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OHMVR COMMISSION MEETING
Sacramento, CA

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STAFF REPORT: Oceano Dunes SVRA – Dust Control Program

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SUBJECT: Oceano Dunes SVRA Dust Control Program Update

Summary

In April 2018, the Department of Parks and Recreation (DPR) entered into a Stipulated Order of Abatement (SOA) with the San Luis Obispo Air Pollution Control District (SLO APCD) related to PM 10 dust issues and Oceano Dunes State Vehicular Recreation Area (SVRA). The SOA was amended in November of 2019 and can be found at: https://storage.googleapis.com/slocleanair-org/images/cms/upload/files/AMENDED%20Order%20of%20Abatement%2011-18-19_FILED_12.pdf.

Discussion

Background: Oceano Dunes SVRA is located within the much larger Guadalupe-Nipomo dune system that stretches from southern SLO County to northern Santa Barbara County. This dune system formed over tens of thousands of years by natural sand supply and onshore winds. For several years California State Parks has been working with the SLO APCD on regional air quality issues. The region has very high Particulate Matter 10 (PM 10) air pollution when powerful onshore winds blow across the Guadalupe-Nipomo Dunes. Through a natural, wind driven process called saltation, sand grains creep and bounce along the dune surface. Through this process, very fine particles in the dune sand become airborne and are dispersed downwind.

The SLO APCD operates an air quality monitor at the California Department of Forestry and Fire Protection (CDF) fire station approximately one mile downwind of Oceano Dunes SVRA. During those powerful onshore wind events, the CDF monitor routinely exceeds the state PM 10 exceedance standard. In 2017, California State Parks approved a five-year plan aimed at reducing PM 10 at the CDF monitor and improving

regional air quality. The California Coastal Commission permitted this five-year plan under Coastal Development Permit 3-12-050.

In April 2018, as part of the SLO APCD Hearing Board process, California State Parks entered into a SOA with the SLO APCD. The SOA required immediate implementation of additional dust control efforts described in the five-year dust plan and the coastal development permit.

The SOA also established the Scientific Advisory Group (SAG), a seven-member panel of technical advisors to "evaluate, assess, and provide recommendations on the mitigation of windblown PM10 emissions" from Oceano Dunes.

By September 2018, DPR implemented the dust control measures described in the five-year dust plan, basically fast-tracking the dust control efforts. DPR undertook a substantial dune restoration effort in support of the SOA and regional air quality in winter 2018/2019. Portions of the dune recreation area at Oceano Dunes SVRA were fenced-off to exclude public access. Thousands of native dune plants were planted in coordination with the winter rains and moist conditions. The native dune plants are propagated from locally collected seed stock and grown at the Oceano Dunes greenhouse, Cal Poly Horticulture Program, and local commercial greenhouses. The restoration process includes application of straw mulch, sterile annual cereal grain seed, native dune plant seed, and fertilizer to support and protect the young native plantings in the dynamic dune ecosystem.

As part of the SOA, a new four-year dust plan or Particulate Matter Reduction Plan (PMRP) was created. The PMRP is available on the SLO APCD website, www.slocleanair.org/air-quality/oceano-dunes-efforts.php.

The SOA (section (2)(c)) also requires the use of air quality modeling to determine progress toward the initial target of reducing the maximum 24-hour PM10 baseline emissions by fifty percent (50%).

Update: The Scientific Advisory Group (SAG) approved the use of the Desert Research Institute (DRI) model to guide emission reductions and dust projects at Oceano Dunes SVRA. DRI presented a modeling update to DPR on April 22, 2020. This presentation outlined the baseline days to be used in the model and the status of the dust control projects to-date in terms of meeting the SOA requirements.

In all, DPR installed 230.9 acres of dust control treatments from 2017 through spring 2020 resulting in a 14.7% mass emission reduction, out of the 50% mass emission requirement outlined in the SOA. Given this information, compliance with SOA (2)(c) may be very difficult for DPR to achieve. The modelling results from 2013 and 2019 illustrate the dynamic nature of the system. Areas that appeared to be more emissive in 2013 did not necessarily show equivalency of high emissivity in 2019 data based on the more recent measurements. As per the DRI presentation on May 4th, 2020 (available upon request), "the expected benefit of targeting "hot spots" as identified initially in the CARB modeling has not resulted in "extra" emission reduction, because that "map" over-emphasized the presence of high emission areas."

DRI presented the initial dispersion model results to DPR on May 4, 2020. The model predicts a 54% reduction in PM10 concentrations at the CDF monitor based on the current and past dust control projects at Oceano Dunes SVRA. This indicates that the dust control projects at ODSVRA may be positively impacting regional air quality, even in light of the low mass emission reductions.

The current modeling does not include any secondary or downwind dust mitigating benefits of implemented dust control projects. DRI recommended that DPR pursue additional modeling that could describe and calculate the secondary or downwind effects of dust projects, and DPR approved that recommendation (see Attachment 1).

In 2019-2020, DPR installed 92.2 acres of dust control projects. These projects include 40 acres of seasonal wind fencing arrays (two 20-acre projects), the 48-acre foredune, and 4.2 acres of backdune projects. The 40 acres of seasonal wind fencing arrays are temporary and will be removed in the fall of 2020.

A draft Oceano Annual Report and Work Plan was submitted to the SLO APCD on August 1, 2020. This work plan, currently being reviewed by the SLO APCD, outlines the 2020-2021 dust projects at Oceano Dunes SVRA.

There have been more PM-10 exceedances of the State Standard at CDF in 2020 than in 2019. DPR is working with the SAG and DRI to better understand any specific impacts OHV activity may or may not have on dust emissions. Since March of 2020, a study has been underway to explore any potential effects of removing OHV from Oceano dunes to dust emissions.

A discussion of the “baseline” days to be used for the model is provided in Attachment 2. The baseline days will be formalized in the 2020 Annual Report and Work Plan.

A SAG response to the industrial/construction type wind fencing proposal is provided in Attachment 3.

Commission Action

For information only.

Attachments

1. Evaluating Secondary Effects of Dust Controls on Emissions and Air Quality using Computational Fluid Dynamic Modeling
2. Defining the 10 Baseline Days for 2013
3. Wind Fence Proposal Review by Scientific Advisory Group