

GREAT BASIN UNIFIED AIR POLLUTION CONTROL DISTRICT

157 Short Street, Bishop, California 93514-3537 760-872-8211 Fax: 760-872-6109

NOTICE OF PUBLIC HEARING

ADOPTION AND APPROVAL OF (1) PROPOSED ORDER UNDER THE PROVISIONS OF CAL. HEALTH & SAFETY CODE SECTION 42316, (2) PROPOSED DISTRICT RULE 433 FOR THE CONTROL OF PARTICULATE EMISSIONS AT OWENS LAKE, AND (3) PROPOSED FINAL 2016 REVISION TO THE OWENS VALLEY PM₁₀ PLANNING AREA DEMONSTRATION OF ATTAINMENT STATE IMPLEMENTATION PLAN

PLEASE TAKE NOTICE that on Wednesday, April 13, 2016, the Governing Board of the Great Basin Unified Air Pollution Control District (GBUAPCD) will conduct a public hearing and consider for adoption and approval of (1) a proposed order authorized by California Health & Safety Code Section 42316 for the City of Los Angeles (City) to install, operate and maintain additional dust control measures on the Owens Lake bed, (2) a proposed District Rule 433 (Control of Particulate Emissions at Owens Lake), and (3) a proposed final 2016 revision to the previously-adopted Owens Valley PM₁₀ Planning Area Demonstration of Attainment State Implementation Plan (2016 SIP) (collectively "Board Actions"). The public hearing and the Governing Board's consideration for adoption and approval of the Board Actions will occur at the District Governing Board's regular meeting on Wednesday, April 13, 2016 at 10:15 a.m. at the City of Los Angeles Department of Water and Power Administrative Building, Training Room 134A, 111 Sulfate Road, Keeler, California 93530. Other actions related to the Board Actions may also be taken at the meeting. Members of the public will have an opportunity to submit written comments or make oral statements at the public hearing on each of the proposed Board Actions.

The GBUAPCD prepared the 2016 SIP for the control of fine dust emissions (PM₁₀) in response to a finding by the United States Environmental Protection Agency (USEPA) that the Owens Valley Planning Area did not attain the 24-hour National Ambient Air Quality Standard (NAAQS) for PM₁₀ as required by the federal Clean Air Act. The dried Owens Lake bed soils and crusts are a source of wind-blown dust during significant wind events and contribute to elevated concentrations of PM₁₀.

The GBUAPCD has adopted a series of SIPs to address and control PM₁₀. In 2008, the GBUAPCD approved the 2008 Revised State Implementation Plan for the Owens Valley Planning Area (2008 SIP), which was implemented through GBUAPCD Board Order #080128-01. In 2011, a dispute arose between the GBUAPCD and the City regarding these requirements. On December 30, 2014, the Sacramento Superior Court entered a Stipulated Judgment for the GBUAPCD in the case captioned *City of Los Angeles v. California Air Resources Board, et al.*, Case No. 34-2013-80001451-CU-WM-GDS to resolve this dispute. Under the major provisions of this agreement, the City agreed to implement additional dust control measures on the lake bed (for a total of 48.6 square miles) by December 31, 2017. The GBUAPCD may also order the City to implement dust control measures on up to 4.8 additional square miles of the lake bed if needed to meet the NAAQS or related state standards. The GBUAPCD agreed to revise the 2008 SIP by December 31, 2014 (later amended by agreement to April 15, 2016) to incorporate the relevant provisions of the Stipulated Judgment into a proposed 2016 SIP Order.

GBUAPCD also proposes to adopt District Rule 433 pursuant to California Health & Safety Code Section 41511. The Rule includes the control elements of the 2016 SIP Order and will comprise the attainment strategy for the 2016 SIP to be submitted to the California Air Resources Board and the U.S. Environmental Protection Agency for their approval. The 2016 SIP contains the project location, history,

air quality setting, emission inventory, control measures, air quality modeling, control strategy, and enabling legislation. The goal of the proposed Board Actions is to continue to reduce dust emissions from the dry lake bed to attain the 24-hour NAAQS for PM₁₀ in 2017. A Notice of Determination will be prepared under the California Environmental Quality Act in connection with the proposed Board Actions based upon the Environmental Impact Report for the Owens Lake Dust Mitigation Program – Phase 9/10 Project (May 2015) (EIR) prepared by the City of Los Angeles Department of Water and Power.

Copies of the proposed order, District Rule 433, the 2016 SIP and the EIR may be obtained from and will be available for public review at the GBUAPCD web-site www.gbuapcd.org, at the GBUAPCD office at 157 Short Street, Bishop, California, and at Inyo County Libraries in Independence, Big Pine, Bishop, Lone Pine, Death Valley and Tecopa, California. Written comments on these rule revisions should be sent to Phillip L Kiddoo, Air Pollution Control Officer, GBUAPCD, 157 Short Street, Bishop, CA 93514. Written comments received by 5:00 pm on March 18, 2016 will be included in the staff report sent to the Governing Board members. Oral and written comments will also be taken at the meeting. For further information, contact the District's Board Clerk, Tori DeHaven at (760) 872-8211.

GBUAPCD staff encourages those who have comments on the 2016 SIP to attend the meeting on April 13, 2016 and submit written comments or make oral statements to the Governing Board prior to the Board Actions.

RULE 433. CONTROL OF PARTICULATE EMISSIONS AT OWENS LAKE

Adopted: 04/13/2016 (Proposed)

The purpose of this regulation is to effectuate a regulatory mechanism under the federal Clean Air Act to attain the National Ambient Air Quality Standards ("NAAQS") and to implement the Stipulated Judgment between the Great Basin Unified Air Pollution Control District ("District") and the City of Los Angeles ("City") dated December 30, 2014 and entered by the Superior Court of the State of California, County of Sacramento. This regulation does not alter or supersede any provision in the Stipulated Judgment, nor does it relieve any party from full compliance with the requirements of the Stipulated Judgment. This regulation sets the basic requirements for the Best Available Control Measures ("BACM") and defines the areal extent of these controls at Owens Lake required in order to meet the NAAQS. This regulation does not preclude the City or the District from implementing more stringent or additional mitigation pursuant to the Stipulated Judgment.

A. DEFINITIONS

1. "BACM PM₁₀ Control Areas" are areas on the dried bed of Owens Lake at or below the Regulatory Shoreline elevation of 3,600 feet and at or above Owens Lake's ordinary high water elevation of 3,553.55 feet on which BACM PM₁₀ Control Measures shall be implemented, and

BACM PM₁₀ Control Areas are:

- a. Areas, as shown on the map in Exhibit 1 Dust Control Area Map, including:
 - *i.* 29.8 square miles of the Owens Lake Bed with approved BACM PM₁₀ Control Measures ("2003 Dust Control Area");
 - ii. 13.2 square miles of the Owens Lake Bed with approved BACM PM₁₀ Control Measures, except for Eligible Cultural Resource Areas where PM₁₀ BACM selection and implementation dates will be deferred as set forth in Paragraph C.3. ("2006 Dust Control Area" and "Channel Area");
 - *iii.* 2.0 square miles of the Owens Lake Bed with approved BACM PM₁₀ Control Measures ("Phase 8 Area");
 - iv. 3.62 square miles of the Owens Lake Bed with approved BACM PM₁₀ Control Measures to be installed by December 31, 2017, except for Eligible Cultural Resource Areas, where PM₁₀ BACM selection and implementation dates will be deferred as set forth in Paragraph C.3. ("Phase 9/10 Area"); and
- b. Additional areas as designated pursuant to Section C., "CONTINGENCY MEASURES" of this rule.

- 2. "BACM PM₁₀ Control Measures" are best available control measures designed to reduce PM₁₀ emissions to Control Efficiency ("CE") levels specified below. The following BACM PM₁₀ Control Measures are approved to be used.
 - a. "BACM Shallow Flooding" means the application of water to the surface of the lake bed in accordance with the performance standards for shallow flooding in Attachment A, Section I - Performance Requirements for BACM Shallow Flooding. Water shall be applied in amounts and by means sufficient to meet a CE level of 99% or CE targets for Minimum Dust Control Efficiency Areas.
 - b. "Tillage with BACM (Shallow Flood) Backup or TWB2" means the roughening of a soil surface using mechanical methods in accordance with the specifications in Attachment A, Section IV Performance Requirements for Tillage with BACM Back-up, and to utilize BACM shallow flooding as a back-up control method in order to prevent NAAQS violations. BACM Shallow Flooding must be implemented in TWB² areas if the erosion threshold as defined in Paragraph A.2.h is exceeded. Water shall be applied in amounts and by means sufficient to meet the CE level of 99% or CE targets for Minimum Dust Control Efficiency areas.
 - c. "Brine BACM" means the application of brine and the creation of wet and/or non-emissive salt deposits sufficient to meet the CE level of 99% as described in Attachment A, Section V Performance Requirements for Brine BACM. BACM Shallow Flooding must be implemented in Brine BACM areas if the erosion threshold as defined in Paragraph A.2.h is exceeded.
 - d. "BACM Managed Vegetation" means planting surfaces of the BACM PM₁₀ Control Areas with protective vegetation to meet the CE level of 99% by maintaining overall average vegetation cover of at least 37% for each contiguous Managed Vegetation area and an areal distribution based on vegetation cover thresholds and grid size.
 - e. "BACM Gravel Blanket" means the application of a layer of gravel sufficient to meet the CE level of 100% by covering the control area with
 - a layer of gravel at least four inches thick with gravel screened to a size greater than ½ inch in diameter, or
 - a layer of gravel at least two inches thick with gravel screened to ½ inch in diameter underlain with a permanent permeable geotextile fabric.
 - f. "Dynamic Water Management or DWM" is a BACM Shallow Flooding operational modification that allows delayed start dates and/or earlier end dates required for shallow flooding in specific areas that have historically had low PM₁₀ emissions within the modified time periods. The truncated dust control periods allows for water savings while achieving the required CE level. Areas eligible for the DWM program and their modified start and/or end dates for shallow flooding are identified in

- Attachment A, Section VI Performance Requirements for Dynamic Water Management. If any DWM area becomes susceptible to wind erosion outside of the modified dust control period the area will be required to be flooded to meet the required CE for that area. BACM Shallow Flooding must be implemented in DWM areas if the erosion threshold as defined in Paragraph A.2.h is exceeded.
- g. "Minimum Dust Control Efficiency or MDCE" BACM is a dust control measure for which the control efficiency target is adjusted to match the required control level based on air quality modeling for the 2006 dust control areas as shown on the map in Exhibit 2 Dust Control Efficiency Requirements. The control efficiency targets may be less than 99%, but the level of control in all areas is intended to prevent exceedances of the NAAOS. MDCE BACM includes:
 - *i.* Shallow flood areas where the wetness cover is adjusted following the curve in Exhibit 3 Shallow Flood Control Efficiency and Wetness Cover Curve,
 - ii. Channel Area a state-regulated wetland area as shown in Exhibits 1 and 2 where vegetation cover is enhanced by irrigation and seeding with native plants in a manner sufficient to prevent windblown dust from causing exceedances of the NAAQS, and
 - iii. Sand Fence Area an area as shown in Exhibits 1 and 2 located in area T1A-1 where sand fences, vegetation and natural water runoff combine to provide sufficient protection to prevent windblown dust from causing exceedances of the NAAOS.
- h. "Erosion Threshold" is applicable to TWB², DWM, and Brine BACM to trigger BACM Shallow Flooding which must be implemented to comply with the shallow flood CE target for that area. The erosion threshold is determined from sand flux measurements or the Induced Particulate Erosion Test (IPET) test method as described in Attachment A, Paragraphs IV.C.2 and IV.C.4. BACM Shallow Flooding must be implemented in TWB², DWM or Brine BACM areas if any of the following thresholds are exceeded as determined using the methods described in Attachment A:
 - *i.* Sand flux measured at 15 cm above the surface exceeds 5.0 grams per square centimeter per day on DWM or Brine BACM areas or 1.0 gram per square centimeter per day on TWB² areas, or
 - *ii.* Induced Particulate Erosion Test method shows visible dust emissions when operated at the reference test height.
- i. "Approved BACM" includes the control measures specified above and other measures approved by the APCO and the US Environmental Protection Agency as equivalent to these methods.

3. "Eligible Cultural Resource Area or ECR Area" is an area or areas where dust control measures will be implemented on a deferred schedule due to the presence of significant cultural resources that make the areas eligible for listing under the California Register of Historic Resources.

B. REQUIREMENTS

- 1. For the 2003 Dust Control Area the City shall continuously operate and maintain any mix of approved BACM PM₁₀ Control Measures as defined above in Section A to meet the 99% efficient CE level. Selection of the type and location of BACM PM₁₀ Control Measures within the area is solely the responsibility of the City.
- 2. For the 2006 Dust Control Area the City shall continuously operate and maintain approved BACM PM₁₀ Control Measures defined above in Section A to meet the CE target specified in Exhibit 2, except for ECR Areas where BACM PM₁₀ Control Measure selection and implementation dates will be deferred as set forth in Paragraph C.3., and any areas of BACM Managed Vegetation, for which the City shall comply with the minimum 37% average vegetation cover target and areal distribution requirements by December 31, 2017.
- 3. For the Phase 8 Area consisting of 2.0 square miles the City shall continue to operate and maintain BACM Gravel Blanket.
- 4. For the Phase 9/10 Project Area consisting of 3.62 square miles the City shall select and install BACM PM₁₀ Control Measures by December 31, 2017, except for ECR Areas, where PM₁₀ BACM selection and implementation dates will be deferred as set forth in Paragraph C.3.
- 5. In areas containing infrastructure capable of achieving and maintaining compliant BACM Shallow Flooding the City may implement TWB², Brine Shallow Flooding or Dynamic Water Management as alternatives to BACM Shallow Flooding or MDCE BACM shallow flooding.

C. CONTINGENCY MEASURES

- 1. At least once each calendar year, the District shall determine whether additional areas of the lake bed require BACM PM₁₀ Control Measures in order to attain or maintain the PM₁₀ NAAQS.
- 2. If the District has not demonstrated attainment with the PM₁₀ NAAQS on or before December 31, 2017, or has not met reasonable further progress milestones, the District shall order the City to apply one or more BACM PM₁₀ Control Measures as set forth in

- Paragraphs A.2 and C.4 on those areas of the Owens Lake bed that cause or contribute to exceedances of the PM_{10} NAAQS.
- 3. If monitoring and/or modeling demonstrates BACM PM₁₀ Control Measures are needed in an ECR Area(s) to attain or maintain the PM₁₀ NAAQS after BACM PM₁₀ Control Measures are implemented in adjacent areas, the District shall order the City to select and implement BACM PM₁₀ Control Measures set forth in Paragraph A.2.
- 4. The District may order the City to implement, operate and maintain a total of up to 53.4 square miles of waterless or water-neutral BACM PM₁₀ Control Measures on the Owens Lake bed below the Regulatory Shoreline (elev. 3,600 feet) and above the ordinary high water level of Owens Lake (elev. 3,553.55 feet).
- 5. As expeditiously as practicable and not more than three years after any such order for additional BACM PM₁₀ Control Measures, the City shall install, operate and maintain BACM PM₁₀ Control Measures that achieve a control efficiency of 99%. If BACM Managed Vegetation is chosen up to two additional years for vegetation growth is allowed to achieve the 37% vegetation cover requirement.

EXHIBIT 1 – Dust Control Area Map

EXHIBIT 2 – Dust Control Efficiency Requirements

EXHIBIT 3 – Shallow Flood Control Efficiency and Wetness Cover Curve

ATTACHMENT A – Performance Requirements for BACM

Rule 433 – Attachment A Performance Requirements for BACM

I. BACM Shallow Flooding

- A. The "BACM Shallow Flooding" PM₁₀ control measure will apply water to the surface of those areas of the lake bed where shallow flooding is used as a PM₁₀ control measure. Water shall be applied in amounts and by means sufficient to achieve the performance standards set forth in Paragraphs I.B and I.C of this attachment. The dates by which BACM Shallow Flooding areas are to comply with these performance standards may be modified by the Dynamic Water Management provisions set forth in Rule 433.A.2.f and Paragraph VI.B.
- B. For all BACM Shallow Flooding areas except those within the 2006 DCA:
 - 1. At least 75 percent of each square mile designated as BACM Shallow Flooding areas shall continuously consist of standing water or surface-saturated soil, substantially evenly distributed for the period commencing on October 16 of each year, and ending on May 15 of the next year. For these BACM Shallow Flood dust control areas, 75 percent of each entire contiguous area shall consist of substantially evenly distributed standing water or surface- saturated soil.
 - 2. Beginning May 16 and through May 31 of every year, shallow flooding areal wetness cover may be reduced to a minimum of 70 percent.
 - 3. Beginning June 1 and through June 15 of every year, shallow flooding areal wetness cover may be reduced to a minimum of 65 percent.
 - 4. Beginning June 16 and through June 30 of every year, shallow flooding areal wetness cover may be reduced to a minimum of 60 percent.
- C. For BACM Shallow Flooding areas within the 12.7 square-mile 2006 DCA:
 - 1. The percentage of each area that must have substantially evenly distributed standing water or surface-saturated soil shall be based on the Shallow Flood Control Efficiency Curve (Exhibit 3) to achieve the control efficiency levels in the Minimum Dust Control Efficiency (MDCE) Map (Exhibit 2).
 - 2. For only those BACM Shallow Flooding areas with control efficiencies of 99 percent or more:
 - a. Beginning May 16 and through May 31 of every year, shallow flooding areal wetness cover may be reduced to a minimum of 70 percent.

- b. Beginning June 1 and through June 15 of every year, shallow flooding areal wetness cover may be reduced to a minimum of 65 percent.
- c. Beginning June 16 and through June 30 of every year, shallow flooding areal wetness cover may be reduced to a minimum of 60 percent.

II. BACM Managed Vegetation

The "BACM Managed Vegetation" PM₁₀ control measure requires planting surfaces of the BACM PM₁₀ control areas with protective vegetation to meet the control efficiency level of 99% by maintaining an overall average vegetation cover of 37% for each contiguous managed vegetation area.

III. BACM Gravel Blanket

The BACM Gravel Blanket" PM_{10} control measure requires the application of a layer of gravel sufficient to meet the control efficiency level of 100% by one of the following means:

- covering 100% of the control area with a layer of gravel at least four inches thick with gravel screened to a size greater than ½ inch in diameter, or
- covering 100% of the control area with a layer of gravel at least two inches thick
 with gravel screened to ½ inch in diameter underlain with a permanent permeable
 geotextile fabric.

IV. Tillage with BACM (Shallow Flood) Backup (or TWB²)

A. The City of Los Angeles ("City") may implement or transition BACM Shallow Flood areas to "Tillage with BACM (Shallow Flood) Back-up (TWB²)," which shall consist of (1) soil tilling within all or portions of BACM Shallow Flood PM₁₀ control areas (TWB² Areas), and (2) the installation of all necessary shallow flood infrastructure so that the TWB² Areas can be shallow-flooded if the erosion threshold is exceeded or the performance criteria are not met.

B. Construction of TWB² Areas

1. Tillage shall create rows and furrows in roughly east to west directions in order to create maximum surface roughness for winds from the north and south. Additional roughness to protect surfaces from west winds shall be created in tilled areas

- sufficient to prevent emissions from east and west winds.
- 2. The tilled surfaces will also be armored with soil clods of 1/2 inch diameter or larger covering 60 percent or more of the tilled surface.
- 3. TWB² areas shall be constructed with ridge heights (RH) averaged on 40-acre blocks at or above 1.25 feet (furrow depth to ridge top difference at least 2.5 feet) and row spacing (RS) sufficient to provide a ratio of the row spacing to ridge height (RS/RH) below 10, e.g. distance between rows is 12.5 feet with average ridge height greater than 1.25 feet.

C. Monitoring and Maintenance

1. Surface Roughness

- a. Lidar, aerial photography or other field measurement methods with equivalent accuracies will be used by the City to measure RS/RH ratio and ridge height. Roughness measurements will be made in the north-to-south direction --- the direction of the primary dust producing winds. Roughness measurements may also be made in other directions. Roughness measurements will be reported to the APCO within 30 days of measurement.
- b. The RS/RH ratio and ridge height measurements will be made at 6 month, or more frequent, intervals. Inverse roughness and ridge height for a TwB² Area will be tracked and plotted as a function of time. Where feasible, field measurements may also be taken to confirm Lidar or other remotely sensed results. The City will conduct roughness measurements at least once every 6 months and report the measurements within 30 days to the APCO. The District reserves the right to conduct its own roughness measurements at any time.
- c. Assuming that degradation of the tilled ridges may occur over time, tillage maintenance will be performed by the City if the average RS/RH roughness ratio is between 10.1 and 12.0 or if the average ridge height is less than 1.1 feet in a tilled area.
- d. The City shall re-flood a TWB² area to comply with the required BACM Shallow Flood control efficiency for the area if the RS/RH ratio is greater than 12.0 (12/1) or the ridge height falls below 1.0 feet for any defined 40-acre averaging area.
- e. The City shall measure clod coverage using the point-intercept method (U.S. Bureau of Land Management, Sampling Vegetation Attributes, Method G,

Technical Reference BLM/RS/ST-96/002+1730) or other field measurement methods with equivalent accuracy. Clod cover will be measured concurrently with surface roughness at least once every 6 months and reported to the APCO within 30 days of measurement.

2. Sand Flux

- a. The City shall monitor each TWB² area with at least four Sensits and Cox sand catchers (CSCs) with inlets set at 15 cm above untilled surfaces (circular pads with 3 m radius) in the general northern, southern, eastern and western portions of a tillage. In TWB² areas greater than 320 acres the City shall install one Sensit and CSC pair per 80 acres.
- b. The City will pair CSCs with Sensits, radio equipment and dataloggers programmed to record 5-minute sand motion data. All Sensit data will be reported daily to the District. Sand motion data from the CSCs and Sensits will be processed to track sand flux at each site.
- c. All sand flux monitoring equipment will be installed prior to the start of tillage activities.
- d. High sand flux values recorded during maintenance activities or from non-tillage sand flux sources shall be excluded from the sand flux data. Maintenance activities and non-tillage sand flux sources may include, but are not limited to, rain-splatters, bugs, adjacent grading and road construction activities, as well as vehicle traffic. Sensits should be placed so as to minimize impacts from nontillage sand flux sources.
- e. When (other than during maintenance activities taking place in the "tillage area" which is defined as the tilled portion of the TWB² area) the sand flux exceeds 0.50 g/cm²/day, the City will perform maintenance in the tillage area, which may include surface wetting, re-establishment of the surface roughness, or full or partial reflooding of a TWB².

3. PM₁₀ Monitoring

a. Each TWB² area will be assigned upwind and downwind PM₁₀ monitors (not necessarily at the TwB² Area boundary) to monitor PM₁₀ emissions from the tillage area. For a given wind direction, the downwind monitors shall be within

- 22 degrees (±11.5°) of the upwind monitors. Upwind/downwind monitor assignments will be requested by the City and approved by the APCO. Existing monitors operated by the District may be used as upwind/downwind monitors. Additional EPA reference and equivalent method PM₁₀ monitors (40 CFR Part 53) shall be operated by the City, unless mutually agreed otherwise.
- b. If a monitor is operated by the City, its operation and maintenance must follow District procedures and data collection must be incorporated into the District communications network. The District reserves the right to audit monitors and monitoring data collected by the City. The District also reserves the right to install and operate or require the City to install and operate additional PM₁₀ monitors to adequately monitor the PM₁₀ emissions coming from tilled areas.
- c. All PM₁₀ monitoring equipment will be in place as soon as practicable as shallow flood areas dry, but no later than the start of tillage activities.
- d. Impacts caused by maintenance activities and non-tillage sources shall be excluded from the PM₁₀ data. Maintenance activities and non-tillage PM₁₀ sources may include, but are not limited to, adjacent grading and road construction activities, as well as vehicle traffic. PM₁₀ monitors should be placed so as to minimize impacts from non-tillage sources.
- e. When the daily downwind to upwind PM_{10} concentration difference for any dust event (other than during maintenance activities in the tillage area) exceeds 50 $\mu g/m^3$ and there is no evidence to show that the additional downwind PM_{10} did not come from the TWB^2 Area, maintenance will be performed in the tillage area.

4. Induced Particulate Erosion Test

a. The Induced Particulate Erosion Test (IPET) method will be used to determine if tilled area surfaces are starting to become emissive. The IPET method uses a small radio-controlled helicopter-type craft (Radio-Controlled Wind Induction Device or RCWInD) to create wind on the surface. Each RCWInD craft shall be pre-tested to determine the test height above the surface (H_t) at which the craft creates a target maximum horizontal wind speed (TWS) measured at 1 centimeter (U_{0.01}) above a flat surface equal to 11.3 meters per second (m/s). If the payload on a craft is changed, e.g. a different camera is used, then H_t must be re-

- determined for the new payload since it will affect the amount of thrust needed to keep the RCWInD aloft.
- b. Testing to determine H_t and TWS will be done on a smooth flat surface, e.g. concrete or asphalt pavement or plywood test platform with calm ambient winds (< 2 m/s). H_t is measured from the bottom of the rotor blade to the surface. The maximum wind speed for any flight height is taken at a height one centimeter above the surface at a point that is one rotor blade length away from the point beneath the center of the fastest rotor blade taken on a line extending outward from the rotor arm. The wind speed measurement is taken with a pitot tube pointing toward the center of the rotor blade. The RCWInD must be flown in a stationary position to get a sustained wind speed measurement.
- c. When the craft is flown over a ridged surface H_t is measured from the bottom of the craft's rotor blades to the highest surface projection anywhere directly below the craft.
- d. Three erosion alert levels are set using the IPET method: 1) an <u>early warning</u> of possible clod and surface stability deterioration, 2) a <u>warning</u> level to alert the City of a potential breakdown of the surface stability and to advise voluntary maintenance efforts, and 3) a <u>mitigation</u> action level to require re-tilling and/or re-flooding of all or part of a TWB², DWM or Brine BACM Area.
- e. The IPET method will be used to determine erosion alert levels as follows:
 - Level 1 An erosion <u>early warning</u> is indicated when any visible dust is observed to be emitted from a surface or particles are dislodged when the RCWInD is flown at a height below one half of H_t. Voluntary mitigation may be appropriate to prevent further surface degradation.
 - Level 2 An erosion <u>warning</u> is indicated when any visible dust is observed to be emitted from a surface when the RCWInD is flown at a height below H_t and above one half of H_t. Voluntary mitigation is advised to prevent further surface degradation.
 - Level 3 <u>Mitigation</u> action is required if visible dust is observed to be emitted from a surface when the RCWInD is flown at a height of H_t or higher.
- D. The City shall re-flood TwB² areas to comply with the BACM Shallow Flood control

efficiency target for that area, if either of the following erosion thresholds are exceeded as determined using the sand flux and IPET measurements described in Paragraphs IV.C.2 and IV.C.4.

- 1. Sand flux measured at 15 cm above the surface exceeds 1.0 gram per square centimeter per day, or
- 2. Induced Particulate Erosion Test method shows visible dust emissions when operated at the reference test height, H_t.

V. Brine BACM

- A. Stable surfaces for Brine BACM shall be defined as consisting of standing water, evaporite salt deposit, and capillary brine salt crust as follows:
 - 1. Water: Standing water or hydrologically saturated surface as defined by BACM Shallow Flooding, regardless of salinity level.
 - 2. Evaporite Salt Deposit: A crystalline deposit of salt minerals precipitated on the surface of the lakebed from evaporation of Owens Lake brine. The evaporite salt deposit does not include the development of salt crust by upward capillary movement of saline fluids through the soil column. The evaporite salt deposit must have an average thickness of 1.5 centimeters or greater and may be either wet or dry.
 - 3. Capillary Brine Salt Crust: A crust enriched in salt minerals formed at the soil surface by upward capillary movement of water through the soil. The capillary brine crust typically consists of a mix of salt minerals and soil particles in various proportions, and must meet the following three conditions:
 - a. The capillary brine salt crust within a Brine BACM area must have an average thickness of 10 centimeters or greater and may be either wet or dry,
 - b. a capillary brine salt crust must be accompanied by either water and/or an evaporite salt deposit, and
 - c. the proportion of qualifying capillary brine crust within a Brine BACM area cannot exceed one-third of the required total compliant cover within a Brine BACM area.
- B. Each Brine BACM area shall be operated such that the total areal extent of the surface cover of the qualifying surfaces are maintained such that they meet or exceed those as

- defined by the Shallow Flooding Control Efficiency Curve in Exhibit 3. The combined mosaic of stable Brine BACM surfaces shall cover the entire dust control area.
- C. Brine BACM can be used by the City of Los Angeles (City) throughout the Owens Lake bed where backup BACM Shallow Flood infrastructure exists and can be implemented, as set forth in this protocol, to ensure that Brine BACM areas do not cause or contribute to exceedance of the NAAQS for PM₁₀.
- D. The boundaries for each Brine BACM area will be pre-defined by the City prior to implementation. Each Brine BACM area will be monitored separately to determine compliance with required surface cover conditions.
- E. The City will monitor each Brine BACM area with at least one sand flux monitor (SFM) site instrumented with paired Cox Sand Catchers (CSCs) and Sensits with inlets positioned 15 cm above the surface, radio equipment, and dataloggers programmed to record 5-minute sand motion data. SFM sites will primarily be located in portions of Brine BACM areas covered with a capillary crust. All Sensit data will be reported daily to the District. Sand motion data from the CSCs and Sensits will be processed to track sand flux at each site.
- F. Brine BACM areas will be monitored using the IPET method following the procedures used for Tillage with BACM Back-up areas in Paragraph IV.C.4.
- G. The City shall re-flood Brine BACM areas to comply with the BACM Shallow Flood control efficiency target for that area, if either of the following erosion thresholds are exceeded as determined using the sand flux and IPET measurements described in Paragraphs IV.C.2 and IV.C.4.
 - 1. Sand flux measured at 15 cm above the surface exceeds 5.0 grams per square centimeter per day, or
 - 2. Induced Particulate Erosion Test method shows visible dust emissions when operated at the reference test height, H_t.

VI. Dynamic Water Management

- A. Areas that are eligible for Dynamic Water Management (DWM) must meet the following sand flux history criteria:
 - 1. 5 years or more of sand flux data from before dust control implementation, and

- 2. The frequency of significant sand flux (≥5 g/cm²/day) taking place outside of the modified shallow flood dust control period did not occur in more than one calendar year over any continuous six year period.
- B. The modified dust seasons for DWM have three different start dates in the beginning of the season that reflect the delayed start of source area activity across the lakebed. The modified start dates are applicable to certain dust control areas based on the sand flux history as evaluated in Paragraph VI.A and the method of shallow flooding using conventional flooding or sprinkler irrigation.
 - 1. For areas shallow flooded by methods other than sprinkler irrigation, the standard and modified dust control periods are:

Standard Dust Season

October 16 to June 30 (with ramping of 99% control areas after May 15)

Modified Dust Seasons for Dynamic Water Management

October 16 – April 30

December 1 – April 30

January 16 – April 30

2. For eligible areas that are shallow flooded with sprinkler irrigation, the modified DWM seasons shall be adjusted to provide water two weeks earlier in the beginning of the dust season to simulate ramp up as applied in conventional BACM Shallow Flood areas and one month later at the end of the dust season due to the lack of wetness during the dry down period with conventional BACM Shallow Flood areas. The adjustments to the DWM seasons for sprinkler irrigated shallow flooding areas are provided below.

Modified Dust Seasons Adjusted for Sprinkler Irrigated Shallow Flooding Areas

October 16 – May 31

November 16 – May 31

January 1 – May 31

- 3. In areas approved for DWM, the City of Los Angeles (City) shall meet the shallow flood control efficiency and wetness targets indicated in Exhibits 2 and 3 by or before the applicable start dates in Paragraph VI.B and water may be shut off with no spring ramping at the end of the modified season.
- C. Each DWM area will be instrumented by the City with sand flux monitoring (SFM) sites

using paired Sensits and Cox Sand Catchers (CSCs) during the modified start and end periods. The locations of SFM sites shall be determined by the City in coordination with the District.

- The number of SFM sites at the modified start of the dust season will be proportional
 to the areal extent of the DWM area. All DWM areas will require at least one SFM
 site however; the APCO may require proportionally more SFM sites for DWM areas
 greater than 320 acres such that there is approximately one SFM site per 160 acres of
 DWM area.
- 2. During the modified end period of the dust season, the LADWP shall install SFM sites incrementally in stages as a DWM area dries. The number of SFM sites is provided in Table 1 below.

Table 1. Number of SFM sites required per DWM area during the modified end of the dust season.

Drying Stage	Exposed Lakebed	Number of SFM sites
1	Less than 50 acres	0
2	50 – 160 acres	1
3	>160 acres	1 per every 160 acres

- 3. The City will pair CSCs with Sensits with inlets positioned at 15 cm above the surface, radio equipment and dataloggers programmed to record 5-minute sand motion data. All Sensit data will be reported daily to the District. Sand motion data from the CSCs and Sensits will be processed to track sand flux at each site.
- 4. During the modified start of the dust season all sand flux monitoring equipment will be placed by the City no later than October 16. During the modified end of the dust season all SFM sites will be placed by the City within 7 calendar days of reaching each drying stage. The City shall inform the District of all SFM site installations within 7 days of installation.
- 5. SFM sites installed for monitoring in the modified beginning dust season may be removed from a DWM area once the modified dust season has started for each DWM area or once the site location is endanger of getting flooded. The City shall inform the District of all SFM site removals within 7 calendar days of their removal

- date. SFM sites installed for monitoring of the modified end of the dust season may be removed from a DWM area after June 30.
- D. DWM areas will be monitored using the IPET method following the procedures used for Tillage with BACM Back-up areas in Paragraph IV.C.4.
- E. The City shall re-flood a DWM area or sub-area as indicated by the available information to comply with the BACM Shallow Flood control efficiency target for that area, if either of the following erosion thresholds are exceeded as determined using the sand flux and IPET measurements described in Paragraphs IV.C.2 and IV.C.4.
 - 1. Sand flux measured at 15 cm above the surface exceeds 5.0 grams per square centimeter per day, or
 - 2. Induced Particulate Erosion Test method shows visible dust emissions when operated at the reference test height, $H_{t.}$
- F. If any DWM area exceeds either erosion threshold in Paragraph VI.E in more than one calendar year over any continuous six-year period, that area will revert to the standard BACM Shallow Flood dust season as shown in Paragraph VI.B.1 since the area will no longer meet the DWM criteria in Paragraph VI.A.

Great Basin Unified Air Pollution Control District

Exhibit 1 - PM10 Dust Control Areas



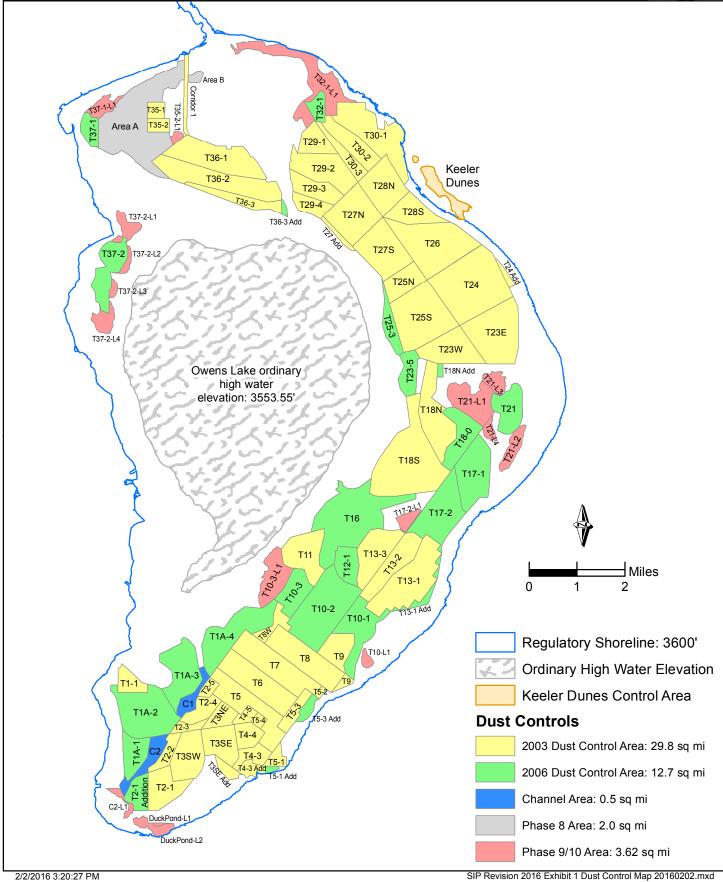


Exhibit 2 - Dust Control Efficiency Map



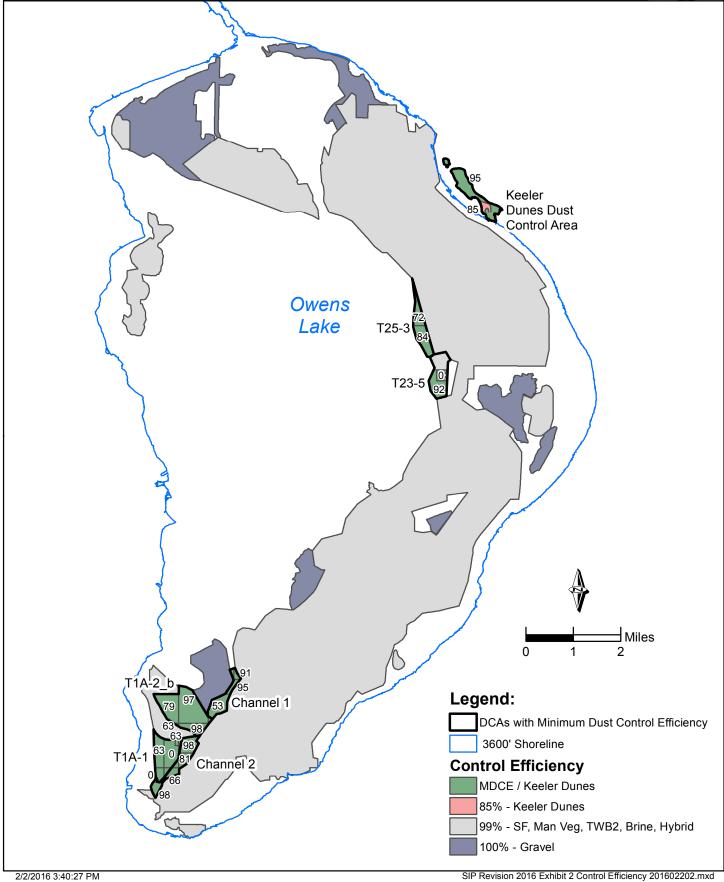
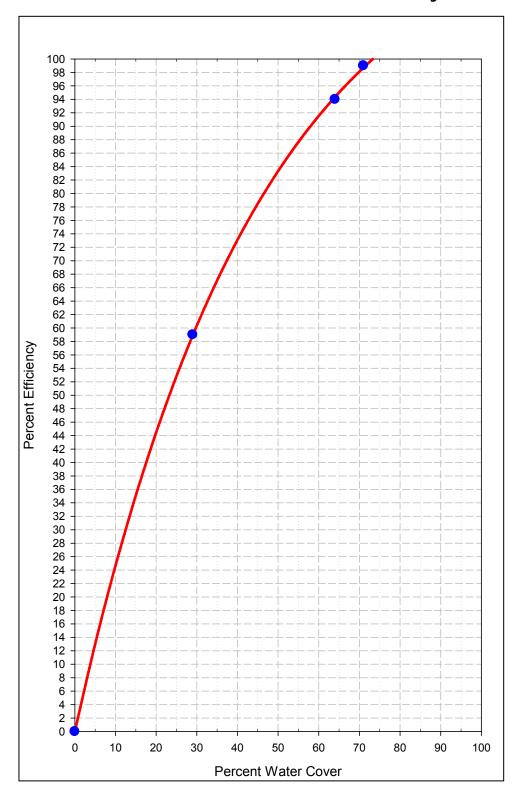


Exhibit 3 - Shallow Flood control efficiency curve





GREAT BASIN UNIFIED AIR POLLUTION CONTROL DISTRICT

157 Short Street, Bishop, California 93514-3537 760-872-8211 Fax: 760-872-6109

Analysis of Proposed District Rule 433 Under CH&SC § 40727.2 (a)

February 5, 2016 Duane Ono

When adopting new rules, California Health and Safety Code §40727.2(a) requires an analysis of existing requirements applicable to the same source or equipment. The following is the District's analysis of District Rule 433 – Control of Particulate Emissions at Owens Lake, which is proposed for adoption in 2016.

District Rule 433 applies to dust control requirements at Owens Lake, CA. The purpose of this rule is to provide a regulatory mechanism under the federal Clean Air Act to attain the National Ambient Air Quality Standards and to implement the "Stipulated Judgment" between the Great Basin Unified Air Pollution Control District ("District") and the City of Los Angeles ("City") dated December 30, 2014 and entered by the Superior Court of the State of California, County of Sacramento. This rule sets the requirements for the Best Available Control Measures ("BACM") and defines the areal extent of these controls at Owens Lake required in order to meet the NAAQS.

Previously, the District ordered the City to implement dust controls through a series of negotiated board orders. These board orders provided BACM options for use at Owens Lake, locations of ordered dust source areas, deadlines for completion, and other provisions as agreed to by the parties. Proposed District Rule 433 includes the control requirements from these previous board orders and incorporates terms from the 2014 Stipulated Judgment, which adds more areas for control, but also provides additional BACM options. The rule includes provisions that can be federally approved by the US EPA and removes discretionary provisions that were agreed to through the Stipulated Judgment and prior Board Orders negotiated by the parties.

Rule 433 does not include portions of District board orders that control the same sources of air pollution from the Owens Lake bed. The excluded portions pertain to BACM requirements that were revised, discretionary provisions that are not federally approvable in a SIP, and agreements between the District and the City that do not affect lake bed dust control requirements. Otherwise, the requirements of the rule are duplicative of the requirements in other Board Orders applicable to the same source, which includes: areas for control, emission reduction requirements, operating parameters, work practices, and monitoring, reporting and record keeping requirements.

Table 1 summarizes the list of District rules and board orders that apply to dust controls at Owens Lake. There are no federal or state regulations specific to dust control requirements at Owens Lake. Additional information on Rule 433 can be found in the draft 2016 Owens Valley Planning Area State Implementation Plan, which will be considered for adoption at the same time as this rule.

1

Table 1. List of District Rules and Board	Orders that regulate the same source as Rule 433.
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Rule/Board Order (Adoption Year)	Area Ordered for Control	Method of Control	Included in Rule 433?
400 – 20% Opacity (1974)	General	Prohibitory rule.	No
401 – Fugitive Dust (1974)	General	Take reasonable precautions to prevent dust from leaving property.	No
402 – Nuisance (1974)	General	Prohibitory rule.	No
BO 981116-01 (1998)	Lake bed 13.5 sq. mi.	BACM: Shallow flooding, gravel, managed vegetation	Yes ¹
BO 031113-01 (2003)	Lake bed 16.5 sq. mi.	BACM: Shallow flooding, gravel, managed vegetation	Yes ¹
BO 080128-01 (2008)	Lake Bed 13.2 sq. mi.	BACM: Shallow flooding, gravel, managed vegetation (with modified vegetation cover requirements), and MDCE ² BACM for the following areas: Moat & Channel and selected Shallow Flood areas.	Yes ¹
District Hearing Board Order GB09-06 (2009)	Lake Bed 2.0 sq. mi.	Gravel BACM	Yes ¹
2014 Stipulated Judgment (2014)	3.4 sq. mi., and up to 4.8 sq. mi. (contingency areas)	Modifies BACM for Shallow Flood (SF) to provide options that use SF BACM as a back-up method if the surface becomes emissive. This includes the use of Tillage, Dynamic Water Management (shorter dust control seasons) and Brine. The gravel BACM requirement was modified to allow less gravel depth if the gravel has a geotextile fabric under layer.	Yes ¹

¹ Rule 433 omits portions of the District board orders that control the same sources of air pollution from the Owens Lake bed. The omitted portions include BACM requirements that were revised, discretionary provisions that are not federally approvable in a SIP, and agreements between the District and the City that do not pertain to lake bed dust control requirements. Otherwise, the requirements of the rule are duplicative of the requirements in other Board Orders pertaining to the same source, which includes: areas for control, emission reduction requirements, operating parameters, work practices, and monitoring, reporting and record keeping requirements.

² Minimum Dust Control Efficiency (MDCE) BACM is a control measure that has less than the 99% control efficiency required for the other BACM options. The minimum control efficiency level ranges from 53-98%. The control efficiency target is determined for specific locations through a modeling analysis approved with the 2008 OVPA PM10 SIP.

CALIFORNIA AIR RESOURCES BOARD

APCD/AQMD RULE EVALUATION FORM -- Page 1

(Electronic Format)

I. GENERAL INFORMATION

District: Great Basin Unified Air Pollution Control District		
Rule No(s): 433 Date adopted/Amended/Rescinded: April 13, 2016		
Rule Title(s): Control of Particulate Matter Emissions at Owens Lake		
Date Submitted to ARB:		
If an Amended Rule, Date Last Amended (or Adopted): <u>NA</u>		
Is the Rule Intended to be Sent to the U.S. EPA as a SIP Revision? X Yes No (If No, do not complete remainder of form)		
District Contact: <u>Duane Ono</u> Phone Number: (760) 872-8211 E-mail: <u>dono@gbuapcd.org</u>		
Address: Narrative Summary of New Rule or Rule Changes: X New Rule Amended Rule		
The purpose of this regulation is to provide a regulatory mechanism under the federal Clean Air Act to attain the NAAQS and to implement the 2014 Stipulated Judgment between the District and the City of Los Angeles. It requires the City to implement BACM to mitigate windblown dust at Owens Lake, CA, to operate and maintain the existing control area, and if ordered, to control additional areas provided that the amount of District-ordered dust control areas on the lake bed does not exceed 53.4 square miles in total.		
Pollutant(s) Regulated by the Rule (Check): ROG (NOx) SO2 (CO) X PM TAC (name):		
II. EFFECT ON EMISSIONS		
Complete this section ONLY for rules that, when implemented, will result in quantifiable changes in emissions. Attach reference(s) for emission factor(s) and other information. Attach calculation sheet showing how the emission information provided below was determined.		
Net Effect on Emissions: Increase X_Decrease N/A		
Emission Reduction Commitment in SIP for this Source Category: 1,581 tons per year of PM10 is expected to be reduced from lake bed areas as a result of new BACM measures.		
Inventory Year Used to Calculate Changes in Emissions: <u>2014 (actual lake bed emission estimate)</u> Area Affected: <u>Owens Lake bed</u>		
Futuro Voar Control Profile Estimate (Provide information on as many years as possible)		

Year	Tons of PM ₁₀ /yr
2014	1,936
2015	1,936
2016	1,222
2017	1,222
2018	355
2019	355

CALIFORNIA AIR RESOURCES BOARD

APCD/AQMD RULE EVALUATION FORM -- Page 2

(Electronic Format)

Baseline Inventory in the SIP for the Control Measure: 1,936 tons/yr of PM10

Emissions Reduction Commitment in the SIP for the Control Measure: <u>1,581 tons/yr of PM10</u>			
Revised Baseline Inventory (if any):			
Revised Emission Reduction Estimate (if developed):			
Note that the district's input to the Rule Evaluation Form will not be used as input to the ARB's emission forecasting and planning.			
III. SOURCES/ATTAINMENT STATUS			
District is: Attainment Nonattainment X Split			
Approximate Total Number of Small (<100 TPY) Sources Affected by this Amendment: NA			
Percent in Nonattainment Area: NA %			
Number of Large (≥ 100 TPY) Sources Controlled: NA Percent in Nonattainment Area: NA %			
Name(s) and Location(s) (city and county) of Large (> 100 TPY) Sources Controlled by Rule (Attach additional sheets as			
necessary): <u>NA</u>			
IV. EMISSION REDUCTION TECHNOLOGY			
Does the Rule Include Emission Limits that are Continuous? X Yes No			
If Yes, Those Limits are in: <u>Rule 433 Attachment A</u>			
Rule 433 sections A.2, B, and Attachment A require BACM to be implemented continuously in all dust control areas on the Owens Lake bed during the dust season from October 1 through June 30, except for areas that are eligible for the Dynamic Water Management Program and may have shorter dust control periods. For BACM areas, the rule requires 99% control during dust season, except for Minimum Dust Control Efficiency Areas identified in the 2008 SIP that may have lower dust control efficiencies based on the model attainment demonstration.			
V. <u>OTHER REQUIREMENTS</u>			
The Rule Contains:			
Emission Limits in Section: Att. A Recordkeeping Requirements in Section: Att. A Reporting Requirements in Section: Att. A Reporting Requirements in Section: Att. A			

CALIFORNIA AIR RESOURCES BOARD

APCD/AQMD RULE EVALUATION FORM --Page 3 (Electronic Format)

VI. <u>IMPACT ON AI</u>	R QUALITY PLAN	
_ No Impact	X Impacts RFP	Impacts attainment Discussion:

Notice of Determination

To: Office of Planning and Research

For U.S. Mail: P.O. Box 3044

Street Address:

1400 Tenth Street, Room 121 Sacramento, CA 95814

Sacramento, CA 95812-3044

County Clerk
County of Inyo
P.O. Drawer F
Independence, CA 93526

From: (Public Agency)

Great Basin Unified Air Pollution Control District 157 Short Street Bishop, CA 93514

Contact: Phillip L. Kiddoo, Air Pollution Control Officer Phone: (760) 872-8211

Subject: Filing of Notice of Determination in compliance with Section 21108 or 21152 of the Public Resources Code.

Great Basin Unified Air Pollution Control District Rule 433 (Control of Particulate Emissions at Owens Lake)

Project Title

Mr. Phillip L. Kiddoo (760) 872-8211
State Clearinghouse Number Lead Agency Area Code /

(If submitted to Clearinghouse) Contact Person Telephone/Extension

Owens Lake (bounded by S.H. 136, S.H. 190, and U.S. 395), Inyo County, CA

Project Location (include county)

2016 Owens Valley PM₁₀ Planning Area Demonstration of Attainment State Implementation Plan

Land Use / Zoning / General Plan Designations:

The dry Owens Lake is primarily owned and operated in trust for the people of the State of California by the California State Lands Commission. Although it is not subject to local regulatory authority by Inyo County (County), the County's General Plan recognizes the location of state-owned and federally owned lands at Owens Lake. The Land Use element of the Inyo County General Plan designates the project area as Natural Resources and State and Federal Lands. This land use designation "is applied to land or water areas that are essentially unimproved and planned to remain open in character, [and] provides for the preservation of natural resources, the managed production of resources, and recreational uses." The Inyo County Zoning Ordinance designates the project area as predominantly OS-40: Open Space Zone, 40-acre minimum lot size.

Project Description:

On April 13, 2016, the Governing Board of the Great Basin Unified Air Pollution Control District (GBUAPCD) adopted and issued (1) District Board Order #160413-01 authorized by California Health & Safety Code Section 42316 for the City of Los Angeles (City) to install, operate and maintain additional dust control measures on the Owens Lake bed, (2) District Rule 433 (Control of Particulate Emissions at Owens Lake), and (3) the final 2016 revision to the previously-adopted Owens Valley PM₁₀ Planning Area Demonstration of Attainment State Implementation Plan (2016 SIP) (collectively "Board Actions"). The Board Actions include orders and requirements for the City to construct and operate additional dust control measures (DCMs) on the dry Owens Lake bed at the southern end of Owens Valley in Inyo

County, eastern-central California. The project is located approximately 5 miles south of the community of Lone Pine and approximately 61 miles south of the City of Bishop. The primary goal of the project is to continue to reduce dust emissions from the dry Owens Lake bed by implementing all Owens Lake bed fine particulate matter (PM_{10}) control measures to achieve the National Ambient Air Quality Standards (NAAQS) for PM_{10} . The project is analyzed in detail in the Environmental Impact Report for the Owens Lake Dust Mitigation Program – Phase 9/10 Project (May 2015) (EIR) prepared by the City of Los Angeles Department of Water and Power.

The project site is not identified on a list of hazardous materials sites compiled pursuant to California Government Code Section 65962.5 (Cortese List). No hazardous material sites are located within 1 mile of the project site.

This is to advise that the Great Basin U	nified Air Pollution Control gency Responsible Ager	
described project on April 13, 2016 and described project:	has made the following deter	minations regarding the above
 The project [☐ will ☒ will not] have at a constant of the project [☐ will ☒ will not] have at a constant of the project of the	was prepared for this project pura ared for this project pursuant to the ere not] made a condition of the a tions [\square was \boxtimes was not] adopt	suant to the provisions of CEQA. he provisions of CEQA. approval of the project. ed for this project.
This is to certify that the Final EIR, wi available to the general public at: Great Bishop, CA 93514.		
Signature (Public Agency)	April 13, 2016 Date	Air Pollution Control Officer Title
Date received for filing at OPR:		