0	326		
31	3/12/90	*	1440	1.55						11.0	321		
32	4/28/90		1440	15.57						20.0	296		
33	4/29/90	*	1440	5.17						19.0	8		
34	4/30/90		1440	6.01						17.0	30		
35	5/14/90		575	21.14	8.44			EPISODE RUN		15.0	280		
36	5/15/90		1440	16.51						14.0	1		
37	5/16/90		764	6.41	3.40			RUN SHORTENED		20.0	216		
38	5/19/90		701	5.59	2.72			EPISODE RUN		14.0	281		
39	5/20/90		1440	5.11						17.0	226		
40	5/21/90		1440	10.77						26.0	231		
41	5/22/90		1440	9.71						23.0	218		
42	5/24/90		1440	34.53						11.0	13		
43	5/27/90		1440	3.01						13.0	198		
44	5/28/90		1440	0.34				RAIN		9.0	348		
45	5/29/90	*	1440	2.76						11.0	286		
46	9/14/90		585	20.87	8.48			RUN SHORTENED					No Met Data this date.

SAMPLING DATA
MONO BASIN
1989 THROUGH 1991

CEDAR HILL

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Vector Bearing	Total Precipitation This Day	Meteorological Data Comments
n		*	Minute	µg/m3	µg/m3	inute	µg/m3			Miles/H	Degrees	Inches	
47	9/15/90		1440	6.89									No Met Data this date.
48	9/16/90		1440	8.59									No Met Data this date.
49	10/18/90		779	10.44	5.65			EPISODE RUN		25.0	197		
50	10/19/90		1440	5.44						25.0	3		
51	10/20/90	*	1440	3.31						9.0	368		
52	10/30/90		1440	9.21						24.0	200		
53	10/31/90		1440	16.07						21.0	219		
54	11/1/90	*	1440	2.78						19.0	6		
55	11/13/90	*	1440	2.60						22.0	197		
56	11/14/90		1440	3.81						22.0	200		
57	11/15/90		1440	5.20						11.0	60		
58	11/17/90		1396	5.05				BURNING		9.0	23		
59	11/18/90		1440	4.78						18.0	8		
60	11/19/90	*	1440	6.07						14.0	191		
61	12/10/90		474	8.27	2.72			EPISODE RUN		23.0	196		
62	12/11/90		1440	3.82						22.0	203		
63	12/12/90		1440	2.19						8.0	74		
64	2/27/91		1458	10.85						19.0	140		
65	2/28/91		1440	2.52				RAIN		17.0	159		
66	3/1/91	*	1440	2.07				RAIN		18.0	226		
67	4/18/91	*	1429	5.94						14.0	228		
68	4/19/91		1442	10.17						22.0	224		
69	4/20/91		1440	5.68						18.0	217		

SAMPLING DATA
MONO BASIN
1989 THROUGH 1991

CEDAR HILL

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM-10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Maximum 1 Hr. Wind Speed	Wind Vector Bearing	Total Precipitation This Day	Meteorological Data Comments
n		*	Minute	µg/m3	µg/m3	inute	µg/m3			Miles/H	Degrees	Inches	
70	4/24/91	*	1418	9.52						20.0	230		
71	4/26/91		1440	3.81						14.0	9		
72	4/30/91	*	1377	19.86						23.0	228		
73	5/1/91		1441	11.19						26.0	218		
74	5/2/91		1440	6.04						17.0	321		
75	5/16/91		1446	26.07						22.0	191		
76	5/17/91		1440	5.60						21.0	186		
77	5/18/91	*	1443	1.07						10.0	354		
78	5/24/91	*	1434	9.41						20.0	240		
79	5/25/91		1440	5.76						22.0	233		
80	5/26/91		1432	4.11						16.0	14		
81	5/29/91		577	10.28	4.12			EPISODE RUN		22.0	242		
82	5/30/91	*	1441	6.16						21.0	255		
83	5/31/91		1423	2.51						19.0	371		

SAMPLING DATA
MONO BASIN
1988 THROUGH 1992
WARM SPRINGS

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/H	Degrees	Inches	
1	4/7/88		847	85.76	50.44			EPISODE RUN					No Meteorological Data at this Site
2	5/4/88		1440	63.58									
3	5/16/88		1441	404.85									
4	1/12/90		1440	10.48									
5	3/17/90		1432	1.00									
6	4/28/90		1588	17.03									
7	5/19/90		797	10.00	5.53			EPISODE RUN					
8	5/20/90		763	1.00	0.53			EPISODE RUN					
9	5/21/90		620	80.68	34.74			EPISODE RUN					
10	5/22/90		607	11.00	4.64			EPISODE RUN					
11	5/23/90	*	741	305.87	157.40			EPISODE RUN					
12	10/31/90		843	9.41	5.51			EPISODE RUN					
13	11/13/90	*	599	18.81	7.82			EPISODE RUN					
14	11/17/90		1440	4.27									
15	12/10/90		525	282.68	103.06			EPISODE RUN					
16	4/19/91		552	11.34	4.35			EPISODE RUN					
17	4/30/91	*	671	200.65	93.50			EPISODE RUN					
18	5/8/91		1439	389.03									
19	5/12/91	*	1449	8.48									
20	5/13/91		607	0.19	0.08			EPISODE RUN					
21	5/16/91		536	586.66	218.37			EPISODE RUN					
22	5/29/91		656	7.63	3.48			EPISODE RUN					
23	6/5/91	*	1428	13.33									
24	7/19/91		1674	6.95									

SAMPLING DATA
MONO BASIN
1988 THROUGH 1992
WARM SPRINGS

			PM-10 DATA			TSP DATA				METEOROLOGICAL DATA			
Data Row Number	Sampling Days	Six Day Sampling	Total Run	PM-10 Concentration	PM10 Conc. Recalculation	Total Run	TSP Concentration	PM-10 Comments	TSP Comments	Max. 1 Hr. Avg. Wind This Day	Wind Vector Bearing This Hour	Total Precipitation This Day	Meteorological Data Comments
n		*	Minutes	µg/m3	µg/m3	Minutes	µg/m3			Miles/H	Degrees	Inches	
25	9/21/91	*	720	15.54	7.77			EPISODE RUN					
26	9/26/91		631	3.69	1.62			EPISODE RUN					
27	9/27/91	*	648	10.96	4.93			EPISODE RUN					
28	10/16/91		1432	10.29									
29	10/22/91		1419	23.38									
30	10/25/91		1432	3.98									
31	11/8/91	*	665	7.05	3.26			EPISODE RUN					
32	11/27/91		1446	13.52									
33	3/14/92		1437	11.11									
34	3/20/92		1437	7.77									
35	4/29/92		686	112.82	53.75			EPISODE RUN					
36	5/18/92	*	625	175.66	76.24			EPISODE RUN					
37	5/19/92		447	2.50	0.78			EPISODE RUN					
38	6/11/92	*	596	20.80	8.61			EPISODE RUN					
39	6/12/92		704	740.07	361.81			EPISODE RUN					
40	9/23/92	*	1427	6.88									
41	10/1/92		1432	37.65									
42	10/21/92	*	1440	19.00									
43	10/29/92		569	16.23	6.41			EPISODE RUN					
44	11/19/92		1448	6.86									
45	11/21/92		1442	1.76									
46	12/2/92	*	1444	264.60									
47	12/7/92		1439	3.03			SITE DISCONTINUED						

APPENDIX 4 - *Final Mono Lake Air Quality Modeling Study*

APPENDIX 5 - Emission Calculations

EMISSION CALCULATIONS

1.0 Vehicle Tail Pipe and Tire-Wear Emissions

The PM-10 emissions factor for motor vehicle exhaust and tire-wear was determined by the California Air Resources Board (CARB) for Mono County. CARB's estimates were adjusted using traffic counts provided by Caltrans for the Mono Basin. The average daily traffic (ADT) figures are listed in Table 2-1.

Emission Rates for Mono County

Based on emission factors used by the California Air Resources Board, the estimated average daily PM-10 emissions for gas and diesel powered vehicles for the entire Mono County is 164 pounds per day. The methods of calculation and the calculations are presented in Tables 1-1 through Table 1-5. The following parameters are used in these tables and calculations:

e = CARB emission factor per vehicle type
er = emission rate per vehicle type = (e) [Mono County vehicle miles traveled/day (VMT/D) per vehicle type]
Rv = ratio of Mono County VMT/D per vehicle type/ total Mono County VMT/D
VMT/D = (ADT) (m)
ADT = average daily travel/highway
m = number of miles/highway

Table 1-1

PM-10 EMISSIONS
(CARB's estimated daily average)
Mono County

Vehicle Type	Emission Factor (e)	Mono Miles	Emission Rates (e_r)
Light Duty Passenger	0.13 T/D	522,000 VMT/D	5.0×10^{-4} lbs/VMT
Light Duty Trucks	0.07 T/D	287,000 VMT/D	4.9×10^{-4} lbs/VMT
Medium Duty Trucks	0.02 T/D	69,000 VMT/D	5.9×10^{-4} lbs/VMT
Heavy Duty Diesel	0.14 T/D	58,000 VMT/D	4.8×10^{-4} lbs/VMT
TOTAL	0.36 T/D	936,000 VMT/D	

R_v = (VMT/D per Vehicle Type) / (VMT/D Total)

Table 1-2

R_v
Mono County

Vehicle Type	Total VMT/D (Mono County)	VMT/D (per Vehicle Type)	R_v
Light Duty Passenger	936,000 VMT/D	522,000 VMT/D	0.558
Light Duty Trucks	936,000 VMT/D	287,000 VMT/D	0.307
Medium Duty Trucks	936,000 VMT/D	69,000 VMT/D	0.074
Heavy Duty Diesel	936,000 VMT/D	58,000 VMT/D	0.062

It is assumed that the same vehicle ratio is in effect for the Mono Basin as for the rest of Mono County.

Table 1-3

MONO BASIN
VEHICLE MILES TRAVELED / DAY

Highway	Miles Mono Basin	ADT	VMT/D
395 outside Lee Vining	24	4000	96,000
395 inside Lee Vining	1	5400	5,400
120 East	16	400	6,400
120 West	10	2300	23,000
168	28	360	10,800
158 North	10	610	6,100
158 South	5	1450	7,250
		TOTAL	154,950

VMT/D per Vehicle Type for Mono Basin = (VMT/D Total for Mono Basin) (R_v)

Table 1-4

MONO BASIN
VEHICLE MILES TRAVELED

Vehicle Types	(Total Mono Basin Miles) (R_v)	Miles/vehicle type
Light Duty Passenger	(154,950 VMT/D) (0.558)	86,462 VMT/D
Light Duty Trucks	(154,950 VMT/D) (0.307)	47,570 VMT/D
Medium Duty Trucks	(154,950 VMT/D) (0.074)	11,466 VMT/D
Heavy Duty Diesel	(154,950 VMT/D) (0.062)	9,606 VMT/D

PM-10 emissions in pounds per day = (VMT/D per Vehicle Type for Mono Basin) (e_r)

Table 1-5

VEHICLE TAIL PIPE & TIRE-WEAR EMISSIONS

Vehicle Type	(Mono Miles/Vehicle Type) (e_r)	Emissions (lb/D)
Light Duty Passenger	(86,462) (5.0 x 10^{-4} lbs/VMT)	42.2
Light Duty Trucks	(47,570) (4.9 x 10^{-4} lbs/VMT)	23.3
Medium Duty Trucks	(11,466) (5.9 x 10^{-4} lbs/VMT)	66.5
Heavy Duty Diesel	(9,600) (4.8 x 10^{-4} lbs/VMT)	46.1
TOTAL		163.7

Annual PM-10 Emission

(76.3 Kg/D) (365 D/yr) = 27,839 Kg/yr

(27,839 Kg/yr) (907.2 Tons/Kg) = 30.7 Tons/yr

24 - Hour PM-10 Emission

From the emission totals from the previous page the 24-hour PM-10 emission total was calculated to be 76.3 Kg/D.

2.0 Road Cinders Emission

The following equation and assumptions necessary for its calculation are based upon the Town of Mammoth Lakes General Plan and a Caltrans study of road cinders used in Mammoth Lakes.

$e = 2.28 (sL/0.5)^{**}$ (grams/VKT)

Given:

Unit Weight of Cinders, loose = 68 lbs/ ft^3

Silt Content (< 200 mesh or 75 microns) = 0.02 before use, 0.08 after use on roads

Assumption:

Cinders of average diameter of 1/16" (1.6 mm) are spread evenly on the road and they cover 1/4th of the surface area.

Silt Loading:

Volume of cinders spread on road = (0.0016 m)(m^2)/4 m^2 = 0.0004 m^3/m^2

Street Loading Mass =(0.0004 m^3/m^2)(68 lb/ft^3)(454 g/lb)(3.28 ft/m)^3 = 436 g/m^2

Silt Loading Before Use (sL) = (436 g/m^2)(0.02) = 8.7 g/m^2

Emission Calculation

$$e = 2.28\left(\frac{sL}{0.5}\right)^{0.8} \quad (grams/VKT)$$

$$e = 2.28\left(\frac{8.7}{0.5}\right)^{0.8}$$

$$e = 22.4\ g/VKT$$

Annual PM-10 Emission

$$PM_{10} = (\ e\ )\ (VKT)\ (n)$$

n = *number of cinder applications/month*

VKT = (VMT) (1.61 *km/mile*)

VMT = (ADT) (m)

m = *number of miles/highway*

ADT = *average daily travel/highway*

The Average Daily Travel (ADT) is the California Department of Transportation's designation for the average number of vehicle miles on a particular highway per day. This is combined with the number of times per day cinders are applied and the number of applications per month. The calculations for the estimation of the road cinder emission are shown in Table 2-1. An example calculation from Table 2-1 involving October, 1992 would be:

PM_{10} = (e) (VKT) (n)

ADT = *average daily travel/highway* = 4341 *miles*
m = *number of miles/highway* = 24 *miles* [*US* 395]
VMT = (ADT) (m) = (4347) (24) = 104,328 *miles*
VKT = (VMT) (1.61 *km/mile*) = (104,328 *miles*) (1.62 *km/miles*) = 167,968 *km*
n = *number of cinder applications/month* = (12)
PM_{10} = (22.4 *g/VKT*) (167,968 *km*) (12) (1 *kg*/1000 *g*) = 45,150 *kg*

The calculations for the Mono Basin are summarized in Table 2-1

24 - Hour PM-10 Emission

The 24 - Hour Design Day was May 8, 1991. No road cinders were used on that day, therefore there were no road cinder emissions on that day.

Table 2-1

ANNUAL PM_{10} EMISSION ESTIMATES FOR ROAD CINDERS

			US 395	CA 167	CA 158	PM10 Total (Kg)
		(miles)	24	25	6	
Date	Oct. 92	ADT	4347	360	1450	
Days Cindered	6	VMT	104328	9000	8700	
Times Cindered/Day	2	VKT	167968	14490	14007	
Cinder Applications/Month	12	PM10 (kg)	45150	3895	3765	52810
Date	Nov-92	ADT	2632	360	1450	
Days Cindered	12	VMT	63168	9000	8700	
Times Cindered/Day	2	VKT	101700	14490	14007	
Cinder Applications/Month	24	PM10 (kg)	54674	7790	7530	69994
Date	Dec-92	ADT	2628	360	1450	
Days Cindered	12	VMT	63072	9000	8700	
Times Cindered/Day	3	VKT	101546	14490	14007	
Cinder Applications/Month	36	PM10 (kg)	81887	3895	3765	89547
Date	Jan-93	ADT	1164	360	1450	
Days Cindered	12	VMT	27936	9000	8700	
Times Cindered/Day	3	VKT	44977	14490	14007	
Cinder Applications/Month	36	PM10 (kg)	36269	3895	3765	43929
Date	Feb-93	ADT	1732	360	1450	
Days Cindered	12	VMT	41568	9000	8700	
Times Cindered/Day	3	VKT	66924	14490	14007	
Cinder Applications/Month	36	PM10 (kg)	53968	3895	3765	61628
Date	Mar-93	ADT	2242	360	1450	
Days Cindered	12	VMT	53808	9000	8700	
Times Cindered/Day	2	VKT	86631	14490	14007	
Cinder Applications/Month	24	PM10 (kg)	46573	3895	3765	54233
Date	Apr-93	ADT	3217	360	1450	
Days Cindered	6	VMT	77208	9000	8700	
Times Cindered/Day	2	VKT	124305	14490	14007	
Cinder Applications/Month	12	PM10 (kg)	33413	3895	3765	41073

1992 - 1993 Winter Total: PM10 = 413214 Kg

PM10 = 455 Tons

3.0 Annual PM-10 Emission Estimates for Residential Wood Burning Devices

Emissions for each wood burning device was calculated using the following equation:

$$PM_{10} \text{ emissions per device} = (e)\ (Mass_{wood})$$

$Mass_{wood}$ = (*number of cords*) (800 *kg/cord*) *Jeffery, Pinion Pine*
e = 8.1 *g/kg certified wood stoves*
e = 14.0 *g/kg fireplaces*
e = 15.0 *g/kg conventional wood stoves, fireplace inserts*

Annual PM-10 Emission

Jeffrey and Pinon are the predominant wood types burned in the Mono Basin. A density for these wood types was estimated to be 10 kg/ft^3 based on data for Ponderosa Pine. Given that a cord is 80 ft^3 of wood per cord, the density of Jeffrey and Pinon Pine is 800 kg/cord.

The total number of wood burning devices within the Mono Basin was calculated using the same ratio of wood burning devices calculated for the Mammoth Lakes study. The ratio of fireplaces to wood burning stoves is 1:3 in Mammoth Lakes and is assumed to be the same for the Mono Basin. As per the 1990 Census there are 979 residents in the Mono Basin. This is 18.9% of the residents in the unincorporated areas of Mono County. There are 2009 occupied housing units in the county therefore (18.9%)(2009) = 380 housing units in the Mono Basin. With the ratio of fireplaces to wood burning stoves being 1:3 the number of fireplaces would be (380)(1/3) = 127. This means that there are 380 - 127 = 253 wood burning stoves. This assumes a worst case scenario with every residence having either a fireplace or a wood burning stove. Based on these assumptions and relevant calculations, the total annual PM_{10} emissions, as seen in Table 3-1, for wood burning devices in the Mono Basin is 18.3 Tons/yr.

Table E 3-1

ANNUAL PM_{10} EMISSION ESTIMATES
FOR RESIDENTIAL WOOD COMBUSTION

Wood Burning Device	Emission Factor	Cords	Cord Density	Units	Total Emission (Mg)
Fireplace	14.0	0.8	800 kg/cord	127	1.4
Wood Stove	15.0	4.0	800 kg/cord	253	15.2
				TOTAL	16.6

TOTAL (16.6 Mg) (1000 kg/Mg) (1/907.2 kg/Tons) = 18.3 Tons

24-Hour PM-10 Emission

It is assumed that there was little to no residential wood combustion on May 8, 1991. Therefore, like road cinders, residential wood combustion will not be a contributing factor for the 24-Hour Design Day PM-10 emission estimates.

4.0 Unpaved Roads

There are 319 miles of roads within the Mono Basin National Forest Scenic Area. Of these 319 miles, 32 are paved. Additionally there are approximately 135 other unpaved road miles located outside of the scenic area but within the Mono Basin. This brings the number of unpaved road miles within the Mono Basin to 422 miles. The soil type from the region is mixed rock; generally granitic in the south western, western, and northern portions of the basin. In the southern and eastern regions the soil is primarily aerial ash and cinder deposit. The equation for calculating the emissions factor for unpaved roads is as follows:

$$\textit{Emissions Factor} \quad e = k\,(1.7)\left(\frac{s}{12}\right)\left(\frac{S}{48}\right)\left(\frac{W}{2.7}\right)^{0.7}\left(\frac{w}{4}\right)^{0.5}\left(\frac{365 - p}{365}\right) \quad \textit{Kg/VKT}$$

where: k = particle size multiplier
s = silt content of road surface material (%)
S = mean vehicle speed (Km/hr)
W = mean vehicle weight (Mg)
w = mean number of wheels
p = number of days with at least 0.254mm (0.01") of precipitation

From the data in Appendix 3 it was determined that the number of days that precipitation was at least 0.01 inches averaged 61 days per year. From Table 11.2.1-3 of AP-42 the particle size multiplier was determined to be k = 0.36. The silt content was determined from table 11.2.1-1 to average 5.0. The mean vehicle speed was estimated to be 32.2 Km/hr (20 mph). The mean vehicle weight was estimated to be 2.7 Mg or 6000 pounds and the mean number of wheels per vehicle was assigned to be 4. This resulted in the following equation:

$$e = (0.36)\ (1.7)\left(\frac{5.0}{12}\right)\left(\frac{40.23}{48}\right)\left(\frac{2.7}{2.7}\right)^{0.7}\left(\frac{4}{4}\right)^{0.5}\left(\frac{365\ -\ 61}{365}\right) \quad Kg/VKT$$

$$e = 0.178 \quad Kg/VKT$$

In 1986, 46,398 visitor days were recorded for the scenic area. That same year the Inyo National Forest had 6.04×10^6 visitor days. In 1992 the Inyo National Forest had 8.38×10^6 visitor days. This yields (8.38/6.04) x (46,398) = 64,373 visitor days visiting the scenic area in 1992. Assuming 3 visitors per car, this means that 21,458 vehicles/year traveled in the scenic area. Assuming that 95% of these vehicles drive only the 1.5 miles (1.6 km) to the South Tufa, this leaves 1072 vehicles/year driving on the remaining 421 miles (678Km).

Annual PM-10 Emission

Based on the above set of assumptions this means that:

PM_{10} = (number of vehicles/year) (VKT) (e)

where: VKT = [vehicle miles traveled (VMT)] (1.61Km/mile)

PM_{10} = (1072 vehicles/year) (678Km) (0.178 Kg/VKT) = 129,000 Kg/year
= (20386 vehicles/year) (1.6Km) (0.178 Kg/VKT) = 5,800 Kg/year
Total 134,800 Kg/year

(134,800 Kg) (1 Ton/907.2 Kg) = 149 Tons/year

24 - Hour PM-10 Emission

Based on the annual PM-10 emission of 134,800 Kg/year:

(134,800 Kg/year) (1 year/365 days) = 378 Kg/day

APPENDIX 6 - *Mono Lake Basin Water Right Decision 1631*

APPENDIX 7 - Pertinent Rules and Regulations

MAJOR SOURCE EMISSIONS THRESHOLD

DISTRICT RULE 209-A

EXISTING RULES FOR PARTICULATE MATTER CONTROL

DISTRICT RULE 400
DISTRICT RULE 401
DISTRICT RULE 405

EXISTING RULES FOR OPEN SPACE BURNING

DISTRICT RULE 406
DISTRICT RULE 407
DISTRICT RULE 408
DISTRICT RULE 409
DISTRICT RULE 410
DISTRICT RULE 411
DISTRICT RULE 412

Major Source Emissions Threshold

District Rule 209-A was reviewed in 1993 and found to have an existing threshold that is lower than the 70 tons per year of PM-10 required by the U.S. EPA. As originally approved, District Rule 209-A set a level of 250 pounds per day of particulate matter as the lower limit for the major source definition in the District. This limit, which is equivalent to about 46 tons per year, was based on "particulate matter" emissions. It did not specify if particulate matter was measured as Total Suspended Particulates (TSP) or if it could be PM-10. If "particulate matter" was interpreted as PM-10, it would effectively relax the limit, because sources emit more TSP than PM-10. To ensure that future facilities will be required to meet the same requirements as existing facilities, District Rule 209-A was clarified in May 1993 to reflect that the 250 pound per day limit is measured as TSP and not PM-10 (District Rule 209-A.B.2.c).

One of the requirements for major sources is that they apply Best Available Control Technology (BACT) to control the emissions from their facilities. At the request of the U.S. EPA and the California Air Resources Board, the BACT requirement under Rule 209-A was also extended to modifications to major sources, where the modification would cause a net increase in emissions of 15 tons per year or more of PM-10. This was equivalent to about 80 pounds of PM-10 per day. This rule revision was approved in May 1993 as District Rule 209-A.B.2.d.

Existing Rules for Particulate Matter Control

District Rules 400, 401, and 405 are existing federally approved rules that limit particulate emissions from area or point sources in the District. Rule 400 limits visible emissions from any source, except those exempted under Rule 405, to less than the Ringelmann 1, or 20 percent opacity. Rule 401 requires that reasonable precautions be taken to prevent visible particulate matter from crossing the property boundary. Methods to comply with both of these rules for fugitive dust emissions are explained in the permit conditions for Permits to Operate that are issued in the District. These rules are included below and an example of the permit conditions are included in Appendix 8. The District considers Rules 400 and 401, along with conditions required under the permit to operate as Reasonably Available Control Measures (RACM) for fugitive dust from industrial sources. Because PM-10 from industrial sources represents an insignificant contribution to the emissions in the Mono Basin Planning Area, these RACM requirements have not been evaluated to determine if they should be considered BACM for fugitive dust from industrial sources.

Existing Rules for Open Space Burning

District Rule 406 limits open outdoor fires, except for activities expressly permitted. Rule 407 controls incinerator burning of combustible refuse. Rules 408 through 411 govern prescribed burning for agricultural operations, range improvement, and forest and wildland management. Said prescribed burning requires that a burn plan be submitted to the District to ensure compliance with guidelines. Rule 412 regulates burning of non-industrial wood waste or vegetative waste at city or county disposal sites.

RULE 209-A. Standards for Authorities to Construct

A. General

The Air Pollution Control Officer shall deny an authority to construct for any new stationary source or modification, or any portion thereof, unless:

1. The new source or modification, or applicable portion thereof, complies with the provisions of this rule and all other applicable District rules and regulations and Sections 44300 (et. seq.) of the California Health and Safety Code.

2. The applicant certifies that all other stationary sources in the State which are owned or operated by the applicant are in compliance, or are on approved schedule for compliance, with all applicable emission limitations and standards under the Clean Air Act (42 USC 7401 et. seq.) and all applicable emission limitations and standards which are part of the State Implementation Plan approved by the Environmental Protection Agency.

B. Applicability and Exemptions

1. This rule (excluding Section D) shall apply to all new stationary sources and modifications which are required pursuant to District rules to obtain a permit to construct.

2. Section (D) of this rule shall apply to new stationary sources and modifications which result in either:

a. A net increase in emissions of 250 or more pounds during any day of any pollutant for which there is a national ambient air quality standard (excluding carbon monoxide and particulate matter), or any precursor of such a pollutant; or

b. A net increase in carbon monoxide emissions which the Air Pollution Control Officer determines would cause the violation of any national ambient air quality standard for carbon monoxide at the point of maximum ground level impact; or

c. A net increase in emissions of 250 or more pounds during any day of particulate matter, measured as total suspended particulate from new stationary sources; or

d. A net increase in emissions of 80 or more pounds during any day of particulate matter measured as PM-10 (particulate matter with a nominal aerodynamic diameter less than 10 microns) from a modification to an existing stationary

source that has net emissions of 250 pounds or more per day of particulate matter measured as total suspended particulate prior to the modification.

3. Any new stationary source or modification which receives a permit to construct pursuant to this rule and complying with the following two conditions shall be deemed as having met the provisions of Part C of the Clean Air Act, as amended in 1977, and any regulations adopted pursuant to those provisions.

   a. Net emissions increase of all pollutants for which there is a national ambient air quality standard, and all precursors of such pollutants, shall be mitigated (offset) by reduced emissions from existing stationary or nonstationary sources. Emissions reductions shall be sufficient to offset any net emissions increase and shall take effect at the time of, or before, initial operation of the new source, or within 90 days after initial operations of a modification.

   b. The applicant shall demonstrate, to the satisfaction of the Air Pollution Control Officer, that the proposed new source or modification will not have a significant air quality impact on any Class I area in cases where either the Air Pollution Control Officer, the Air Resources Board, or the U. S. Environmental Protection Agency requests such a demonstration at any time during the district's review of the application for an authority to construct or within 30 days of the public notice of the Air Pollution Control Officer's decision on the application.

RULE 400. Ringelmann Chart

A person shall not discharge into the atmosphere from any single source of emission whatsoever, any air contaminant for a period or periods aggregating more than three minutes in any one hour which is:

A. As dark or darker in shade as that designated as No. 1 on the Ringelmann Chart, as published by the United States Bureau of Mines; or

B. Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in subsection (A) of this rule.

1. "An observer" is defined as either a human observer or a certified, calibrated, in-stack opacity monitoring system.

RULE 401. Fugitive Dust

A. A person shall take reasonable precautions to prevent visible particulate matter from being airborne, under normal wind conditions, beyond the property from which the emission originates. Reasonable precautions include, but are not limited to:

1. Use, where possible, of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads or the clearing of land;

2. Application of asphalt, oil, water, or suitable chemicals on dirt roads, material stockpiles, and other surfaces which can give rise to airborne dusts;

3. Installation and use of hoods, fans, and fabric filters, to enclose and vent the handling of dusty materials. Adequate contaminant methods shall be employed during such handling operations;

4. Use of water, chemicals, chuting, venting, or other precautions to prevent particulate matter from becoming airborne in handling dusty materials to open stockpiles and mobil equipment; and

5. Maintenance of roadways in a clean condition.

B. This rule shall not apply to emissions discharged through a stack.

RULE 405. Exceptions

Rule 400 does not apply to:

A. Fire set by or permitted by a public officer if such fire is set or permission given in the performance of an official duty of such officer, and such fire, in the opinion of such officer, is necessary:

1. For the purpose of the prevention of a fire hazard which cannot be abated by other means, or

2. The instruction of public employees in the methods of fighting fire.

B. Fires set pursuant to a permit on property used for industrial purposes for the purpose of instruction of employees in methods of fighting fire.

C. Agricultural operations necessary in the growing of crops or raising of fowls or animals, or

D. The use of an orchard, field crop, or citrus grove heater which does not produce unconsumed, solid carbonaceous matter at a rate in excess of that allowed by State law.

E. The use of other equipment in agricultural operations necessary in the growing of crops, or raising of fowls, or animals.

RULE 406. Open Outdoor Fires

ADOPTED 10/1/76. REVISED 1/21/76. REVISED 11/4/92.

A person shall not burn any combustible refuse in any open outdoor fire within the boundaries of the Great Basin Unified Air Pollution Control District, except:

A. When such fire is set or permission for such fire is given in the performance of the official duty of any public officer, and such fire in the opinion of such officer is necessary:

1. For the purpose of the prevention of a fire hazard which cannot be abated by other means, or

2. The instruction of public employees, or public volunteers under the supervision of a public officer, in the methods of fighting fire.

B. When such fire is set pursuant to permit on property used for industrial purposes for the purpose of instruction of employees in methods of fighting fires.

C. Agricultural fires necessary to maintain and continue an agricultural operation set or permitted by a fire official having jurisdiction in the performance of official duty for the purposes of:

1. Control and disposal of agricultural wastes.

2. Range improvement burning.

3. Forest management burning.

4. Fires set in the course of any agricultural operation in the growing of crops, or raising of fowls or animals.

5. Abatement of an immediate health hazard.

6. Wildland management burning.

D. On burn days as declared by the State Air Resources Board and pursuant to a valid burn permit as authorized by the Great Basin Unified Air Pollution Control District, fires for the disposal of household rubbish of a single or two family dwelling on its premises.

E. Fires used only for the cooking of food for human beings or for recreational purposes.

F. Fires, on burn days as declared by the State Air Resources Board and pursuant to a valid burn permit as authorized by the Great Basin Unified Air Pollution Control District, for the clearing

of rights-of-way by a public entity or public utility where access by chipping equipment is not available by existing means or for reservoir maintenance.

G. Except in case of emergency, permits for the setting of a fire or fires permitted by this rule shall be granted by the Air Pollution Control Officer, or by the public fire official having jurisdiction over the proposed burn location.

H. When such fire is set for the purpose of burning non-industrial wood waste pursuant to a valid permit as authorized by the Great Basin Unified Air Pollution Control District under District Rule 412.

RULE 407. Incinerator Burning

ADOPTED 9/5/74

A person shall not burn any combustible refuse in any incinerator, except in a multiple-chamber incinerator as described in Rule 101(n), or in equipment found by the Air Pollution Control Officer in advance of such use to be equally effective for the purpose of air pollution control as an approved multiple-chamber incinerator.

This rule shall not apply to incinerators used to burn only household rubbish and yard trimmings and brush of a single or two-family dwelling on its premises on authorized burn days.

RULE 408. Open Burning in Agricultural Operations or Disease or Pest Prevention

ADOPTED 9/5/74. REVISED 3/10/76. REVISED 11/4/92.

A. No person shall burn agricultural wastes on "no burn" days as announced by the State Air Resources Board for the Counties of Inyo, Mono, and Alpine or when prohibited by the Air Pollution Control Officer.

B. Such burning when authorized shall conform to the following criteria:

1. Material to be burned shall be as dry as feasible prior to burning, and shall be free from combustible impurities such as tires, tar paper, rubbish, plastics, demolition or construction debris, and shall be reasonably free of dirt, soil, and visible surface moisture.

2. Trees and branches over two inches in diameter shall have been dried for at least 10 days prior to burning.

3. Branches under two inches in diameter and prunings shall have been dried for at least 1 week prior to burning.

4. Wastes from field crops that are cut in a green condition shall have been dried for at least 1 week prior to burning.

5. Exceptions to the foregoing may be made by the fire authority which issues the permits to burn, after notification to the Air Pollution Control Officer, and if the material to be burned is diseased or insect infested and there would be irreparable damage if the foregoing standards were rigidly enforced.

6. Material to be burned shall be so arranged as to burn with a minimum of smoke.

7. All burning shall conform to the applicable jurisdic-tional fire code(s).

C. The use of oil or tires in connection with the ignition or burning of agricultural wastes, roadsides, ditch banks, or patches of vegetation is prohibited.

D. No agricultural wastes shall be burned without a permit issued by a fire protection authority having jurisdiction over the proposed burn location. As a condition to the issuance of a permit, each applicant shall provide the information required by the issuing agency on forms prepared jointly by said agency and the District. The permit may place a limit upon the amount of materials to be burned in any one day and the hours of the day during which time the material may be burned. Further, the form of this permit shall contain the following words or words of similar import: 'This permit is valid only on those days during which agricultural burning is not prohibited by the State Air Resources Board or by the Air Pollution Control Officer pursuant to Section 41855 of the Health and Safety Code.'

E. Open burning in agricultural operations or disease or pest prevention at altitudes above 6000 feet (msl) is exempt from the requirements of Rule 408.

F. Burning shall be curtailed when smoke is drifting into a populated area or creating a public nuisance.

RULE 409. Range Improvement Burning

ADOPTED 10/1/76. REVISED 3/10/76. REVISED 7/1/92.

A. No range improvement burning may be done without first having obtained a permit from the California Department of Forestry and Fire Protection or other designated agency having jurisdiction over the proposed burn location. The form of this permit shall contain the following words or words of similar import: 'This permit is valid only on those days during which agricultural burning is not prohibited by the State Air Resources Board or by the Air Pollution Control Officer pursuant to Section 41855 of the Health and Safety Code.'

B. Range improvement burning, when permitted, shall comply with all the provisions of this rule and all the provisions for wildland management burning under District Rule 411.

C. Range improvement burning when permitted shall conform to the following criteria:

1. Where *economically* and *technically feasible*, *brush shall* be treated by chemical or mechanical means at least 6 months prior to a proposed burn, to kill or uproot the brush in order to insure rapid combustion.

2. Unwanted trees over 6" in diameter in the burn area or those not effectively treated at the time of the brush treatment shall be felled at least 3 months prior to the burn, but a longer time may be required where conditions warrant.

3. Burning being done primarily for improvement of land for wildlife and game habitat shall require the filing with the District a statement obtained from the Department of Fish and Game certifying the burning is desirable and proper for the improvement of land for wildlife and game habitat.

RULE 410. Forest Management Burning

ADOPTED 9/5/74. REVISED 3/10/76. REVISED 7/1/92.

A. No forest management burning may be done without first having obtained a permit from the California Department of Forestry and Fire Protection or other designated agency having jurisdiction over the proposed burn locations. The form of this permit shall contain the following words or words of similar import: 'This permit is valid only on those days during which agricultural burning is not prohibited by the State Air Resources Board or by the Air Pollution Control Officer pursuant to Section 41855 of the Health and Safety Code.'

B. Forest management burning, when permitted, shall comply with all the provisions of this rule and all the provisions for wildland management burning under District Rule 411.

C. Forest management burning, when permitted, shall conform to the following criteria:

1. Waste shall be dried sufficiently to insure rapid combustion.

2. Where possible, unless good management dictates otherwise, waste to be burned shall be windrowed or piled so as to burn with a minimum of smoke.

RULE 411. Wildland Management Burning

ADOPTED 9/5/74. REVISED 3/10/76. REVISED 7/1/92.

A. No wildland management burning may be done without first having obtained a permit from the California Department of Forestry and Fire Protection or other designated agency having jurisdiction over the proposed burn locations. The form of this permit shall contain the following words or words of similar import: 'This permit is valid only on those days during which agricultural burning is not prohibited by the State Air Resources Board or by the Air Pollution Control Officer pursuant to Section 41855 of the Health and Safety Code.'

B. No person shall conduct wildland management burning on "no burn" days as announced daily by the State Air Resources Board for the Inyo, Mono and Alpine Counties or when such burning is prohibited by the Air Pollution Control Officer except:

1. When a permissive burn notice has been issued by the State Air Resources Board pursuant to Section 80110 (c through e), California Code of Regulations (CCR), Title 17, and such notice has not been canceled by either the State Air Resources Board or the Air Pollution Control Officer.

2. When the Air Pollution Control Officer has authorized, by special permit pursuant to Section 80120, California Code of Regulations (CCR), Title 17, agricultural burning on days designated by the State Air Resources Board as no-burn days because the denial of such permit would threaten imminent and substantial economic loss. In authorizing such burning the Air Pollution Control Officer shall limit the amount of acreage which can be burned in any one day and only authorize burning when downwind populated areas are forecasted by the State Air Resources Board to achieve the ambient air quality standards. Every applicant for a permit to burn agricultural waste pursuant to this section shall provide information in writing to the Air Pollution Control Officer for evaluation, stating why the denial of such a permit would threaten imminent and substantial economic loss.

C. Wildland management burning, when permitted, shall conform to the following criteria:

1. Before a permit may be issued for a wildland management burn, a plan for the burn shall be submitted by the owner, or his agent, of the land on which the burn is proposed, to the District and the California Department of Forestry and Fire Protection, or other designated agency having jurisdiction over the proposed burn location. This plan shall:

   a. Limit the ignition of fires to approved devices.

   b. Limit the total acreage or tonnage of vegetation that may be burned each day.

   c. Limit burning or require mitigation when the meteorological conditions could otherwise cause smoke to create or contribute to an exceedance of a state or federal ambient air quality standard or cause a public nuisance.

   d. Require the vegetation to be burned to be free of tires, rubbish, tar paper or construction debris, and reasonably free of dirt and soil.

   e. Require the vegetation to be in a condition which will facilitate combustion and minimize the amount of smoke emitted during combustion.

   f. Include the following information which shall be provided to the Air Pollution Control Officer for review in advance of the proposed burn; i) location and specific objectives of the burn project, ii) acreage or tonnage, type, and arrangement of vegetation to be burned, iii) directions and distances to nearby sensitive receptor areas, iv) fuel condition, combustion, and meteorological prescription elements developed for the project, v) projected schedule and duration of project ignition, combustion, and burndown, vi) specifications for monitoring and verifying critical project parameters, and vii) specifications for disseminating project information. For projects located in areas above 11,000 feet, the plan shall be approved by the Air Pollution Control Officer in advance of the proposed burn.

2. The material to be burned shall be ignited only by devices approved by the California Department of Forestry and Fire Protection, or the local fire protection agency, and ignition shall be as rapid as practicable within applicable fire control restrictions.

3. Burning shall not be allowed on Sundays or legal holidays.

4. All burning shall conform to the applicable jurisdictional fire code(s).

5. Burning shall be curtailed when smoke is drifting into a populated area or creating a public nuisance.

D. The total amount of material burned in any one day, may be limited by the District, taking into consideration matters which would affect the ambient air quality of the District.

RULE 412. Open Burning of Non-Industrial Wood Waste at City or County Disposal Sites

ADOPTED 9/5/74. REVISED 2/9/81. REVISED 11/4/92.

A. No person shall burn non-industrial wood waste on "no-burn" days as announced by the State Air Resources Board for the Counties of Inyo, Mono, and Alpine or when prohibited by the Air Pollution Control Officer.

B. Burning of non-industrial wood waste at city or county disposal sites shall be restricted to sites above 1,500 feet (above mean sea level), that have been approved for such burning by the Air Pollution Control Officer (APCO) and the California Air Resources Board. Approval shall be based upon the submittal of written documentation for each site which shall include:

1. A copy of the resolution by the applicable city council or county board of supervisors declaring their intention to allow burning at designated sites.

2. The estimated tonnage and type of material to be burned at each site with the estimated criteria pollutant emissions, broken down by month for a one year period and an analysis of air quality trends showing that the proposed burns will not prevent the achievement or maintenance of the ambient air quality standards.

3. Location and elevation of the sites to be used for burning.

4. A copy of a written statement by the owner of the land on which the disposal site is located approving the burn on such land.

5. Written approval of the fire protection agency having authority over the proposed burn site.

6. A statement explaining why burning at the disposal site will not create a nuisance. This shall include consideration for the site's proximity to population centers and the prevailing wind pattern.

7. A statement indicating who is responsible to verify that only non-industrial wood waste is burned and how often inspections shall be made at each site.

C. Such burning when authorized shall conform to the following criteria:

1. Material to be burned shall be as dry as feasible prior to burning, and shall be free from combustible impurities such as tires, tar paper, rubbish, plastics, demolition or construction debris, and shall be reasonably free of dirt, soil, and visible surface moisture.

2. Trees and branches over two inches in diameter shall have been dried for at least 10 days prior to burning.

3. Branches under two inches in diameter and prunings shall have been dried for at least 1 week prior to burning.

4. Exceptions to the foregoing may be made by the fire authority which issues the permits to burn, after notification to the Air Pollution Control Officer, and if the material to be burned is diseased or insect infested and there would be irreparable damage if the foregoing standards were rigidly enforced.

5. Material to be burned shall be so arranged as to burn with a minimum of smoke.

6. All burning shall conform to the applicable jurisdictional fire code(s).

D. The use of oil or tires in connection with the ignition or burning of non-industrial wood wastes is prohibited.

E. No non-industrial wood waste shall be burned without a permit issued by a fire protection authority having jurisdiction over the proposed burn location. As a condition to the issuance of a permit, each applicant shall provide the information required by the issuing agency on forms prepared jointly by said agency and the District. The permit may place a limit upon the amount of materials to be burned in any one day and the hours of the day during which time the material may be burned. Further, the form of this permit shall contain the following words or words of similar import: 'This permit is valid only on those days during which agricultural burning is not prohibited by the State Air Resources Board or by the Air Pollution Control Officer pursuant to Section 41855 of the Health and Safety Code.'

F. Burning shall be curtailed when smoke is drifting into a populated area or creating a public nuisance. If smoke from a particular site repeatedly drifts into a populated area or causes a nuisance, the APCO will revoke approval for that site.

G. The total amount of material burned in any one day, may be limited by the District, taking into consideration matters which would affect the ambient air quality of the District.

2. Trees and branches over two inches in diameter shall have been dried for at least 10 days prior to burning.

3. Branches under two inches in diameter and prunings shall have been dried for at least 1 week prior to burning.

4. Exceptions to the foregoing may be made by the fire authority which issues the permits to burn, after notification to the Air Pollution Control Officer, and if the material to be burned is diseased or insect infested and there would be irreparable damage if the foregoing standards were rigidly enforced.

5. Material to be burned shall be so arranged as to burn with a minimum of smoke.

6. All burning shall conform to the applicable jurisdictional fire code(s).

D. The use of oil or tires in connection with the ignition or burning of non-industrial wood wastes is prohibited.

E. No non-industrial wood waste shall be burned without a permit issued by a fire protection authority having jurisdiction over the proposed burn location. As a condition to the issuance of a permit, each applicant shall provide the information required by the issuing agency on forms prepared jointly by said agency and the District. The permit may place a limit upon the amount of materials to be burned in any one day and the hours of the day during which time the material may be burned. Further, the form of this permit shall contain the following words or words of similar import: 'This permit is valid only on those days during which agricultural burning is not prohibited by the State Air Resources Board or by the Air Pollution Control Officer pursuant to Section 41855 of the Health and Safety Code.'

F. Burning shall be curtailed when smoke is drifting into a populated area or creating a public nuisance. If smoke from a particular site repeatedly drifts into a populated area or causes a nuisance, the APCO will revoke approval for that site.

G. The total amount of material burned in any one day, may be limited by the District, taking into consideration matters which would affect the ambient air quality of the District.

APPENDIX 8 - Typical Industrial Source Permit Conditions

PERMIT TO OPERATE

GREAT BASIN UNIFIED AIR POLLUTION CONTROL DISTRICT

157 Short St. Suite #6 - Bishop, CA 93514
(619) 872-8211

PERMIT NUMBER 632

Pursuant to the authority granted under the Rules and Regulations for the Great Basin Unified Air Pollution Control District, the

Federal White Aggregates
870-789 West Pender Street
Vancouver, B.C., Canada V6C1AZ

operations and associated equipment and buildings located at:
Dolomite Ghost Town, on Dolomite Loop Road, off Hwy 138, 7 miles southeast of Lone Pine, Inyo County.

is hereby granted a permit to operate as of July 22, 1991.

This Permit to Operate is granted for one year and may be renewed upon payment of the renewal fee on or before the anniversary date above.

EQUIPMENT DESCRIPTION FOR PERMIT: Dolomite Crushing & Screening Plant.

1 - 10 ton ore hopper	n/a	hp
1 - vibrating feeder	n/a	hp
1 - Cedar Rapids jaw crusher	50	hp
2 - conveyors (jaw to screen) 3 hp ea.	6	hp
1 - Overstrom triple deck screen	7 1/2	hp
1 - conveyor (screen to rolls)	3	hp
1 - Columbia rolls crusher	70	hp
1 - conveyor (rolls to jaw)	3	hp
2 - belt conveyors @ 5 hp ea.	10	hp
2 - coarse ore storage bins	n/a	hp
2 - Union Special sewing machines	1	hp
1 - sacking bin & sacker	n/a	hp
2 - conveyors (Overstrom to Sweco) 3 hp ea	6	hp
1 - Sweco triple deck screen	3	hp
2 - valve packers 3 hp ea	6	hp

CONTROL SYSTEM:

1 - Water truck controls pit and haul road fugitive dust emissions.

PERMIT CONDITIONS: See the attached conditional approval.

Ellen Hardebeck
AIR POLLUTION CONTROL OFFICER

Date July 22, 1991

Conditional Approval for Permit to Operate No. 632

Federal White Aggregates
870-789 West Pender Street
Vancouver, B.C., Canada V6C1AZ

Located at:
Dolomite Ghost Town, on Dolomite Loop Road,
off Hwy 138, 7 miles southeast of Lone Pine

PERMIT CONDITIONS:

1. The District will be notified 48 hours prior to equipment start up and 48 hours prior to commencing seasonal start up by calling (619) 872-8211.
2. Federal White Aggregates is responsible for dust control from commencement of this project to final completion and is also responsible for insuring that subcontractor(s), employees, and all other persons connected with the project abide by the conditions of this permit.
3. The hourly input feed rate shall be limited to 10 tons per hour and is restricted to processing no more than 240 tons of dolomite aggregate per day. Daily production records shall be kept on site and made available to the District staff upon request.
4. Within 90 days after placing the crushing plant into operation, the applicant shall offset all increased emissions by dismantling the equipment covered under former Permits to Operate No. 521 (crushing plant # 2), and No. 487 (aggregate wash plant).
5. To prevent violations of District Rule(s) 400, 401 and 402, Federal White Aggregates shall have at a minimum one (1) watering truck available full time to apply water to areas in and around the plant. The applicant will give particular attention to controlling dust from:
   a. unimproved access roads used for entrances to or exit from the material pit.
   b. areas in and around the open quarry, and aggregate crushing plant.
   c. dirt and mud carried on and deposited on adjacent improved streets and roads, and these streets are maintained in a clean manner.
   d. the materials pit, and ore storage pile fugitive emissions when needed to maintain fugitive dust emissions below a Ringelmann 1 (20% opacity).
   e. all dust emissions, and that any dust emission is kept below a Ringelmann 1 (20% opacity).
6. Federal White Aggregates shall post and observe a 15 mph speed limit at the project. During normal daily activity, Federal White Aggregates, their contractor(s), and employees will observe this speed limit. The speed limit will be strictly enforced by the applicant. (Authority cited rules 402 & 210).
7. If wind conditions are such that the applicant cannot control dust, Federal White Aggregates shall shut down all operations (except for equipment used for dust control). Under no circumstance will wind generated dust be allowed to blow across a property boundary.
8. The height of all aggregate storage piles and its conveyor drop distance shall be kept to a minimum. Aggregate storage pile height shall not be allowed to exceed a 20 foot maximum height. If District Rule(s) 400, 401 or 402 are violated, water shall be applied to the storage piles as necessary to minimize fugitive dust emissions cause by high winds.

9. Federal White Aggregates shall pursue and explore potential buyers for the reject waste collected by the baghouse. Any progress towards finding a market for this waste material shall be reported to the District. Until a market is established, the applicant shall take every reasonable precaution necessary to prevent this waste material from becoming airborne and prevent the transport of dust or dirt beyond the property boundary by continuously stabilizing and controlling the material. Reasonable available dust control measures may include, but need not be limited to: covering the waste material with 4 inches of overburden material, or rocks, sealing, re-vegetation, or by paving. On a temporary basis, the fine waste dust may be controlled by use of a resinous or petroleum based dust suppression agent, or otherwise stabilizing the spoils with a chemical surfactant, or latex binder. This control operation shall be performed before the close of business each operating day or at least once a day when the plant is in continual operation. Since waste crankcase oil is a hazardous waste it will not be considered or used as a dust suppression agent.

10. In the quarry, core and blast holes shall be properly drilled, using water injection, cyclone collection, or other approved methods to decrease the amount of dust created to below a Ringelmann 1 (20% opacity). During blasting, the generation of fugitive dust shall be reduced by minimizing the amount of explosives used and by preventing overshot. No blasting shall take place during periods of high winds where the wind velocity is high enough to carry dust or dirt cross a property boundary.

11. Federal White Aggregates shall keep the active quarry as small as possible. Once any portion of the quarry is exhausted of useful material, the applicant shall immediately begin reclamation of the disturbed surface. Federal White Aggregates shall not allow any abandoned portion of the quarry to remain subject to wind erosion for a period in excess of six (6) months without applying all reasonably available dust control measures necessary to prevent the transport of dust or dirt beyond the property boundary. Reasonable available control measures may include, but need not be limited to: sealing, re-vegetation, paving, or otherwise stabilizing the soil surfaces with chemical surfactants, or latex binders.

12. At the termination of mining, and prior to abandoning the site, Federal White Aggregates shall apply reasonable available control measures to prevent fugitive dust emissions from being emitted after the quarry is closed. The applicant shall comply with the mitigation measures specified by the Inyo County Planning Commission's Conditional Use Permit #88-3 dated November 17, 1988 and by the mitigation measures outlined in Reclamation Plan #88-1.

13. The provisions of this permit may be modified by the District if it determines the stipulated controls are inadequate, or if District Rule(s) 400, 401, or 402 are violated. If requested by the Air Pollution Control Officer, Federal White Aggregates shall within thirty (30) days submit a written plan to the District describing how the dust emissions will be controlled and maintained below a Ringelmann I (20% opacity). The Air Pollution Control Officer will approve or modify the plan. Federal White Aggregates shall implement the plan immediately following the APCO's approval.

14. Federal White Aggregates shall promptly notify the District in writing should they learn of or encounter conditions where toxic air emissions of concern are emitted and allowed to disperse into the ambient air. Toxic air emissions are those listed on the AB2588 list of substances as required by the California Health & Safety Code Section 44321.