Appendix A. NWS Issued Alerts

This section provides weather alert text products from the National Weather Service (downloaded from Iowa State Mesonet [https://mesonet.agron.iastate.edu/]) covering the high-wind dust event that occurred on October 25, 2020.

Iowa State University

Iowa Environmental Mesonet

MENU **SEARCH**

National Weather Service Raw Text Product

Displaying AFOS PIL: **NPWVEF** Received: **2020-10-25 09:03 UTC** Previous in Time

Latest Product | Next in Time

View All KVEF Products for 25 Oct 2020 | View All NPW Products for 25 Oct 2020 | View As Image

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PIL: NPWVEF Single Text File (\003 Delimited)

Start UTC Date @0z: 01/01/2020

End UTC Date @0z: 01/01/2021

Download Please

628
WWUS75 KVEF 250903
NPWVEF

URGENT - WEATHER MESSAGE
National Weather Service Las Vegas NV
203 AM PDT Sun Oct 25 2020

NVZ022-252300-
/O.UPG.KVEF.FZ.A.0002.201027T0800Z-201027T1500Z/
/O.NEW.KVEF.FZ.W.0003.201027T0800Z-201027T1500Z/
/O.CON.KVEF.WI.Y.0026.201026T0300Z-201027T0400Z/
Southern Clark County-
Including Primm, Searchlight, and Cal-Nev-Ari
203 AM PDT Sun Oct 25 2020

...WIND ADVISORY REMAINS IN EFFECT FROM 8 PM THIS EVENING TO 9 PM PDT MONDAY...
...FREEZE WARNING IN EFFECT FROM 1 AM TO 8 AM PDT TUESDAY...

* WHAT...For the Wind Advisory, north winds 25 to 35 mph with gusts up to 55 mph expected. For the Freeze Warning, the first freeze of the season expected with temperatures as low as 32 degrees.

* WHERE...Southern Clark County.

* WHEN...For the Wind Advisory, from 8 PM this evening to 9 AM PDT Monday morning. For the Freeze Warning, from 1 AM to 8 AM PDT Tuesday morning.

* IMPACTS...Gusty winds could blow around unsecured objects. Tree limbs could be blown down and a few power outages may result. Frost and freeze conditions will kill crops and other sensitive vegetation, marking the end of the growing season.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Use extra caution when driving, especially if operating a high profile vehicle. Secure outdoor objects.

Take steps now to protect tender plants from the cold.

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AZZ003-NVZ016-017-252300-
/O.UPG.KVEF.FZ.A.0002.201027T0800Z-201027T1500Z/
/O.NEW.KVEF.FZ.W.0003.201027T0800Z-201027T1500Z/
Northwest Deserts-Northeast Clark County-

Western Clark and Southern Nye County-
Including Kingman, Golden Valley, Dolan Springs, Valentine,
Wikieup, Yucca, Mesquite, Overton, Moapa, Pahrump,
Indian Springs, Desert Rock, and Amargosa Valley
203 AM PDT Sun Oct 25 2020 /203 AM MST Sun Oct 25 2020/

...FREEZE WARNING IN EFFECT FROM 1 AM PDT /1 AM MST/ TO 8 AM PDT
/8 AM MST/ TUESDAY...

* WHAT...The first freeze of the season expected with temperatures
  as low as 31 degrees.

* WHERE...In Arizona, Northwest Deserts. In Nevada, Northeast
  Clark County and Western Clark and Southern Nye County.

* WHEN...From 1 AM PDT /1 AM MST/ to 8 AM PDT /8 AM MST/ Tuesday
  morning.

* IMPACTS...Frost and freeze conditions will kill crops and other
  sensitive vegetation, marking the end of the growing season.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Take steps now to protect tender plants from the cold.

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CAZ520-252300-
/O.EXB.KVEF.WI.Y.0026.201025T2000Z-201026T0300Z/
/O.CON.KVEF.FZ.W.0002.201026T0800Z-201026T1600Z/
Owens Valley-
Including Bishop, Independence, Lone Pine, and Olancha
203 AM PDT Sun Oct 25 2020

...WIND ADVISORY IN EFFECT FROM 1 PM THIS AFTERNOON TO 8 PM PDT
THIS EVENING...
...FREEZE WARNING REMAINS IN EFFECT FROM 1 AM TO 9 AM PDT
MONDAY...

* WHAT...North winds 30 to 40 mph with gusts up to 50 mph
  expected.

* WHERE...Owens Valley.

* WHEN...For the Wind Advisory, from 1 PM this afternoon to 8 PM
  PDT this evening. For the Freeze Warning, from 1 AM to 9 AM PDT
  Monday morning.

* IMPACTS...Gusty winds could blow around unsecured objects. Tree
  limbs could be blown down and a few power outages may result.

Frost and freeze conditions will kill crops and other sensitive vegetation, marking the end of the growing season.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Use extra caution when driving, especially if operating a high profile vehicle. Secure outdoor objects.

Take steps now to protect tender plants from the cold.

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NVZ014-252300-
/O.EXB.KVEF.WI.Y.0026.201025T2000Z-201026T0300Z/
Esmeralda and Central Nye County-
Including Beatty, Goldfield, Silver Peak, and Dyer
203 AM PDT Sun Oct 25 2020

...WIND ADVISORY IN EFFECT FROM 1 PM THIS AFTERNOON TO 8 PM PDT THIS EVENING...

* WHAT...North winds 30 to 40 mph with gusts up to 50 mph expected.

* WHERE...Esmeralda and Central Nye County.

* WHEN...From 1 PM this afternoon to 8 PM PDT this evening.

* IMPACTS...Gusty winds could blow around unsecured objects. Tree limbs could be blown down and a few power outages may result.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Use extra caution when driving, especially if operating a high profile vehicle. Secure outdoor objects.

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AZZ002-036-CAZ524-526-527-NVZ021-252300-
/O.CON.KVEF.WI.Y.0026.201026T0300Z-201027T0400Z/
Lake Havasu and Fort Mohave-Lake Mead National Recreation Area-
Eastern Mojave Desert-Cadiz Basin-San Bernardino County-
Upper Colorado River Valley-
Including Lake Havasu City, Desert Hills, Topock, Bullhead City,
Oatman, Mohave Valley, Baker, Mountain Pass, Mitchell Caverns,
Vidal Junction, Needles, Hoover Dam, and Laughlin
203 AM PDT Sun Oct 25 2020 /203 AM MST Sun Oct 25 2020/

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...WIND ADVISORY REMAINS IN EFFECT FROM 8 PM PDT /8 PM MST/ THIS
EVENING TO 9 PM PDT /9 PM MST/ MONDAY...

* WHAT...North winds 30 to 35 mph with gusts up to 50 mph
  expected.

* WHERE...Portions of northwest Arizona, southeast California
  and southern Nevada.

* WHEN...From 8 PM PDT /8 PM MST/ this evening to 9 PM PDT /9 PM
  MST/ Monday evening.

* IMPACTS...Gusty winds could blow around unsecured objects. Tree
  limbs could be blown down and a few power outages may result.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Use extra caution when driving, especially if operating a high
profile vehicle. Take action to secure trash cans, lawn
furniture, and other loose or lightweight outdoor objects. Blowing
dust and sand may reduce visibilities for brief periods of time.
Boaters in the Wind Advisory area should use extreme caution when
venturing onto area lakes. Strong winds over the open waters will
make the lake water rough and hazardous, which may result in high
waves 2 to 4 feet, which could tip or swamp smaller craft. For
your personal safety, avoid the open waters. Stay close to shore
or around protected areas.

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For more information from the National Weather Service visit
https://weather.gov/lasvegas
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Iowa Environmental Mesonet

MENU **SEARCH**

National Weather Service Raw Text Product

Displaying AFOS PIL: **NPWVEF** Received: **2020-10-25 19:36 UTC** Previous in Time

Latest Product | Next in Time

View All KVEF Products for 25 Oct 2020 | View All NPW Products for 25 Oct 2020 | View As Image

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PIL: NPWVEF Single Text File (\003 Delimited)

Start UTC Date @0z: 01/01/2020

End UTC Date @0z: 01/01/2021

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354
WWUS75 KVEF 251936
NPWVEF

URGENT - WEATHER MESSAGE
National Weather Service Las Vegas NV
1236 PM PDT Sun Oct 25 2020

NVZ022-260300-
/O.EXT.KVEF.WI.Y.0026.201025T2000Z-201027T0400Z/
/O.CON.KVEF.FZ.W.0003.201027T0800Z-201027T1500Z/
Southern Clark County-
Including Primm, Searchlight, and Cal-Nev-Ari
1236 PM PDT Sun Oct 25 2020

...WIND ADVISORY NOW IN EFFECT UNTIL 9 PM PDT MONDAY...
...FREEZE WARNING REMAINS IN EFFECT FROM 1 AM TO 8 AM PDT
TUESDAY...

* WHAT...For the Wind Advisory, north winds 25 to 35 mph with
  gusts up to 55 mph expected. For the Freeze Warning, the first
  freeze of the season expected with temperatures as low as 32
  degrees.

* WHERE...Southern Clark County.

* WHEN...For the Freeze Warning, from 1 AM to 8 AM PDT Tuesday.
  For the Wind Advisory, until 9 PM PDT Monday.

* IMPACTS...Gusty winds could blow around unsecured objects.
  Tree limbs could be blown down and a few power outages may
  result. Frost and freeze conditions will kill crops and other
  sensitive vegetation, marking the end of the growing season.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Use extra caution when driving, especially if operating a high
profile vehicle. Secure outdoor objects.

Take steps now to protect tender plants from the cold. To prevent
freezing and possible bursting of outdoor water pipes they should
be wrapped, drained, or allowed to drip slowly. Those that have
in-ground sprinkler systems should drain them and cover above-
ground pipes to protect them from freezing.

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NVZ016-017-260300-
/O.EXB.KVEF.WI.Y.0026.201025T2000Z-201027T0400Z/
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/O.CON.KVEF.FZ.W.0003.201027T0800Z-201027T1500Z/
Northeast Clark County-Western Clark and Southern Nye County-
Including Mesquite, Overton, Moapa, Pahrump, Indian Springs,
Desert Rock, and Amargosa Valley
1236 PM PDT Sun Oct 25 2020

...WIND ADVISORY IN EFFECT UNTIL 9 PM PDT MONDAY...
...FREEZE WARNING REMAINS IN EFFECT FROM 1 AM TO 8 AM PDT
TUESDAY...

* WHAT...North winds 25 to 35 mph with gusts up to 55 mph
  expected.

* WHERE...Northeast Clark County and Western Clark and Southern
  Nye County.

* WHEN...For the Freeze Warning, from 1 AM to 8 AM PDT Tuesday.
  For the Wind Advisory, until 9 PM PDT Monday.

* IMPACTS...Gusty winds could blow around unsecured objects. Tree
  limbs could be blown down and a few power outages may result.
  Frost and freeze conditions will kill crops and other sensitive
  vegetation, marking the end of the growing season.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Use extra caution when driving, especially if operating a high
profile vehicle. Secure outdoor objects.

Take steps now to protect tender plants from the cold. To prevent
freezing and possible bursting of outdoor water pipes they should
be wrapped, drained, or allowed to drip slowly. Those that have
in-ground sprinkler systems should drain them and cover above-
ground pipes to protect them from freezing.

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CAZ520-260300-
/O.EXT.KVEF.WI.Y.0026.201025T2000Z-201027T0400Z/
/O.CON.KVEF.FZ.W.0002.201026T0800Z-201026T1600Z/
Owens Valley-
Including Bishop, Independence, Lone Pine, and Olancha
1236 PM PDT Sun Oct 25 2020

...WIND ADVISORY NOW IN EFFECT UNTIL 9 PM PDT MONDAY...
...FREEZE WARNING REMAINS IN EFFECT FROM 1 AM TO 9 AM PDT
MONDAY...

* WHAT...North winds 30 to 40 mph with gusts up to 55 mph
  expected.

* WHERE...Owens Valley including Bishop, Lone Pine, Independence,
  and Olancha.

* WHEN...For the Freeze Warning, from 1 AM to 9 AM PDT Monday.
  For the Wind Advisory, until 9 PM PDT Monday.

* IMPACTS...Gusty winds could blow around unsecured objects.
  Tree limbs could be blown down and a few power outages may
  result. Frost and freeze conditions will kill crops and other
  sensitive vegetation, marking the end of the growing season.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Use extra caution when driving, especially if operating a high
profile vehicle. Secure outdoor objects.

Take steps now to protect tender plants from the cold. To prevent
freezing and possible bursting of outdoor water pipes they should
be wrapped, drained, or allowed to drip slowly. Those that have
in-ground sprinkler systems should drain them and cover above-
ground pipes to protect them from freezing.

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AZZ003-260300-
/O.EXA.KVEF.WI.Y.0026.201025T2000Z-201026T0300Z/
/O.CON.KVEF.FZ.W.0003.201027T0800Z-201027T1500Z/
Northwest Deserts-
Including Kingman, Golden Valley, Dolan Springs, Valentine,
Wikieup, and Yucca
1236 PM MST Sun Oct 25 2020

...WIND ADVISORY IN EFFECT UNTIL 8 PM MST THIS EVENING...
...FREEZE WARNING REMAINS IN EFFECT FROM 1 AM TO 8 AM MST
TUESDAY...

* WHAT...Southwest winds 25 to 35 mph with gusts up to 40 mph
  expected. Winds will shift to the north this evening and
  decrease slightly, with 20-25 winds with gusts of 30-35 mph.

* WHERE...Northwest Deserts including Kingman, Dolan Spring,
  Wikieup, and Yucca.

* WHEN...For the Wind Advisory, from 1 PM this afternoon to 8 PM
  PDT this evening. For the Freeze Warning, from 1 AM to 9 AM
  PDT Monday morning.

* IMPACTS...Gusty winds could blow around unsecured objects.
  Tree limbs could be blown down and a few power outages may

result. Frost and freeze conditions will kill crops and other
sensitive vegetation, marking the end of the growing season.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Use extra caution when driving, especially if operating a high
profile vehicle. Secure outdoor objects.

Take steps now to protect tender plants from the cold. To prevent
freezing and possible bursting of outdoor water pipes they should
be wrapped, drained, or allowed to drip slowly. Those that have
in-ground sprinkler systems should drain them and cover above-
ground pipes to protect them from freezing.

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CAZ522-NVZ015-020-260300-
/O.EXB.KVEF.WI.Y.0026.201025T2000Z-201027T0400Z/
Death Valley National Park-Lincoln County-Las Vegas Valley-
Including Furnace Creek, Stovepipe Wells, Shoshone, Caliente,
Pioche, Panaca, Hiko, Alamo, Rachel, Las Vegas, North Las Vegas,
Henderson, and Boulder City
1236 PM PDT Sun Oct 25 2020

...WIND ADVISORY IN EFFECT UNTIL 9 PM PDT MONDAY...

* WHAT...North winds 25 to 35 mph with gusts up to 50 mph
  possible.

* WHERE...In Nevada, Lincoln County and Las Vegas Valley. In
  California, Death Valley National Park.

* WHEN...Until 9 PM PDT Monday.

* IMPACTS...Gusty winds could blow around unsecured objects.
  Tree limbs could be blown down and a few power outages may
  result. Frost and freeze conditions will kill crops and other
  sensitive vegetation, marking the end of the growing season.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Use extra caution when driving, especially if operating a high
profile vehicle. Secure outdoor objects.

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AZZ001-260300-

/O.EXA.KVEF.WI.Y.0026.201025T2000Z-201026T0300Z/
Northwest Plateau-
Including Colorado City, Pipe Spring National Monument, Tuweep,
Mt Trumbull, and Western Grand Canyon
1236 PM MST Sun Oct 25 2020

...WIND ADVISORY IN EFFECT UNTIL 8 PM MST THIS EVENING...

* WHAT...Southwest winds 25 to 35 mph with gusts up to 45 mph
  possible. Winds will shift to the north this evening and
  decrease slightly, gusting up to 35 mph.

* WHERE...Northwest Plateau in Arizona including Pipe Spring,
  Colorado City, and Mount Trumbull.

* WHEN...For the Wind Advisory, from 1 PM this afternoon to 8 PM
  PDT this evening. For the Freeze Warning, from 1 AM to 9 AM
  PDT Monday morning.

* IMPACTS...Gusty winds could blow around unsecured objects. Tree
  limbs could be blown down and a few power outages may result.
  Frost and freeze conditions will kill crops and other sensitive
  vegetation, marking the end of the growing season.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Use extra caution when driving, especially if operating a high
profile vehicle. Secure outdoor objects.

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CAZ523-525-260300-
/O.EXA.KVEF.WI.Y.0026.201026T0300Z-201027T0400Z/
Western Mojave Desert-Morongo Basin-
Including Barstow, Daggett, Fort Irwin, Morongo Valley,
Yucca Valley, and Twentynine Palms
1236 PM PDT Sun Oct 25 2020

...WIND ADVISORY IN EFFECT FROM 8 PM THIS EVENING TO 9 PM
MONDAY...

* WHAT...North winds 25 to 35 mph with gusts up to 50 mph
  expected.

* WHERE...Western Mojave Desert and Morongo Basin.

* WHEN...From 8 PM this evening to 9 PM Monday evening.

* IMPACTS...Gusty winds could blow around unsecured objects. Tree
  limbs could be blown down and a few power outages may result.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Use extra caution when driving, especially if operating a high
profile vehicle. Secure outdoor objects.

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AZZ036-NVZ021-260300-
/O.EXT.KVEF.WI.Y.0026.201025T2000Z-201027T0400Z/
Lake Mead National Recreation Area-
Including Bullhead City, Oatman, Mohave Valley, Hoover Dam,
and Laughlin
1236 PM PDT Sun Oct 25 2020 /1236 PM MST Sun Oct 25 2020/

...WIND ADVISORY NOW IN EFFECT UNTIL 9 PM PDT MONDAY...

* WHAT...North winds 30 to 40 mph with gusts up to 60 mph
  possible.

* WHERE...Locations along the Colorado River including Bullhead
  City, Laughlin, Lake Mead, Lake Mohave, and Oatman.

* WHEN...Until 9 PM PDT Monday.

* IMPACTS...Gusty winds could blow around unsecured objects. Tree
  limbs could be blown down and a few power outages may result.
  These winds will also result in wave heights up to 4 feet at
  times resulting in significant boating hazards and possible
  impacts to area marinas.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Use extra caution when driving, especially if operating a high
profile vehicle. Secure outdoor objects.

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NVZ014-260300-
/O.CON.KVEF.WI.Y.0026.201025T2000Z-201026T0300Z/
Esmeralda and Central Nye County-
Including Beatty, Goldfield, Silver Peak, and Dyer
1236 PM PDT Sun Oct 25 2020

...WIND ADVISORY REMAINS IN EFFECT UNTIL 8 PM PDT THIS EVENING...

* WHAT...North winds 30 to 40 mph with gusts up to 50 mph
  expected.

* WHERE...Esmeralda and Central Nye County.

* WHEN...From 1 PM this afternoon to 8 PM PDT this evening.

* IMPACTS...Gusty winds could blow around unsecured objects.
  Tree limbs could be blown down and a few power outages may
  result.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Use extra caution when driving, especially if operating a high
profile vehicle. Secure outdoor objects.

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AZZ002-CAZ524-526-527-260300-
/O.CON.KVEF.WI.Y.0026.201026T0300Z-201027T0400Z/
Lake Havasu and Fort Mohave-Eastern Mojave Desert-Cadiz Basin-
San Bernardino County-Upper Colorado River Valley-
Including Lake Havasu City, Desert Hills, Topock, Baker,
Mountain Pass, Mitchell Caverns, Vidal Junction, and Needles
1236 PM PDT Sun Oct 25 2020 /1236 PM MST Sun Oct 25 2020/

...WIND ADVISORY REMAINS IN EFFECT FROM 8 PM THIS EVENING
TO 9 PM MONDAY...

* WHAT...North winds 30 to 35 mph with gusts up to 50 mph
  expected.

* WHERE...Western Mojave Desert and Colorado River Valley
  including Baker, Lake Havasu City, Topock, Needles, and Vidal
  Junction.

* WHEN...From 8 PM this evening to 9 PM Monday evening.

* IMPACTS...Gusty winds could blow around unsecured objects. Tree
  limbs could be blown down and a few power outages may result.
  Wave heights on Lake Havasu could reach up to 4 feet resulting
  in significant hazards to boaters.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Use extra caution when driving, especially if operating a high
profile vehicle. Secure outdoor objects.

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For more information from the National Weather Service visit
https://weather.gov/lasvegas
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Appendix B. Supporting Materials

1.1 Supporting Information for Suspected Dust Event Days

1.1.1 2016-07-30

The 24-hour average PM_{10} concentration observed on September 8, 2020, ranked as the 99.94 percentile of all concentrations in the five-year period from 2016-2020 at Jerome Mack (Table 3.4-1). The only higher value (309 µg/m^3) was recorded on July 30, 2016, which also has evidence of being a high-wind, dust-related event. Observations in wind patterns, satellite imagery, and visibility cameras indicate a dust layer that moved over the Las Vegas Valley that was likely a result of overnight thunderstorms in Arizona. Hourly PM_{10} data is shown compared to wind speed and gust data in Figure 1. Overnight thunderstorms in Arizona led to the development of a Mesoscale Convective Complex (MCC) over the Phoenix area from 20:45-22:15 MST, which is depicted in the satellite imagery (Figure 2). At around 21:45 MST, a very strong outflow boundary was produced by the MCC that travelled northwest towards southern California and southern Nevada, depicted in the imagery. As the outflow boundary moved out from the Phoenix area, it picked up a large, deep layer of dust that it carried into southern Nevada, where it remained in the Las Vegas Valley all day.

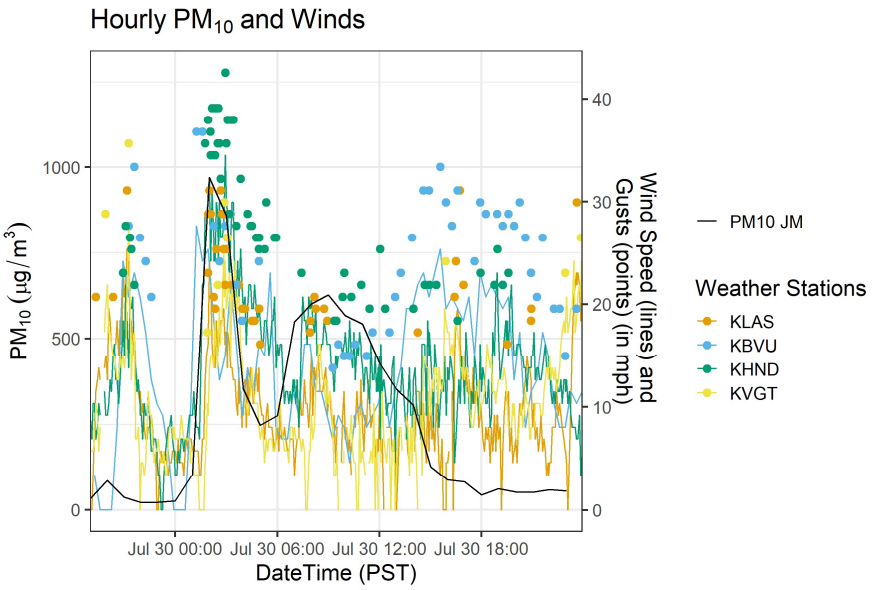

Figure 1. Hourly PM_{10} (µg/m^3) at Jerome Mack (JM), wind speed (lines), and wind gusts (dots) from KLAS, KBVU, KHND, and KVGT weather stations between July 29 at 19:00 PST and July 30, 2016, at 23:59 PST.

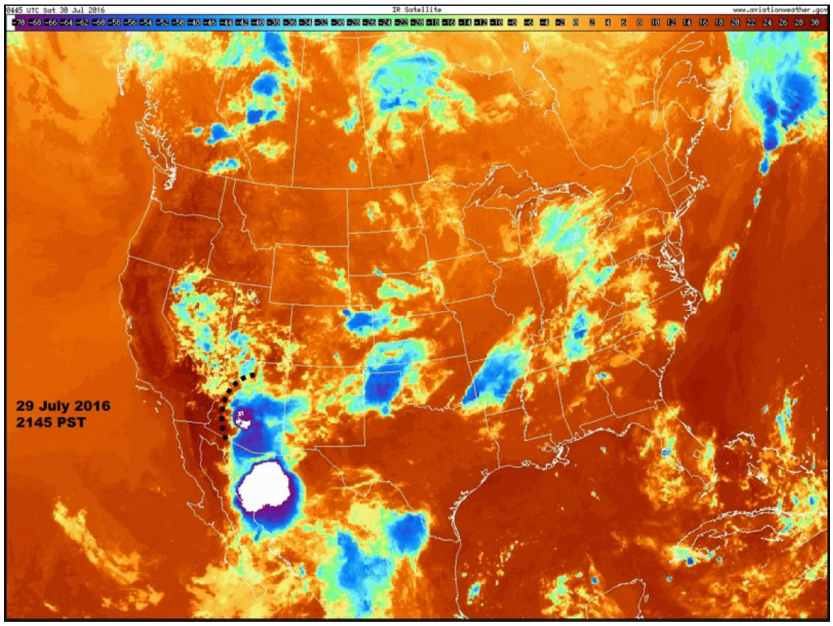

Figure 2. Satellite imagery from July 29, 2016, at 21:45 PST with the outflow boundary from a thunderstorm system in Arizona outlined.

1.1.2 2018-02-10

A regional-scale dust event is suspected to have occurred on February 10, 2018, associated with a cold front passage. Elevated levels of PM_{10} and $PM_{2.5}$ levels occurred throughout the network. Hourly averages of resultant wind speed for February 10 show the high wind speeds occurring during the afternoon and evening hours, and hourly averages for PM_{10} on February 10 show the high concentrations also occurred during the afternoon and evening hours (**Figure 5**). The resultant wind directions show a corresponding shift from southwesterly to northerly directions (not shown).

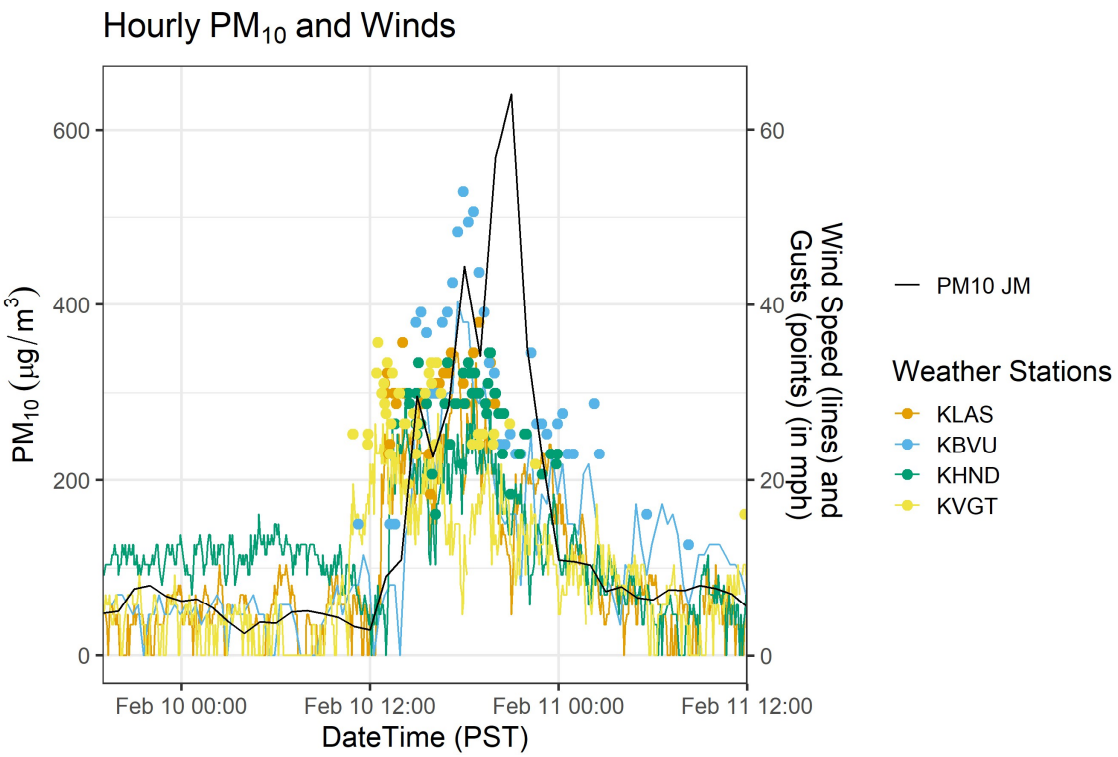

Figure 3. Hourly PM_{10} ($\mu g/m^3$) at Jerome Mack (JM), wind speed (lines), and wind gusts (dots) from KLAS, KBVU, KHND, and KVGT weather stations between February 9 at 19:00 PST and February 11, 2018, at 12:00 PST.

1.1.3 2017-12-20

PM_{10} values observed on December 20, 2017, are suspected to be related to a high-wind dust event. On this day, wind gusts of up to 50 mph were recorded locally (**Figure 6**), which correspond with the highest PM_{10} levels and wind direction switching from southwest to northwest. Recently disturbed land near the Jerome Mack site apparently contributed to the unusually high PM_{10} levels.

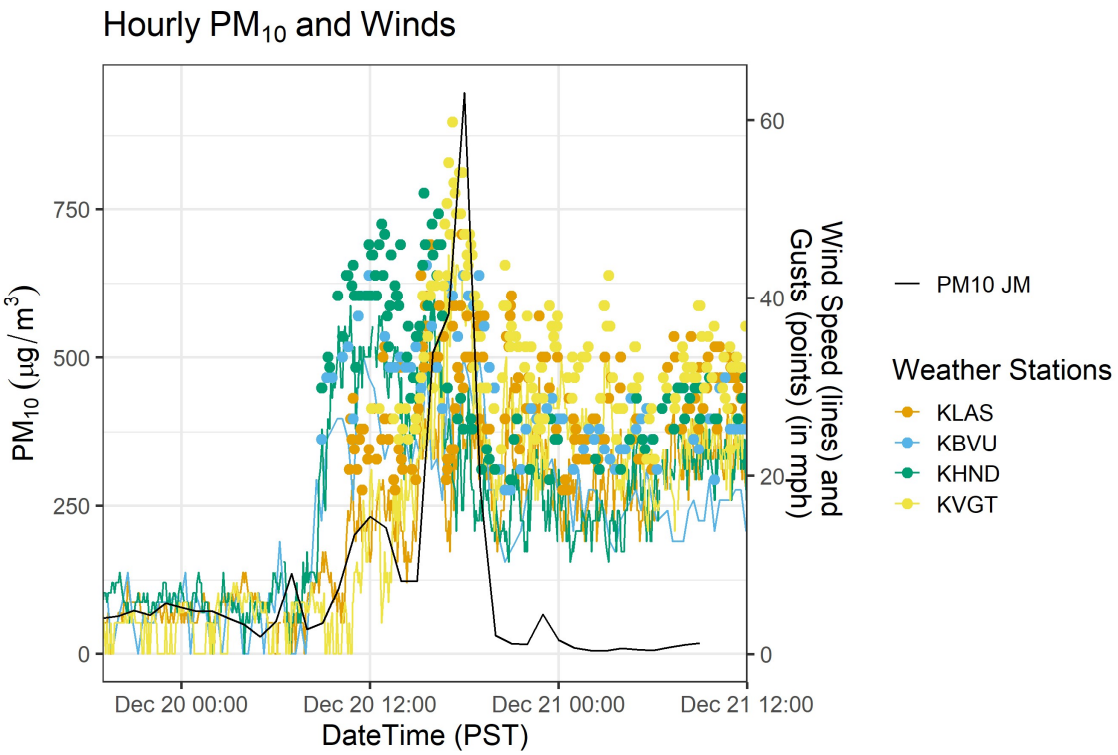

Figure 4. Hourly PM_{10} ($\mu g/m^3$) at Jerome Mack (JM), wind speed (lines), and wind gusts (dots) from KLAS, KBVU, KHND, and KVGT weather stations between December 19 at 19:00 PST and December 21, 2017, at 12:00 PST.

1.1.4 2020-06-28

A third suspected 2020 dust event occurred on June 28 when a 24-hour average PM_{10} concentration of 167 $\mu g/m^3$ was recorded. Westerly winds with speeds >40 mph were recorded and the M Resort Hotel visibility cameras showed periods obscured by dust that correlated with times of the highest PM_{10} concentrations (Figure 7).

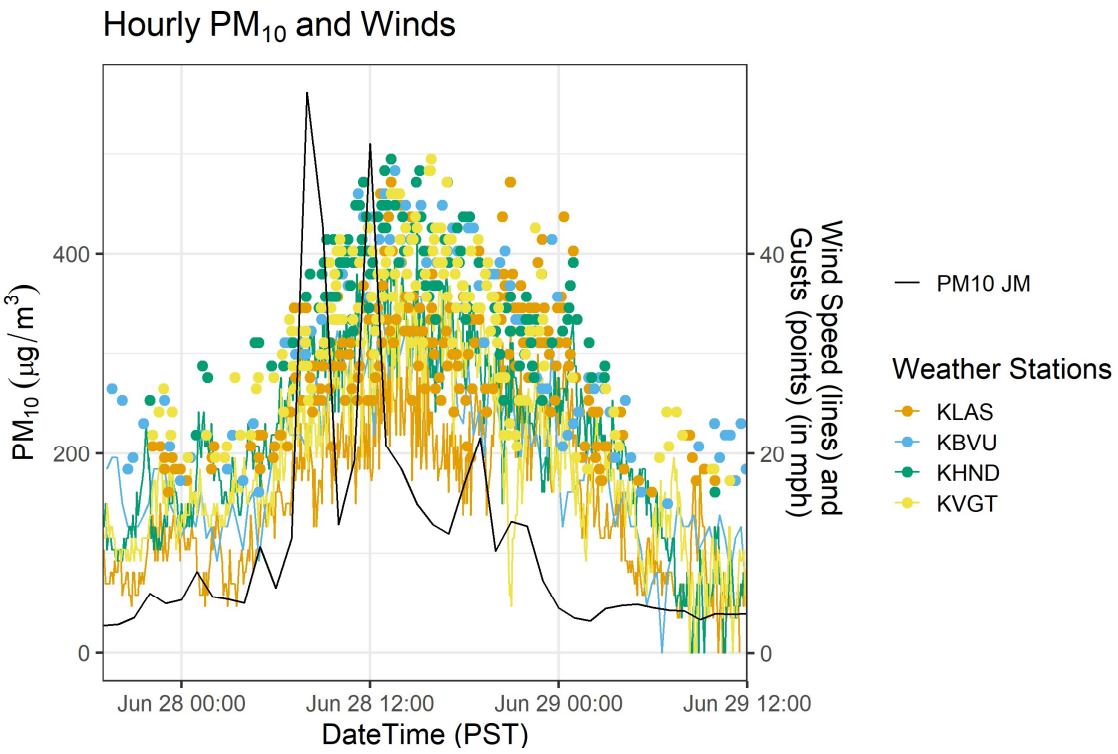

Figure 5. Hourly PM_{10} (ug/m3) at Jerome Mack (JM), wind speed (lines), and wind gusts (dots) from KLAS, KBVU, KHND, and KVGT weather stations between June 27 at 19:00 PST and June 29, 2020, at 12:00 PST.

1.2 Supporting Information for Meteorological Similar Analysis

The following sections supplement Section 3.5.1 of the main document, "Wind Events Without High Concentrations." This section details April 15, 2016, one instance in the set of dates that have similar wind profiles to the event date but low daily average PM_{10} concentrations (below 100 µg/m^3 at Clark County sites). More details on methodology can be found in Section 3.5.1 of the main document. Table 1 provides the same information as Table 3.5-1 in the main document.

Table 1. Similar meteorological event days without elevated PM_{10} concentrations identified by days with six or more hourly-reported wind speed observations >25 mph and eight or more wind gusts >45 mph. PM_{10} concentrations are reported at Jerome Mack (JM) and Sunrise Acres (SA).

			Daily PM_{10} ($\mu g/m^3$)	
Date	Daily Wind Speed (mph)	Peak Wind Gust (mph)	JM	SA
2020-10-25 (Event date)	7	49	210	163
2016-04-15	22	47	29	28
2021-02-24	10	56	48	43
2022-03-20	17	62	41	50

1.2.1 February 24, 2021

Figures 8-11 below compare surface-level wind and visibility conditions on the event date and February 24, 2021. The wind profile on February 24, 2021, matches the intensity of winds experienced on the event date fairly well, with wind gusts >45 mph and sustained winds >25 mph for an extended period (Figure 8). Figure 9 shows that the strongest hourly surface-level winds with speeds between 30-40 mph came from a north-northwesterly direction on February 24, similar to the event date. On February 24, 2021, visibility remained at the maximum value of 10 miles throughout the day, even during peak winds (Figure 10). The maintenance of high visibility on February 24, 2021, indicates that the wind event did not dramatically affect levels of suspended dust particles, a claim supported by the fact that daily PM_{10} concentration was less than or equal to 60 $\mu g/m^3$ at all sites. Figure 11 compares 24-hour HYSPLIT back trajectories from Las Vegas ending at 15:00 PST on October 25, 2020, which is when the event started, and 19:00 PST on February 24, 2021, which is the time when maximum PM_{10} concentrations were observed. On the event date, transport paths below 200 m indicate near-surface transport toward Las Vegas, which facilitated entrainment and transport of dust from the source region. On February 24, 2021, the transport paths towards Las Vegas occurred at high altitudes >500 m, inhibiting surface-level transport from dust sources surrounding Las Vegas.

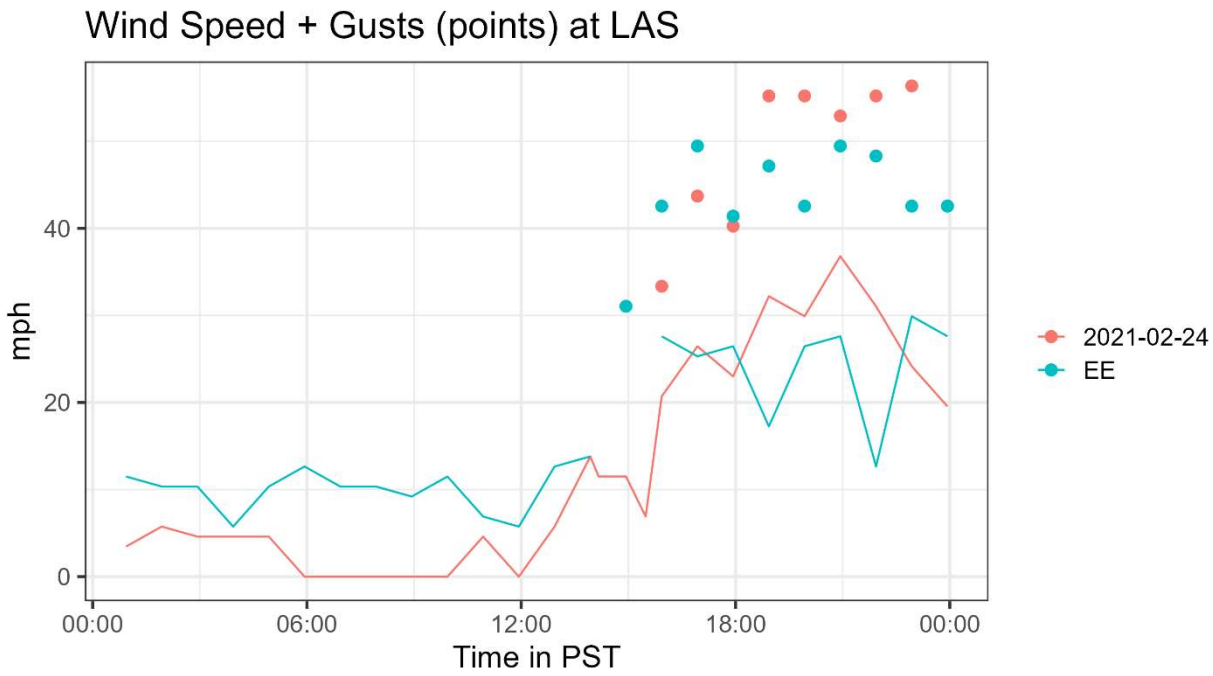

Figure 6. Wind speed and maximum hourly wind gusts in mph at LAS for February 24, 2021, (pink) and the October 25, 2020, suspected exceptional event (EE) day (teal).

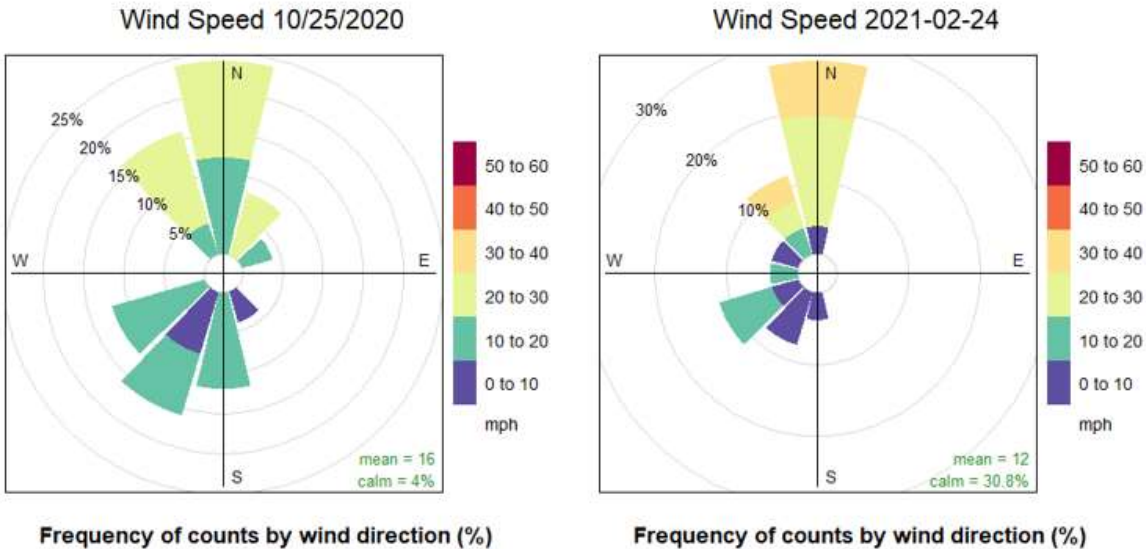

Figure 7. Hourly-reported wind speed and direction frequency for (left) October 25, 2020, the suspected exceptional event day, and (right) February 24, 2021.

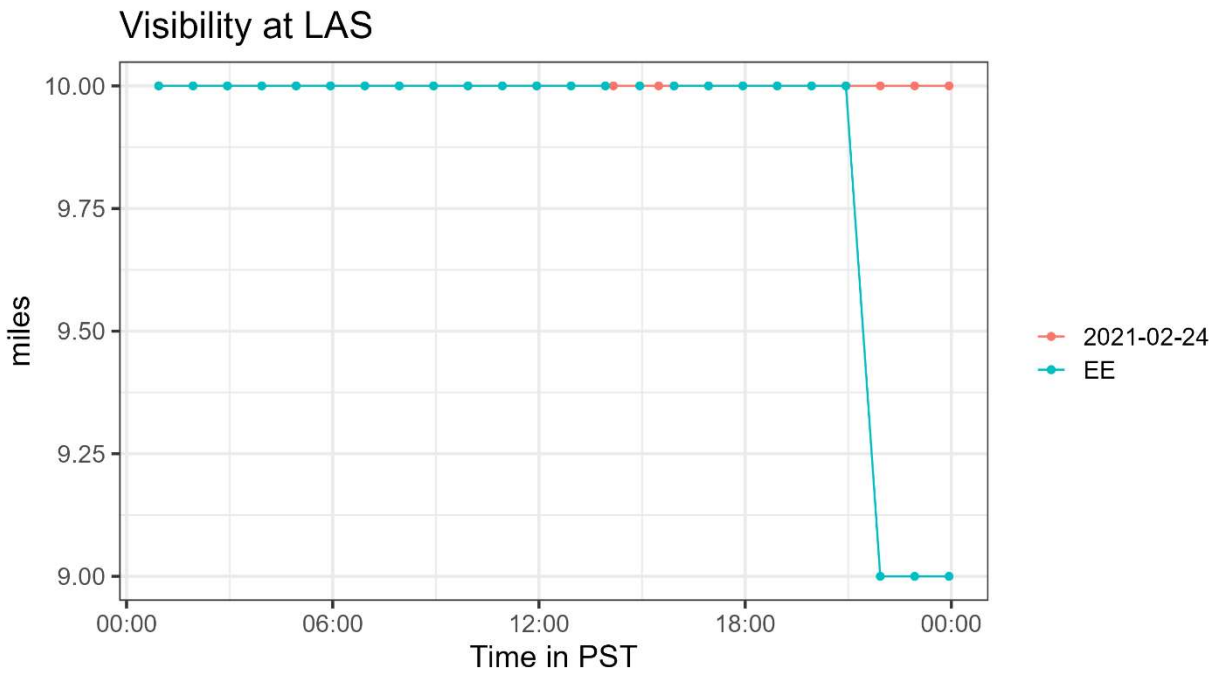

Figure 8. Hourly visibility in miles at LAS for February 24, 2021 (pink), and the October 25, 2020, suspected exceptional event (EE) day (teal).

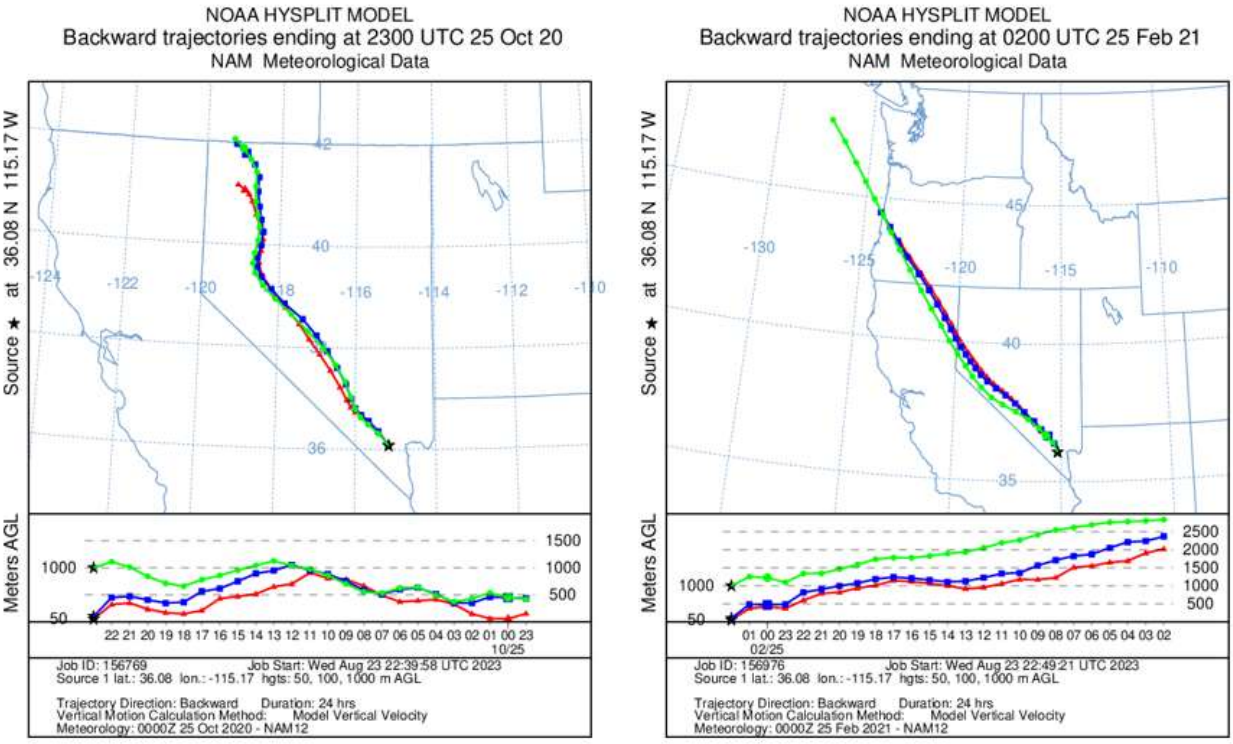

Figure 9. 24-hour HYSPLIT back-trajectories initiated from Las Vegas at (left) 23:00 UTC on October 25, 2020 (event date), and (right) 02:00 UTC on February 25, 2021, at 50 m (red), 100 m (blue), and 1,000 m (green).

1.2.2 March 20, 2022

Figures 12-15 below compare surface-level wind and visibility conditions on the event date and March 20, 2022. The wind profile on March 20, 2022, exceeds the intensity of winds experienced on the event date with wind gusts >50 mph and sustained winds >20 mph for a longer period than on October 25, 2020 (Figure 12). Figure 13 shows that the strongest hourly surface-level winds with speeds between 30-40 mph came from a northwesterly direction on March 20, 2022, compared to a north-northeasterly direction on the event date. On March 20, visibility remained at the maximum value of 10 miles throughout the day, even during peak winds (Figure 14). The maintenance of high visibility on March 20, 2022, indicates that the wind event did not dramatically affect levels of suspended dust particles, a claim supported by the fact that daily PM_{10} concentration was less than or equal to 50 µg/m^3 at all sites. Figure 15 compares 24-hour HYSPLIT back trajectories from Las Vegas ending at 15:00 PST on October 25, 2020, and 16:00 PST on March 20, 2022, the time of maximum PM_{10} concentration. On the event date, transport paths below 200 m indicate near-surface transport towards Las Vegas which facilitated entrainment and transport of dust from the source region. On March 20, 2022, the transport paths towards Las Vegas occurred at high altitudes greater than 500 m, inhibiting surface-level transport from dust sources surrounding Las Vegas.

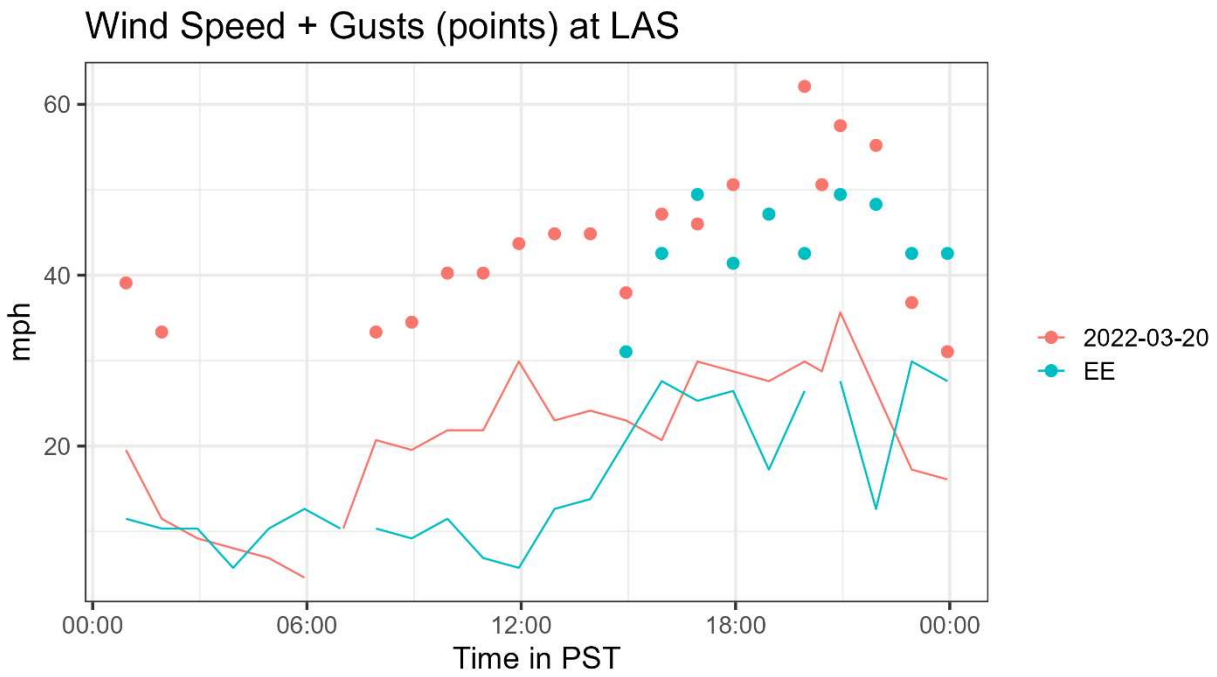

Figure 12. Wind speed and maximum hourly wind gust in mph at LAS for March 20, 2022 (pink), and the October 25, 2020, suspected exceptional event (EE) day (teal).

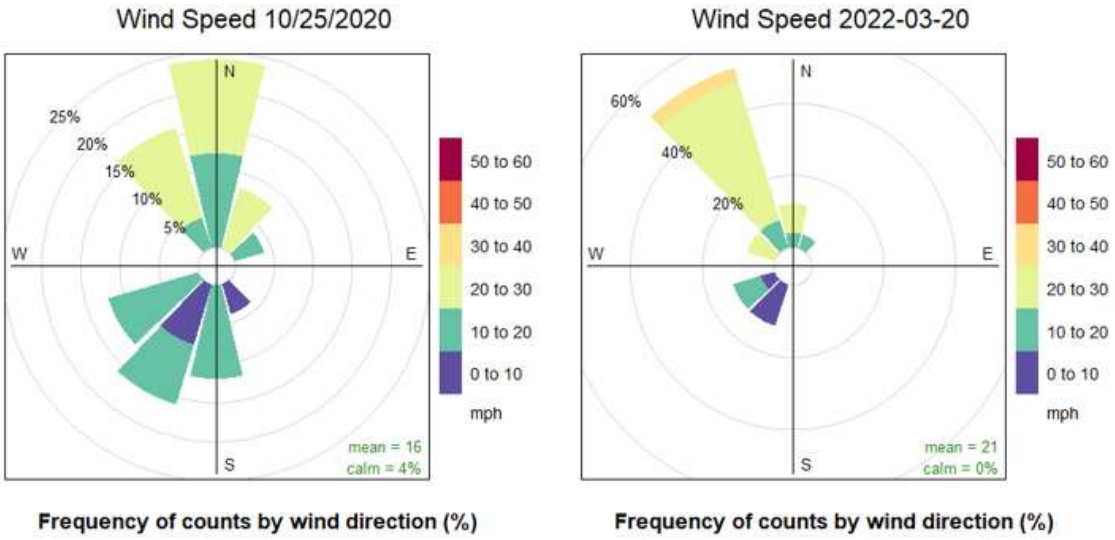

Figure 13. Hourly reported wind speed and direction frequency for (left) October 25, 2020, suspected exceptional event day and (right) March 20, 2022.

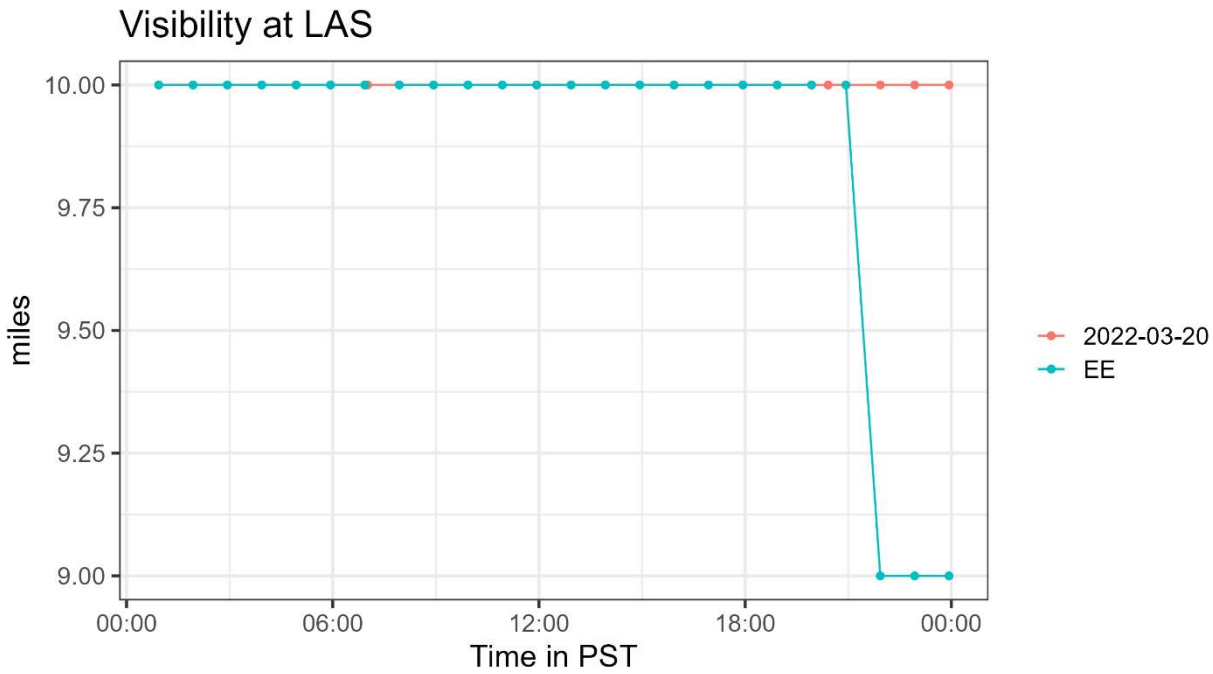

Figure 14. Hourly-reported visibility in miles at LAS for March 20, 2022 (pink), and the October 25, 2020, suspected exceptional event (EE) day (teal).

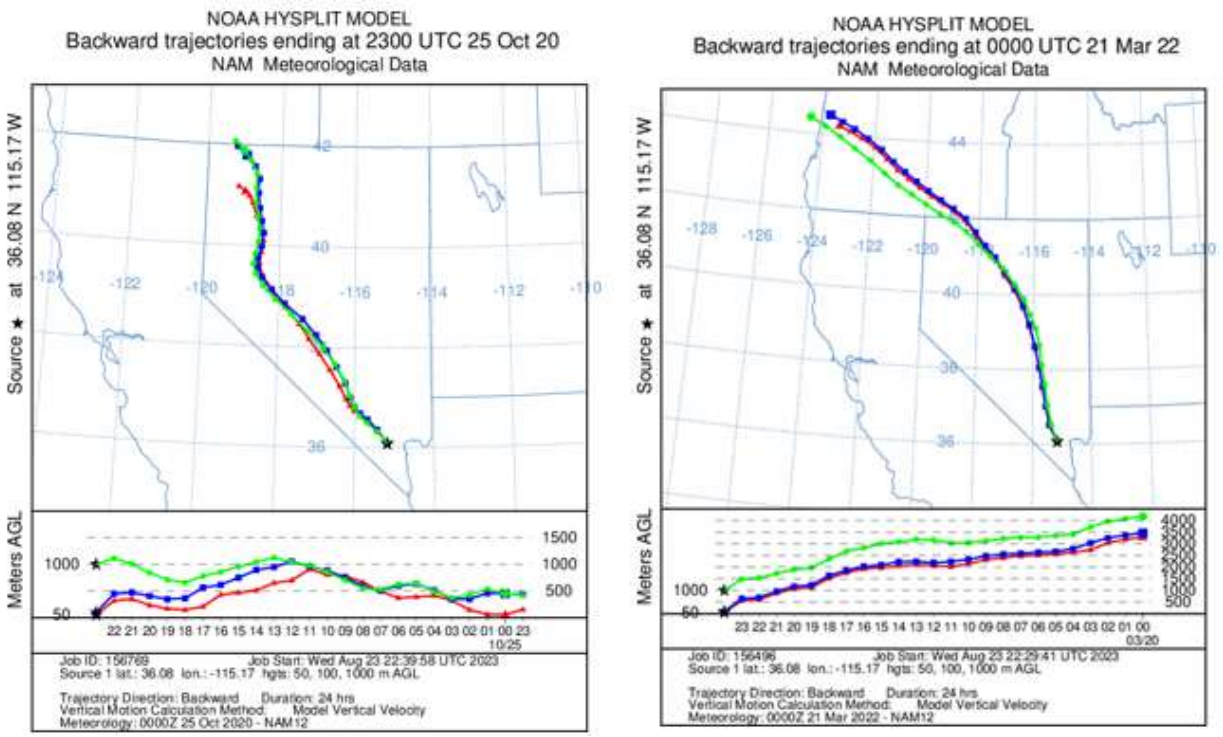

Figure 15. 24-hour HYSPLIT back-trajectories initiated from Las Vegas at (left) 23:00 UTC on October 25, 2020 (event date), and (right) 00:00 UTC on March 21, 2022, at 50 m (red), 100 m (blue), and 1,000 m (green).

Appendix C: 2012 PM_{10} SIP and Clark County AQR Documents

This Appendix provides two documents to fulfill nRCP requirement 2: the *Redesignation Request and Maintenance Plan for Particulate Matter (PM_{10})* report, developed in August 2012, and the *Clark County Air Quality Regulations* document, last revised in January 2020.

Redesignation Request and Maintenance Plan for Particulate Matter (PM_{10})

Clark County, Nevada

Protecting the air we share

Air Quality

August 2012

APPROVED BY THE CLARK COUNTY BOARD OF COMMISSIONERS

Susan Brager, Chair
Steve Sisolak, Vice-Chair
Larry Brown
Tom Collins
Chris Giunchigliani
Mary Beth Scow
Lawrence Weekly

PREPARED BY

Clark County Department of Air Quality
Planning Division

EXECUTIVE SUMMARY

This *Request for Redesignation and Maintenance Plan for Particulate Matter (PM_{10})* is a formal request by Clark County, through its Department of Air Quality, to the U.S. Environmental Protection Agency (EPA) to redesignate the Clark County PM_{10} nonattainment area to attainment for the 1987 24-hour National Ambient Air Quality Standard (NAAQS). The plan summarizes the progress in attaining the PM_{10} standard, demonstrates that all Clean Air Act and Clean Air Act Amendment requirements for attainment have been met, and presents a plan to assure continued maintenance over the next 10 years.

In 1990, EPA designated the Las Vegas Valley, Hydrographic Area 212 (HA 212) in Clark County, as being in "moderate" nonattainment of the 24-hour PM_{10} NAAQS. In 1993, EPA reclassified HA 212 as a "serious" nonattainment area because Clark County could not demonstrate attainment by the required date of December 1994.

In June 2001, Clark County submitted a PM_{10} State Implementation Plan (SIP) that met federal requirements for serious PM_{10} nonattainment areas. The SIP demonstrated that the adoption and implementation of Best Available Control Measures for fugitive sources and continuation of controls for stationary sources would result in attainment of the 24-hour NAAQS by December 31, 2006. Although the Act required the SIP demonstrate attainment of the PM_{10} NAAQS no later than December 31, 2001, EPA granted Clark County a five-year extension for the 24-hour attainment date. Final EPA approval of the Clark County PM_{10} SIP became effective in July 2004.

In June 2007, Clark County submitted the *PM_{10} Milestone Achievement Report*, prepared in accordance with 40 CFR Part 52. The report documents Clark County's attainment of the 24-hour PM_{10} NAAQS by the applicable date of December 31, 2006. In August 2010, EPA published a determination of attainment for PM_{10} for the Las Vegas Valley in the *Federal Register*.

Following on that success, this maintenance plan provides a PM_{10} attainment demonstration that uses the most recently adopted planning variables, including those approved by the Regional Transportation Commission of Southern Nevada, which is the designated Metropolitan Planning Organization for the Las Vegas urban area. The plan also provides revised emission inventories and motor vehicle emissions budgets.

After EPA approval, this plan will become federally enforceable and will determine how Clark County will maintain the 1987 PM_{10} NAAQS through 2023. Once approved, the budgets in this plan will be the projected budgets used to determine transportation conformity in future regional transportation plans.

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TABLE OF CONTENTS

1.0 INTRODUCTION....1
1.1 Introduction....1
1.2 Characteristics and Health Effects....1
1.3 National Ambient Air Quality Standards....2
1.4 History of Clark County Nonattainment Area....2
1.4.1 Nonattainment Area....3
1.5 Required Components of a Redesignation Request....6
1.5.1 Attainment of the PM_{10} Standards....6
1.5.2 Approved Implementation Plan....6
1.5.3 Permanent and Enforceable Improvements in Air Quality....6
1.5.4 Requirements under Section 110 and Part D of the Clean Air Act....6
1.5.5 Approvable Maintenance Plan: Section 175(a) of the Clean Air Act....6

2.0 ATTAINMENT OF THE PM_{10} STANDARD....1
2.1 Introduction....1
2.2 Monitoring Network....1
2.3 Design value....3
2.4 Monitoring Results and Attainment Demonstration....5
2.5 Quality Assurance Program....5

3.0 STATE IMPLEMENTATION PLAN APPROVAL....1
3.1 Introduction....1
3.2 Previous Plan Approvals....1

4.0 PERMANENT AND ENFORCEABLE IMPROVEMENT IN AIR QUALITY....1
4.1 Introduction....1
4.2 Economic Conditions....1
4.2.1 Population Trends....1
4.2.2 Development Patterns....2
4.3 Meteorological Conditions....2
4.4 Attainment and Maintenance Control Measures....5
4.4.1 Stationary Point and Nonpoint Source Regulations....5
4.5 Additional Emission Reduction Control Measures....6
4.5.1 Regional Haze Rule....6
4.5.2 Transportation Conformity....6
4.5.3 Clark County Natural Events Action Plan....6
4.6 Air Quality Trend Analysis: Weight of Evidence....7

5.0 REQUIREMENTS FROM SECTION 110 AND PART D OF THE CLEAN AIR ACT AMENDMENTS....1
5.1 Introduction....1
5.2 Section 110 Requirements....1
5.2.1 Section 110(a)(2)....1
5.2.2 Section 110(l)....2

5.3 Part D Requirements 2
5.3.1 Section 172(c) 2
5.3.2 Section 176(c) 2

6.0 MAINTENANCE PLAN 3
6.1 Introduction 3
6.1.1 Inventory Domain 3
6.2 Transportation Input Data 3
6.3 Efficiency and Effectiveness Factors 3
6.4 Emission Inventory Type Categories 3
6.4.1 Point Sources 3
6.4.2 Nonpoint Sources 4
6.4.3 Mobile Sources 4
6.4.4 Banked Emission Reduction Credits 5
6.5 Summary of Emission Inventories 5
6.6 Maintenance Demonstration 8
6.7 Rollback Model 9
6.8 Monitoring Network and Verification of Continued Attainment 11
6.9 Contingency Measures 11
6.9.1 Potential Contingency Measures 11
6.9.2 Tracking and Triggering Mechanisms 12
6.9.3 Action Resulting from Trigger Activation 13
6.10 Subsequent Maintenance Plan Revisions 13

7.0 MOTOR VEHICLE EMISSIONS BUDGETS 1

8.0 REFERENCES 1

APPENDICES

APPENDIX A: Technical Support Document A-1

APPENDIX B: Documentation of the Public Review Process B-1

LIST OF FIGURES

Figure 1-1. Clark County PM_{10} Nonattainment Area (HA 212). 4
Figure 1-2. BLM Disposal Area within HA 212. 5
Figure 2-1. Clark County PM_{10} Monitoring Stations. 2
Figure 2-2. Design Values for 1999–2010 (µg/m^3). 4
Figure 4-1. Wind Speeds (2001–2010). 4
Figure 4-2. Precipitation (2001–2010). 4
Figure 4-3. Actual and Log PM_{10} Trend. 8
Figure 6-1. Emission Distribution in 2008. 7
Figure 6-2. Emission Distribution in 2023. 7
Figure 6-3. Nonpoint Emissions in the BLM Disposal Area. 8
Figure 6-4. Comparison of 2008, 2015, and 2023 PM_{10} Emissions. 9

LIST OF TABLES

Table 2-1. Clark County PM_{10} Monitoring Sites 1
Table 2-2. Estimation of PM_{10} Design Concentrations 3
Table 2-3. Design Values for 2008–2010 (µg/m^3) 3
Table 2-4. Summary of Las Vegas Valley PM_{10} Monitoring Data, 2008-2010 5
Table 4-1. Clark County Population History (1990-2010) 1
Table 4-2. Monthly Averages for Temperature and Rainfall (1937 to 2010) 3
Table 6-1. Daily VMT Data Used to Develop Emission Inventories 3
Table 6-2. Summary of Total Daily PM_{10} Emissions (tpd) 6
Table 7-1. BLM Disposal Area PM_{10} Mobile Source Emissions (tpd) 1
Table 7-2. Revised Maintenance Demonstration 3
Table 7-3. PM_{10} MVEBs for the BLM Disposal Area (tpd) 3

ACRONYMS AND ABBREVIATIONS

Acronyms

AQR	Clark County Air Quality Regulation
AQS	Air Quality System
BACM	Best Available Control Measures
BCC	Clark County Board of County Commissioners
BLM	Bureau of Land Management
BMP	best management practices
CAA	Clean Air Act
CFR	Code of Federal Regulations
EI	emission inventory
EPA	U.S. Environmental Protection Agency
ERC	emission reduction credit
FR	*Federal Register*
HA	Hydrographic Area
MVEB	motor vehicle emission budget
NAAQS	National Ambient Air Quality Standards
NDEP	Nevada Division of Environmental Protection
NEAP	Natural Events Action Plan
NRS	Nevada Revised Statues
RTC	Regional Transportation Commission of Southern Nevada
SIP	state implementation plan
VMT	vehicle miles traveled

Abbreviations

mph	miles per hour
$PM_{2.5}$	particulate matter less than 2.5 microns in mean aerodynamic diameter
PM_{10}	particulate matter less than 10 microns in mean aerodynamic diameter
tpd	tons per day
$\mu g/m^3$	micrograms per cubic meter
µm	microns

1.0 INTRODUCTION

1.1 INTRODUCTION

Clark County, in coordination with the Nevada Division of Environmental Protection (NDEP), requests that the U.S. Environmental Protection Agency (EPA) redesignate the Clark County nonattainment area, Hydrographic Area (HA) 212, to attainment status for particulate matter less than 10 microns (µm) in diameter (PM_{10}) under the 1987 PM_{10} 24-hour National Ambient Air Quality Standard (NAAQS).

To complete this redesignation request and maintenance plan in accordance with EPA guidance, Clark County inventoried emissions of PM_{10} for the baseline year (2008) and projected those emissions outward to 2015 and 2023. The inventories were adjusted to reflect federal, state, and local rules on PM_{10} emissions that have already been adopted or implemented. These controls were shown to reduce overall PM_{10} emissions through the maintenance year (2023).

1.2 CHARACTERISTICS AND HEALTH EFFECTS

"Particulate matter" is a general term used to describe a complex group of airborne solid, liquid, and semi volatile materials of various sizes and compositions. Primary PM is emitted directly into the atmosphere from anthropogenic activities, such as agricultural operations, industrial processes, construction and demolition activities, and entrainment of road dust into the air, and nonanthropogenic activities, such as windblown dust and ash from forest fires. Secondary PM is formed in the atmosphere from (predominantly gaseous) combustion by-product precursors, such as nitrogen oxides and volatile organic compounds. The overwhelming majority of airborne PM in Clark County is primary PM; the major source is fugitive windblown dust, with contributions from entrained road dust and construction activities.

Particulate size is a critical characteristic of PM that primarily determines the location of its deposition along the respiratory system. EPA has established two types of PM air quality standards, one for PM_{10} and one for $PM_{2.5}$. (The latter refers to the subset of PM_{10} with an aerodynamic diameter smaller than 2.5 µm.)

PM_{10} has a detrimental effect on human health because it can accumulate in the respiratory system. Short-term exposure can irritate the lungs and may cause immune system responses, resulting in lung constriction that produces shortness of breath and coughing. Larger particles deposit in the upper respiratory tract; smaller particles travel deep into the lungs and are retained longer.

Long-term, low-level PM_{10} exposure may cause cancer and premature death. Those with a history of asthma or chronic lung disease are especially sensitive to these effects. The elderly or those with heart conditions may also have severe reactions, since the resulting lack of oxygen may strain the heart.

1.3 NATIONAL AMBIENT AIR QUALITY STANDARDS

On July 1, 1987, EPA revised the PM NAAQS (Volume 52, page 34634 of the *Federal Register* (52 FR 24634)). The previous standards addressed total suspended particulates, without regard to size; the revised standards addressed only particles having an aerodynamic diameter of 10 μm or less. EPA determined that these microscopic particles can be inhaled deep into the lungs and present a hazard to public health when concentrations exceed certain levels. Both annual-averaged and 24-hour averaged PM_{10} standards were promulgated; however, EPA revoked the annual-averaged standard in 2006 (71 FR 61144). The current PM_{10} (primary) standard retains only the 24-hour averaging time, at a level of 150 micrograms per cubic meter ($\mu g/m^3$).

1.4 HISTORY OF CLARK COUNTY NONATTAINMENT AREA

After passage of the 1990 Clean Air Act Amendments, EPA designated all areas previously classified as Group I areas as "moderate" nonattainment areas, including HA 212 (CAA §107(d)(4)(B)). EPA required these moderate nonattainment areas to submit a state implementation plan (SIP) by November 1991 that would demonstrate attainment of the PM_{10} NAAQS by December 1994. Because of unprecedented growth, high-wind events, and other factors, Clark County could not demonstrate attainment by the required date, and EPA reclassified HA 212 as a "serious" nonattainment area on January 8, 1993 (58 FR 3334). In 1997, a PM_{10} SIP revision was submitted. In December 2000, the Clark County Board of County Commissioners (BCC) requested that the state formally withdraw all previously submitted SIPs and addenda because none demonstrated attainment of the NAAQS.

Section 110 of the Clean Air Act (CAA) requires that states not meeting the NAAQS submit a SIP detailing programs to bring the nonattainment area into attainment. After completing comprehensive research and work programs to address the problems identified in the 1997 PM_{10} SIP revision, Clark County submitted a new SIP to EPA in June 2001 that met federal requirements for remediating serious PM_{10} nonattainment areas. This new SIP demonstrated that the adoption and implementation of Best Available Control Measures (BACM) for fugitive sources and continuation of controls for stationary sources would result in attainment of the annual average PM_{10} NAAQS by 2001 and attainment of the 24-hour NAAQS by December 31, 2006. Although the CAA required the SIP demonstrate attainment of the PM_{10} NAAQS no later than December 31, 2001, EPA granted Clark County a five-year extension for the 24-hour attainment date. Clark County supported its extension request with a Most Stringent Measure control analysis that showed the emission control programs proposed for the valley were at least as stringent, if not more so, than control programs implemented in other nonattainment areas.

In June 2004, EPA published final approval of the PM_{10} SIP (69 FR 32273). In June 2007, Clark County submitted a milestone achievement report that described the county's progress in implementing the SIP (DAQEM 2007a). In August 2010, EPA determined HA 212 had attained the PM_{10} NAAQS (75 FR 45485).

With submittal of this redesignation request and maintenance plan, Clark County is requesting that EPA designate Clark County in attainment of the PM_{10} NAAQS.

1.4.1 Nonattainment Area

Figure 1-1 depicts the PM_{10} nonattainment area established by EPA (HA 212), which is roughly 1,500 square miles, largely under federal control, and includes the:

- City of Las Vegas
- City of North Las Vegas
- City of Henderson
- Unincorporated urban areas of Clark County
- Desert National Wildlife Refuge lands
- Humboldt-Toiyabe National Forest lands
- Red Rock Canyon National Conservation Area
- Nellis Air Force Base
- Nellis Bombing and Gunnery Range
- Nellis Small Arms Range
- Clark County Shooting Range
- Las Vegas Paiute Indian Reservation
- Spring Mountain State Park
- Lake Mead National Recreational Area.

More than 80 percent of the land in Nevada is under federal jurisdiction, most of it managed by the Bureau of Land Management (BLM). In 1998, Congress passed the Southern Nevada Public Land Management Act, which allowed BLM to sell, trade, or lease public land within a specific area around Las Vegas. There was an amendment to this boundary in 2003, and minor adjustments thereafter. The area currently comprises 327,047 acres and is known as the BLM disposal area (Figure 1-2). Lands controlled by the federal government outside this area remain in a native or managed state, and the disposal boundary can only be changed by an act of Congress.

Because the BLM disposal area contains nearly all of the anthropogenic sources and sensitive receptors within the nonattainment area, it was used for the attainment demonstration in the EPA-approved PM_{10} SIP and in this maintenance plan.

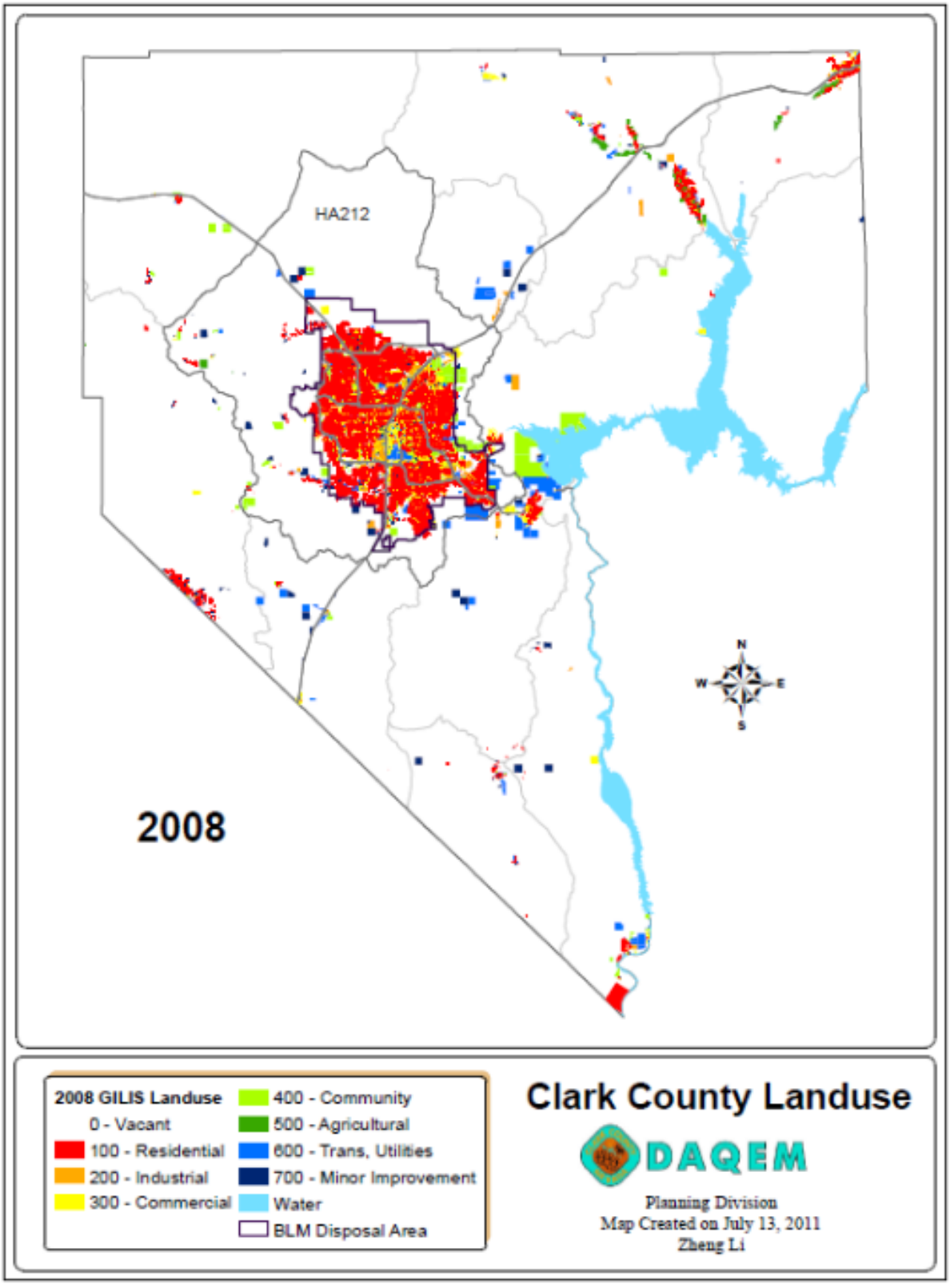

Figure 1-1. Clark County PM_{10} Nonattainment Area (HA 212).

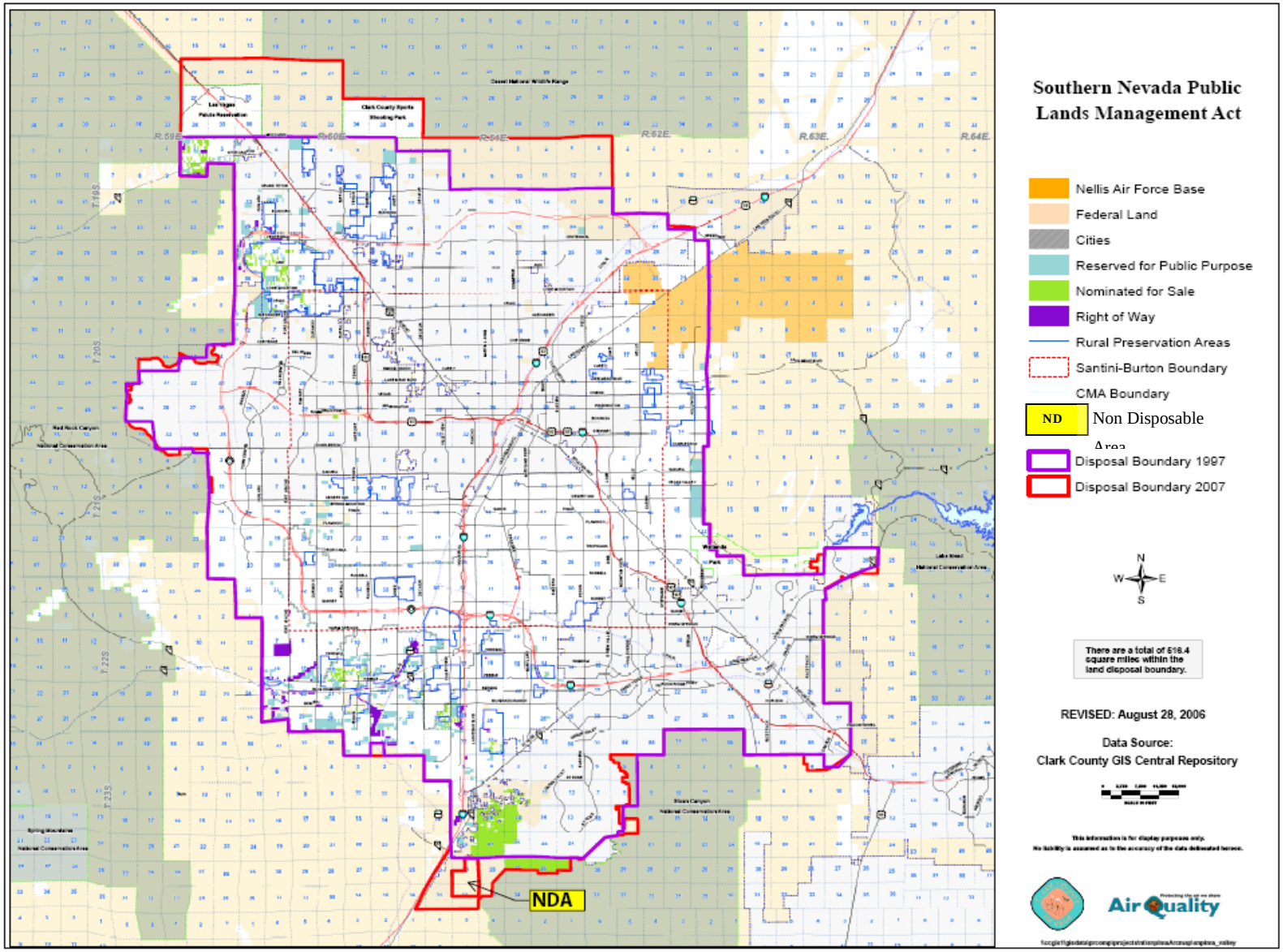

Figure 1-2. BLM Disposal Area within HA 212.

1.5 REQUIRED COMPONENTS OF A REDESIGNATION REQUEST

CAA Section 107(d)(3)(E) defines the five conditions that must be met before EPA can redesignate a nonattainment area to attainment. With the submittal of this plan, Clark County meets these five conditions.

1.5.1 Attainment of the PM_{10} Standards

Clark County must show that the area is attaining the applicable NAAQS. Redesignation of PM_{10} nonattainment areas to attainment are based solely on ambient air quality data. Section 2 presents the data used to demonstrate attainment.

1.5.2 Approved Implementation Plan

The SIP for the nonattainment area must be fully approved under CAA Section 110(k) and must satisfy all requirements that apply to the nonattainment area. Section 3 provides the information required by CAA Section 110(k) to show that Clark County has an approved PM_{10} SIP.

1.5.3 Permanent and Enforceable Improvements in Air Quality

Clark County must be able to reasonably attribute improvements in air quality to emission reductions that are permanent and federally enforceable. Section 4 shows that improved air quality in the Clark County area is the result of permanent and enforceable emission reduction control measures, as opposed to air quality improvements resulting from adverse economic or meteorological conditions.

1.5.4 Requirements under Section 110 and Part D of the Clean Air Act

Clark County must meet all requirements of Section 110 and Part D that applied before submittal of the redesignation request. Section 5 discusses the noninterference of this SIP with any applicable requirements concerning attainment, and with reasonable further progress towards attainment of all other criteria pollutant NAAQS or any other applicable CAA requirement.

1.5.5 Approvable Maintenance Plan: Section 175(a) of the Clean Air Act

Section 107(d)(3)(E) of the Clean Air Act Amendments stipulates that EPA must fully approve a maintenance plan that meets the requirements of CAA Section 175(a) before it can redesignate an area to attainment. Section 6 provides a plan to maintain the PM_{10} NAAQS for at least 10 years after redesignation.

2.0 ATTAINMENT OF THE PM_{10} STANDARD

2.1 INTRODUCTION

The first required component of an area's redesignation request is a demonstration that it has attained the NAAQS. This attainment demonstration is based on quality-assured monitoring data representative of the Clark County PM_{10} nonattainment area. A total of three consecutive years of non-violating air quality data is needed to show attainment of the standard. A complete year of air quality data comprises all four calendar quarters, with each quarter containing data from at least 75 percent of the scheduled sampling days.

Attainment of the PM_{10} standard is demonstrated through establishment of a design value. As specified in Appendix K of Title 40, Part 50 of the Code of Federal Regulations (40 CFR 50), attainment of the 24-hour standard is determined by calculating the expected number of exceedances of the 150 $\mu g/m^3$ limit per year: the standard is attained when the expected number of exceedances is one or less.

On August 3, 2010, EPA issued a final rule determining that the PM_{10} NAAQS had been attained for the HA 212 nonattainment area by the applicable attainment date of December 31, 2006, and that the area was currently attaining the standard (75 FR 45485). Therefore, the requirements of CAA Section 107(d)(3)(E)(i) have been satisfied.

2.2 MONITORING NETWORK

40 CFR 58 defines the requirements for the ambient air quality monitoring programs mandated by the CAA. Clark County's PM_{10} monitoring network consists of eight State and Local Air Monitoring System monitors; the system is governed by quality assurance and quality control procedures and subject to periodic EPA performance audits. As shown in Table 2-1, the monitoring objective of all but one station is "population exposure." The exception is the Jean monitoring station, which monitors background concentrations.

Table 2-1. Clark County PM_{10} Monitoring Sites

Site Name	Scale	Monitoring Objective
Paul Meyer	Middle	Population exposure
Palo Verde	Neighborhood	Population exposure
Joe Neal	Neighborhood	Population exposure
Green Valley	Middle	Population exposure
Sunrise Acres	Neighborhood	Population exposure
Jean	Regional	Background
J.D. Smith	Neighborhood	Population exposure
Boulder City	Neighborhood	Population exposure

Figure 2-1 shows the locations of the Clark County PM_{10} monitoring stations. Table 2-2 shows the design value concentrations measured at these stations from 2008–2010.

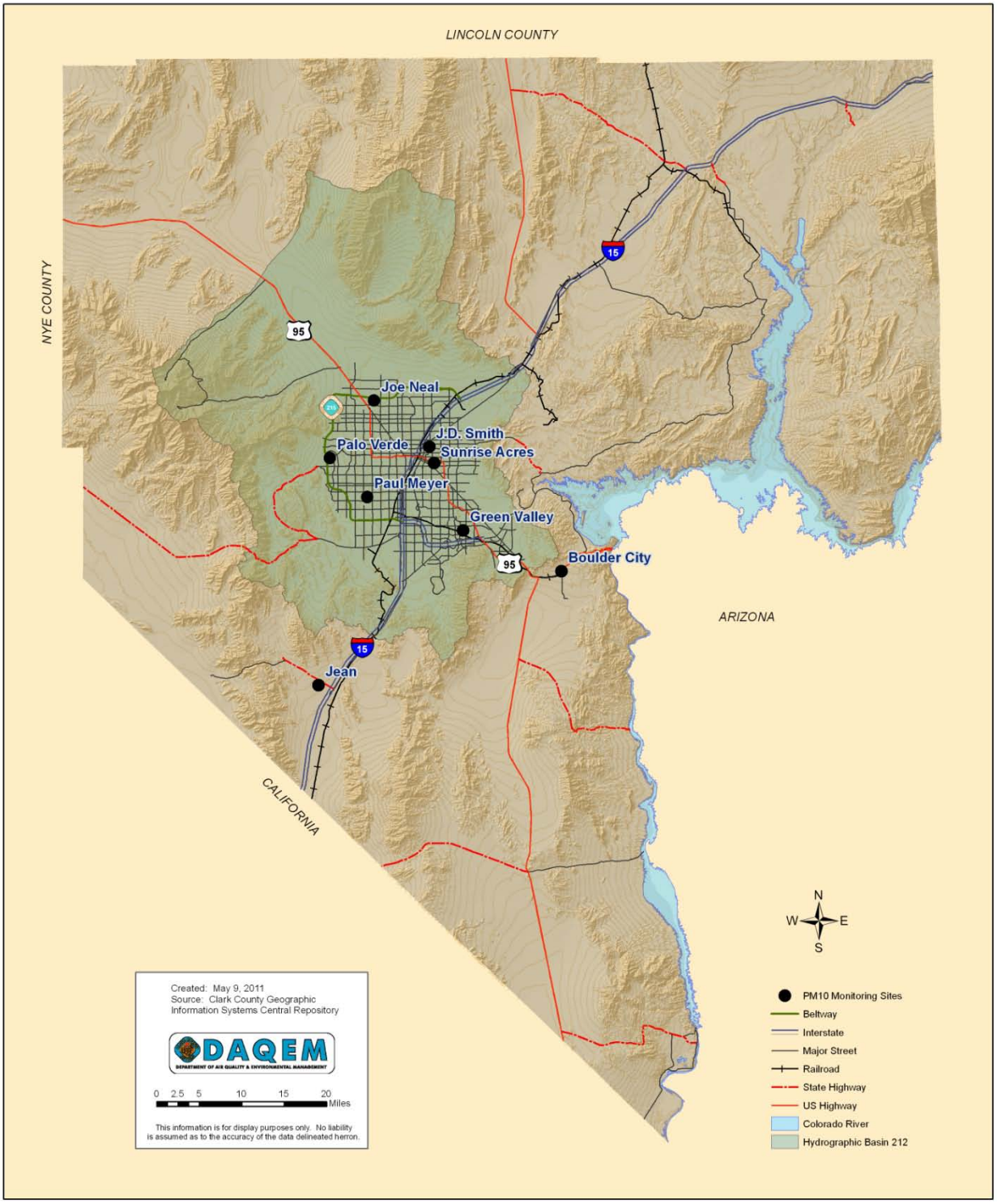

Figure 2-1. Clark County PM_{10} Monitoring Stations.

Table 2-2. Design Values for 2008–2010 (µg/m^3)

Site ID	Site Name	Number of Daily Values	1st High	2nd High	3rd High	4th High	Site Value	Design Value (highest site value)
0020	E. Craig Road	876	123	102	98	96	98	98
0043	Paul Meyer	1,050	83	76	70	66	66	
0072	Lone Mountain	806	70	69	59	58	59	
0073	Palo Verde	1,060	57	54	52	51	51	
0075	Joe Neal	1,047	120	96	95	84	84	
0298	Green Valley	1,041	144	81	80	78	80	
0561	Sunrise Acres	1,047	106	103	86	81	81	
1021	Orr	804	85	75	71	70	71	
2002	J.D. Smith	1,045	109	91	82	78	78	

2.3 DESIGN VALUE

The design value (in µg/m^3) is the concentration derived from a statistical approach to monitoring data that describes the air quality status of a given area, during a specific period, relative to the NAAQS. When a design value is related to a comprehensive emissions inventory (EI) for the same period, future concentrations can be predicted through emissions forecasts.

The 24-hour PM_{10} baseline year (2008) design value for the BLM disposal area was derived using the *PM_{10} SIP Development Guideline* (EPA 1987). Data from the nine PM_{10} monitoring sites that operated from 2008–2010 were ranked by the four highest values for each site during that period. As Table 2-3 shows, the first, second, third, or fourth highest values are selected for each site, depending on the number of recorded values at that site during the three-year period.

Table 2-3. Estimation of PM_{10} Design Concentrations

Number of Daily Values	Data Point Used for Design Concentration
≤ 347	Highest Value
348 – 695	Second Highest Value
696 – 1,042	Third Highest Value
1,043 – 1,096	Fourth Highest Value

The data analysis identified two exceptional events, one on February 13, 2008, and another on May 21, 2008. On these days, HA 212 experienced high-wind events during which the 24-hour PM_{10} standard was violated.

Sustained winds of 25 miles per hour (mph) and gusts of 40 mph are the established thresholds for exceptional high-wind events in HA 212; winds greater than these values overwhelm BACM. Wind speeds during both identified events were greater than these thresholds. Since PM_{10} emissions were not reasonably controllable during these events, they were not reasonably

preventable; the events were therefore flagged in EPA's Air Quality System (AQS). In accordance with EPA's Exceptional Event Rule, Clark County is requesting that these exceedance days be excluded from regulatory consideration.

The two event days were not considered in the design value calculations. Clark County ranked the remaining high values from each site for the three-year period (Table 2-2). The highest value from the list, 98 µg/m^3, was determined to be the design value. The design day (i.e., the day on which the design value concentration occurred) was determined to be April 15, 2008.

Figure 2-2 shows the 12-year trend of the design values in HA 212. The data demonstrate a significant improvement in air quality since implementation of the PM_{10} SIP.

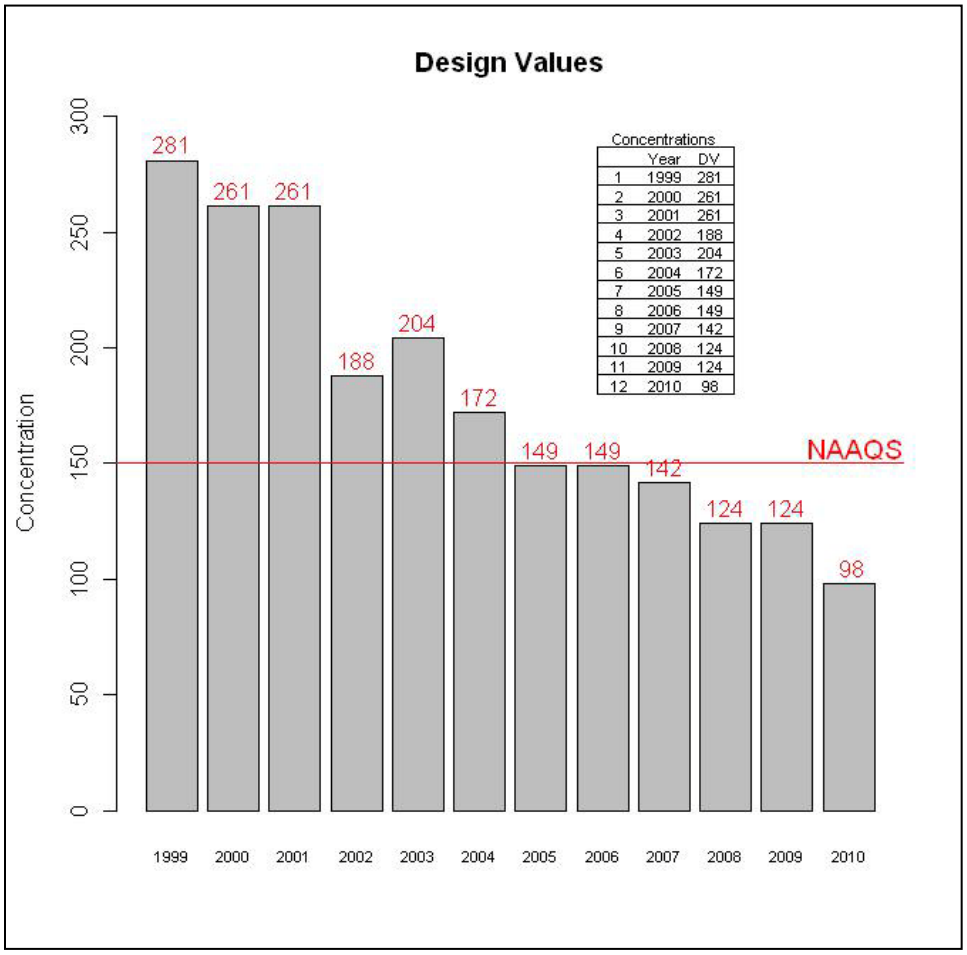

Figure 2-2. Design Values for 1999–2010 (µg/m^3).

2.4 MONITORING RESULTS AND ATTAINMENT DEMONSTRATION

The monitoring data illustrated by Figure 2-2 verify that the Clark County nonattainment area has been in attainment with the PM_{10} NAAQS since 2006, in accordance with the requirements of 40 CFR 58. Table 2-4 outlines the highest 24-hour concentrations during 2008–10, excluding the two high-wind events of February 13, 2008, and May 21, 2008.

Table 2-2. Summary of Las Vegas Valley PM_{10} Monitoring Data, 2008–2010

Site ID	Monitoring Site	Highest 24-hour PM_{10} Concentration ($\mu g/m^3$)			Expected Exceedances Per Year
		2008	2009	2010	2008-2010
0020	E. Craig Road	123	67	N/A[1]	0
0043	Paul Meyer	76	83	48	0
0072	Lone Mountain	70	69	N/A[1]	0
0073	Palo Verde	54	57	49	0
0075	Joe Neal	120	95	64	0
0298	Green Valley	144	81	52	0
0561	Sunrise Acres	106	85	57	0
1021	Orr	71	85	N/A[1]	0
2002	J. D. Smith	109	77	62	0

[1] Site is no longer in operation or no longer monitoring PM_{10}.

Since none of the values are greater than the PM_{10} NAAQS, the expected number of exceedances in the Las Vegas Valley for 2008–2010 is zero. This is lower than the annual expected exceedance rate for the 24-hour PM_{10} NAAQS, demonstrating continued attainment of the standard.

2.5 QUALITY ASSURANCE PROGRAM

PM_{10} data have been collected and verified in accordance with 40 CFR 58 and the *Quality Control & Assurance System for Continuous Particulate Matter (2.5 & 10) Pollutants (Quality Assurance Project Plan)* (DAQEM 2008). PM_{10} audit data are submitted to AQS, and the audit schedule is available in the annual network plan Clark County submits to EPA.

3.0 STATE IMPLEMENTATION PLAN APPROVAL

3.1 INTRODUCTION

The second required component of an area's redesignation request is a fully approved SIP satisfying all requirements that apply to the nonattainment area under CAA Section 110(k), which addresses completeness findings, deadlines for EPA actions, types of EPA actions, and sanctions that may be applied to areas failing to meet CAA requirements. The information in this section demonstrates, as required under CAA Section 110(k), that there is an approved SIP for the Clark County PM_{10} nonattainment area.

3.2 PREVIOUS PLAN APPROVALS

In June 2001, Clark County submitted a PM_{10} SIP that met federal requirements for remediating serious PM_{10} nonattainment areas. This SIP demonstrated that the adoption and implementation of best available control measures and technologies would result in attainment of the 24-hour NAAQS by December 31, 2006. Final EPA approval of the Clark County PM_{10} SIP was effective in July 2004 (69 FR 32273).

4.0 PERMANENT AND ENFORCEABLE IMPROVEMENT IN AIR QUALITY

4.1 INTRODUCTION

The third required component of a redesignation request is a demonstration that improvements in air quality are reasonably attributed to emission reductions that are permanent and federally enforceable. The information in this section shows that improved air quality in the Clark County PM_{10} nonattainment area is the result of permanent and enforceable emission reduction control measures, as opposed to adverse economic or meteorological conditions.

4.2 ECONOMIC CONDITIONS

Clark County, formed in 1909 and located at the southern tip of Nevada, is an area of more than 8,000 square miles. Most county residents live within the BLM disposal area, a 511-square-mile basin inside HA 212. The BLM disposal area was one of the fastest-growing areas in the nation for several decades, and hosts up to 40 million visitors each year. Rapid population growth, high construction activity, disturbance of vacant lands, and high-wind events led to increased PM_{10} 24-hour NAAQS exceedances in the 1990s and early 2000s.

4.2.1 Population Trends

More than 96 percent of Clark County's population resides in HA 212, and more than 99 percent of the population in HA 212 resides within the BLM disposal area. Table 4-1 provides population data for Clark County over the last 20 years; during that time, the average annual population growth was 4.8 percent.

Table 4-1. Clark County Population History (1990-2010)

Year	Clark County	HA 212	BLM Disposal Area	Annual Population Change in HA 212	Annual Percent Increase
1990	805,519	776,180	773,029	—	—
1991	829,839	797,973	794,779	21,793	2.8%
1992	870,692	837,862	834,604	39,889	5.0%
1993	919,388	884,184	880,874	46,322	5.5%
1994	986,152	949,139	945,784	64,955	7.3%
1995	1,048,668	1,009,812	1,006,467	60,673	6.4%
1996	1,119,708	1,077,971	1,074,597	68,159	6.7%
1997	1,170,113	1,127,419	1,124,161	49,448	4.6%
1998	1,246,193	1,199,347	1,196,164	71,928	6.4%
1999	1,321,176	1,272,638	1,269,290	73,291	6.1%
2000	1,428,689	1,372,022	1,367,181	99,384	7.8%
2001	1,498,278	1,448,827	1,445,970	76,805	5.6%
2002	1,578,332	1,525,226	1,522,291	76,399	5.3%
2003	1,641,529	1,586,032	1,583,363	60,806	4.0%
2004	1,747,025	1,691,647	1,685,391	105,615	6.7%
2005	1,815,700	1,759,636	1,752,457	67,989	4.0%

Year	Clark County	HA 212	BLM Disposal Area	Annual Population Change in HA 212	Annual Percent Increase
2006	1,912,654	1,855,019	1,847,643	95,383	5.4%
2007	1,996,542	1,933,602	1,925,411	78,583	4.2%
2008	1,986,145	1,924,817	1,916,585	-8,785	-0.5%
2009	2,006,347	1,943,812	1,936,450	18,995	1.0%
2010	2,036,358	1,974,611	1,966,074	30,798	1.6%

Source: Clark County Department of Comprehensive Planning.

4.2.2 Development Patterns

More than 90 percent of the land of HA 212 is owned by federal agencies. The land is managed with varying types and intensities of use, according to individual agencies' land and resource management plans. BLM has the largest holding, including the Red Rock National Conservation Area west of Las Vegas. Most of the Spring Mountain Range, including Mt. Charleston, is administered by the U.S. Forest Service as part of the Humboldt-Toiyabe National Forest. The rapid disturbance and development of vacant land has been concentrated in the BLM disposal area, which includes the cities of Las Vegas, Henderson, and North Las Vegas, as well as the unincorporated areas of Clark County.

Monitored levels of PM_{10} have shown a continued decline since the early 2000s despite the rapid growth. It is reasonable, therefore, to conclude that improvements in HA 212 PM_{10} air quality have not been caused by a downturn in economic conditions, i.e., any reduction of PM_{10} concentrations in HA 212 can be reasonably attributed to the emission reduction control measures in the PM_{10} SIP, which are permanent and federally enforceable.

4.3 METEOROLOGICAL CONDITIONS

Summers in Clark County display the classic characteristics of the desert Southwest: daily high temperatures in the lower elevations often exceed 100ºF, with lows above 70ºF. The summer heat is usually tempered by low relative humidity, which may increase for several weeks during July and August in association with moist monsoonal wind flows from the south. This is the most common period for thunderstorms in the valley, which can result in high-wind events. Temperatures during the spring and fall are generally moderate, with strong winds being the most persistent weather hazard.

Winters are generally mild and pleasant. Afternoon temperatures average 60ºF, and the sky is normally clear and sunny. Snow accumulation on valley floors is rare; however, higher elevations, such as the Spring Mountains, typically receive 5–10 feet of snowfall annually. Based on measurements from McCarran International Airport over the past 30 years, temperatures fall below 32ºF an average of 24 days a year.

Average annual rainfall in the valley, also measured at McCarran, is approximately 4.16 inches. Table 4-2 lists temperature and rainfall averages in Clark County over the last seven decades.

Table 4-2. Monthly Averages for Temperature and Rainfall (1937 to 2010)

Month	Maximum (°F)	Minimum (°F)	Average (°F)	Rainfall (inches)
January	57.1	34.5	47.0	0.52
February	62.5	38.9	52.2	0.58
March	69.5	44.3	58.3	0.45
April	78.2	51.7	66.0	0.20
May	88.5	61.1	75.4	0.15
June	98.6	69.9	85.6	0.07
July	104.6	76.5	91.2	0.43
August	102.2	74.8	89.3	0.44
September	94.7	66.6	81.3	0.32
October	81.3	54.3	68.7	0.25
November	66.5	42.0	55.0	0.36
December	57.2	34.7	47.0	0.40
Annual Average	**80.1**	**54.1**	**68.1**	**4.16**

Source: DRI (2010).

Elevated levels of PM_{10} emissions in HA 212 are largely associated with wind-blown dust, re-entrained road dust, or construction emissions, and are often amplified by dry, arid conditions. High-wind events in HA 212 generally occur between February–May and September–December, although high winds have been recorded in other months as storms pass through. The monitoring stations that record the highest concentrations of PM_{10} during high-wind events are typically those located near large expanses of disturbed soil.

Figures 4-1 and 4-2 illustrate data on wind speed and precipitation, respectively, in HA 212 for the last 10 years. Rainfall dropped significantly during this time (2006–2009), although winds remained relatively constant. SIP-implemented PM_{10} control measures were effective in spite of drought-like conditions, so it is reasonable to assume that lower PM_{10} concentrations over the last 10 years were not caused by atypical meteorological conditions.

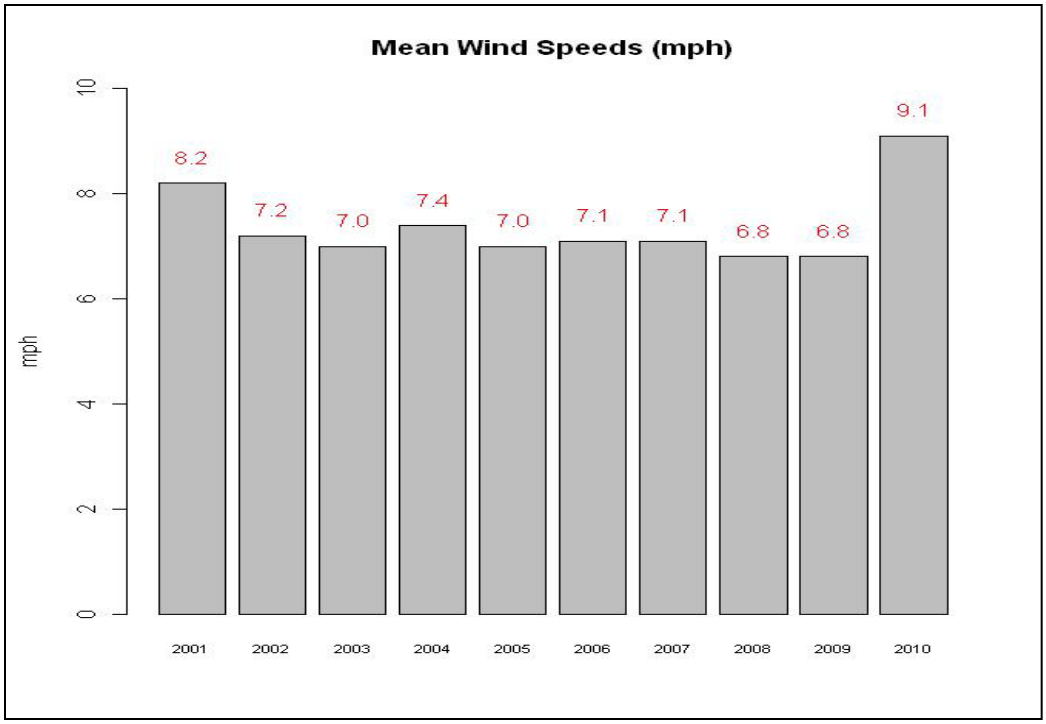

Figure 4-1. Wind Speeds (2001–2010).

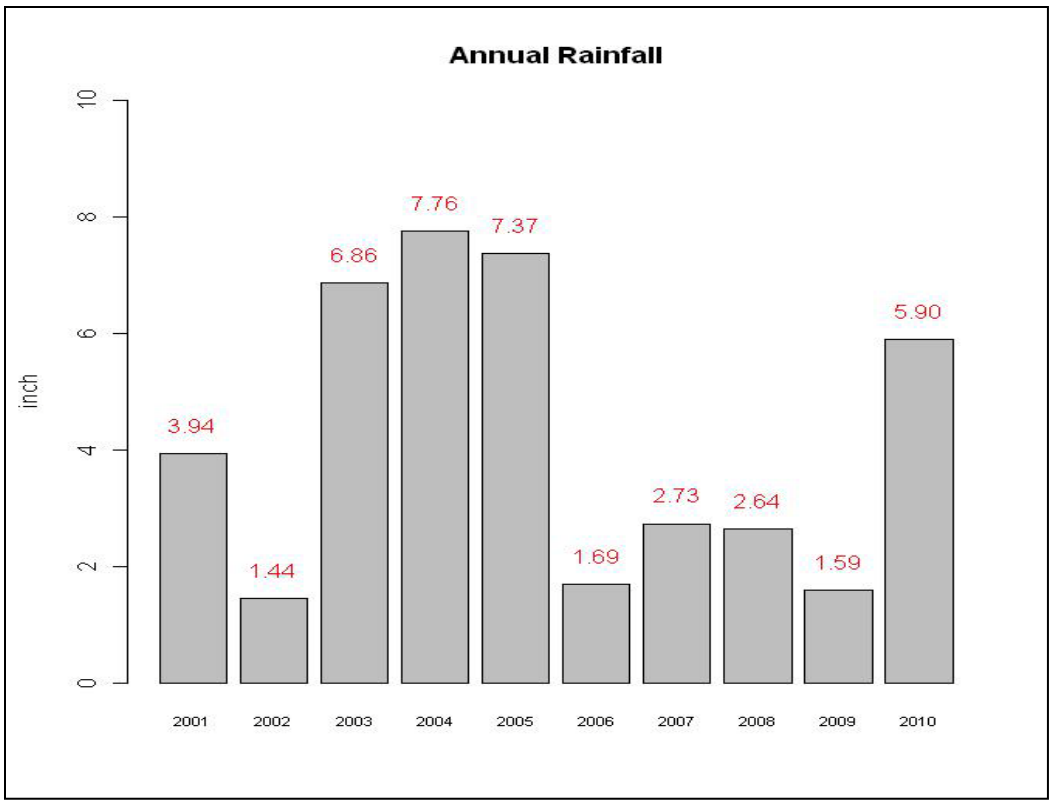

Figure 4-2. Precipitation (2001–2010).

4.4 ATTAINMENT AND MAINTENANCE CONTROL MEASURES

CAA Section 110(a)(2)(A) requires that each SIP include enforceable emission limitations and other control measures to achieve and maintain the NAAQS. As part of its attainment effort, Clark County included the Section 90 series of the Clark County Air Quality Regulations (AQRs) in the PM_{10} SIP. These rules include control requirements for open areas, construction activities, and vacant lands, and their implementation and enforcement have significantly contributed to the improvement of air quality in the Las Vegas Valley.

Clark County is now obligated to maintain the valley's improved air quality status. Clark County is not proposing amendments to the Section 90-series AQRs with this maintenance plan; in fact, the Section 90 series is vital to maintaining compliance with the PM_{10} NAAQS. Construction activities and vacant lands are the two source categories with the highest PM_{10} emissions; while their controls are not without cost, Clark County cannot relax PM_{10} measures applicable to HA 212 at this time. Section 110(l) of the CAA states: "[EPA] shall not approve a revision of a plan if the revision would interfere with any applicable requirement concerning attainment and reasonable further progress...."

4.4.1 Stationary Point and Nonpoint Source Regulations

PM_{10} stationary point sources in Clark County are generally industrial and utility combustion sources that emit 70 tons per year or more. Nonpoint sources are commercial, small-scale industrial, and residential sources whose emissions fall below point source reporting levels and which are too numerous or too small to identify individually.

Clark County has numerous SIP and non-SIP regulations in place for stationary and nonpoint sources, notably AQR Sections 12.0–12.13 and Section 21. Clark County also enforces several federal regulations as part of its emissions control program, including 40 CFR 61 and 63, "National Emissions Standards for Hazardous Air Pollutants" (under AQR Section 13) and 40 CFR 60, "Standards of Performance for New Stationary Sources" (under AQR Section 14).

As part of its 2001 PM_{10} SIP submittal, Clark County adopted comprehensive fugitive dust controls (the Section 90 series). The following list outlines these AQRs:

- Section 90 requires stabilization of open areas and vacant lands to prevent entrainment of particulate matter.

- Section 91 requires stabilization of unpaved roads, and paving of unpaved roads when traffic volume is equal to or greater than 150 vehicles per day. It also prohibits construction of new unpaved roads in public thoroughfares.

- Section 92 requires stabilization of unpaved parking areas, including material handling and storage yards, and generally prohibits construction of new unpaved parking lots in the nonattainment area.

- Section 93 sets forth requirements for paved roads, street sweeping equipment, and certain other dust-mitigating devices.

- Section 94 establishes permitting and dust control requirements for construction activities. This regulation incorporates by reference a comprehensive dust control handbook (DAQEM 2003) that outlines Best Management Practices (BMP) for construction activities.

The Clark County dust program met EPA's most stringent measures requirements at the time of adoption, and it remains state-of-the-art because of Clark County's SIP commitment to evaluate the feasibility of revising the Section 90 rules. This resulted in numerous amendment adoptions in 2002 and 2003.

4.5 ADDITIONAL EMISSION REDUCTION CONTROL MEASURES

4.5.1 Regional Haze Rule

This rule, promulgated in July 1999, mandates emission reductions to achieve natural visibility levels in mandatory Class I areas by 2064. Control measures principally address light-scattering and -absorbing aerosols. Several of these measures will be implemented throughout the western states, i.e., Best Available Retrofit Technology will be installed on older emissions units. The measures will be operational by January 1, 2015, or no later than five years after approval of state regional haze SIPs, whichever comes first. Most western states, including Nevada, have submitted regional haze SIPs; EPA proposed full approval of Nevada's plan on June 22, 2011 (76 FR 36450).

4.5.2 Transportation Conformity

Clark County will continue to work closely with the Regional Transportation Commission of Southern Nevada (RTC) to assure that regional transportation plans and transportation improvement programs in HA 212 are consistent with and conform to Clark County's air quality program requirements, including the PM_{10} SIP.

4.5.3 Clark County Natural Events Action Plan

In April 2005, the BCC adopted the *Natural Events Action Plan for High-Wind Events: Clark County, Nevada* (NEAP). The NEAP protects public health by warning of impending wind events: dust control permittees are reminded to employ all BMP for dust control, the public is notified of wind events in progress, and Clark County citizens are educated on the health hazards of PM. Public notifications include information on how residents can reduce airborne particulates by avoiding certain individual or collective particulate-emitting activities, especially during high-wind events.

Protection of public health is the principal goal of the NEAP, which contains detailed information about actions implemented in Clark County to minimize public exposure to potentially high levels of PM_{10} caused by winds. Its primary components are:

- A high-wind event notification system that includes an early warning procedure.

- Education and outreach programs.

- Enhanced enforcement and compliance programs to reduce emissions.

- Submittal of required documentation to EPA in the event of an exceedance.

The only guidance in effect when Clark County developed its NEAP was an EPA policy memo, "Areas Affected by PM_{10} Natural Events" (EPA 1996), which allowed air quality data to be flagged so it would not count toward an area's attainment status if it could be shown there was a clear causal relationship between the data and one of three categories of natural events: volcanic and seismic activity, unwanted wild land fires, or high-wind events. On March 22, 2007, EPA promulgated a final rule (72 FR 13560) addressing the review and handling of air quality monitoring data influenced by "exceptional events," i.e., those for which the normal planning and regulatory process established by the CAA is not appropriate.

Clark County's NEAP procedures have been very effective since their adoption, and changes reflecting the exceptional event final rule have created an even stronger program. Clark County now provides more information to EPA in submittal packages, and has improved early warning processes to better inform the public.

Clark County continually updates its natural events program. One example is the high-wind exceptional event exercise drill, which is conducted each year before the windy season to refamiliarize staff with procedures and identify potential problem areas. Additionally, construction notices are issued that proactively warn sources of winds that are below NEAP event levels but could still impact public health. These and other enhancements provide essential tools for regularly evaluating operational processes to help reduce the health and environmental effects of PM on county residents.

4.6 AIR QUALITY TREND ANALYSIS: WEIGHT OF EVIDENCE

Clark County performed an air quality trend analysis for the period between 2001 and 2010 using quality-assured data from EPA's AQS database (Figure 4-2). The purpose was to use a weight-of-evidence approach to support the attainment demonstration of the PM_{10} NAAQS.

For the demonstration, a regressed logarithmic trend line was fit to the data points in lieu of a linear trend line because of its smoothing effect on the rate of change of the dependent variable (PM_{10} design values, or y), and because the trend line is more representative of real world conditions (i.e., the line is prevented from dropping below zero (the lower asymptote) due to all values of $y > 0$).

The R-squared (R^2) of the regression—commonly called the "goodness-of-fit"—is the percentage of variance in y that can be accounted for by the independent variable (years, or x). An R^2 greater than 0.80 suggests that the regression line equation ($y = 62.32\ln(x) + 255.24$) strongly approximates the data points, and provides a significant level of credibility for the weight-of-evidence attainment demonstration. The R^2 of this regression is 0.9366.

Clark County is confident that future PM_{10} concentrations will continue to trend downward with the maintenance control measures described in Section 4.4 and continued enforcement of the PM_{10} control program.

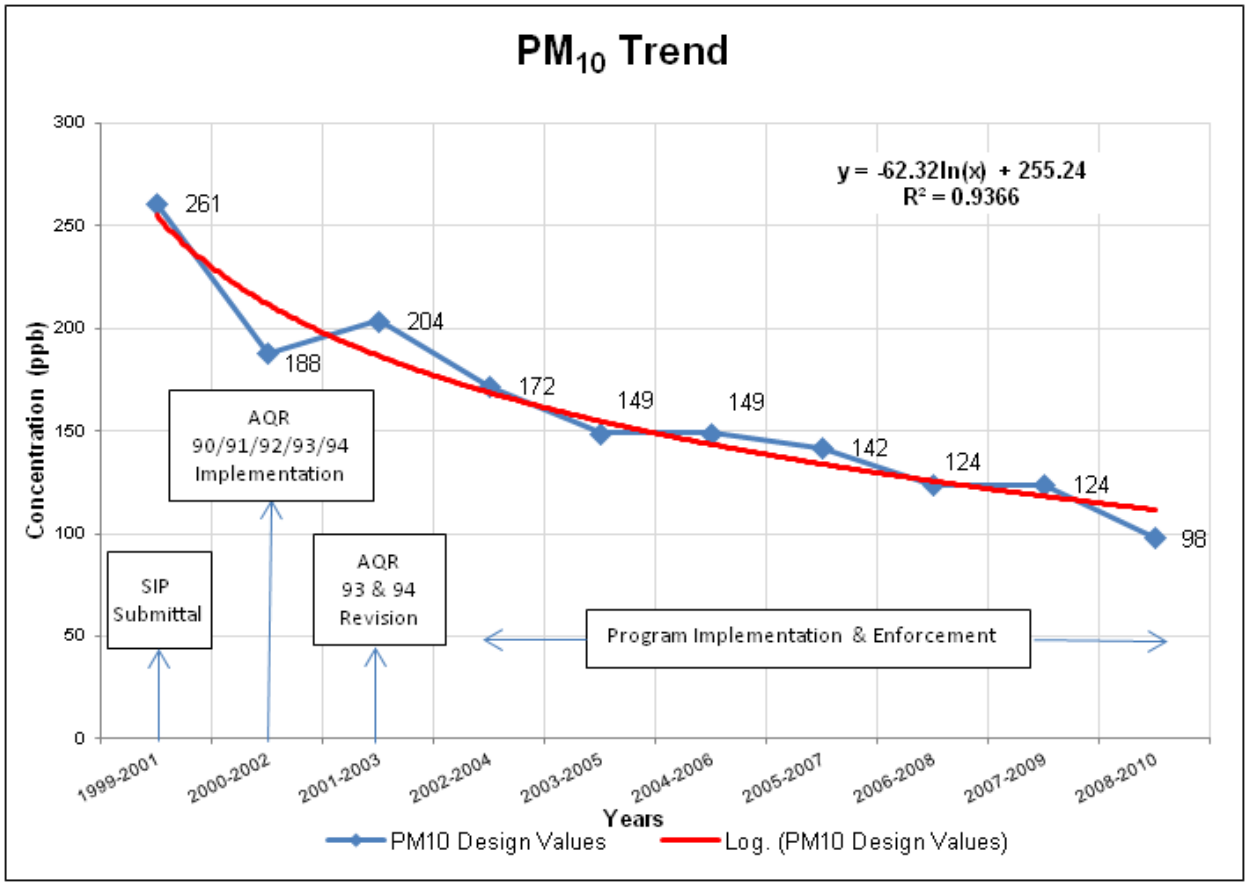

Figure 4-3. Actual and Log PM_{10} Trend.

5.0 REQUIREMENTS FROM SECTION 110 AND PART D OF THE CLEAN AIR ACT AMENDMENTS

5.1 INTRODUCTION

The fourth required component of a redesignation request is verification that Clark County meets CAA Section 110 and Part D requirements. This section provides that verification.

5.2 SECTION 110 REQUIREMENTS

Before EPA can redesignate the Clark County PM_{10} nonattainment area, the provisions of CAA Sections 110(a)(2) and 110(l) must be satisfied. Section 110(a)(2) addresses the general requirements for SIPs; Section 110(l) prevents approval of SIP revisions if components of the plan would interfere with any applicable requirement concerning attainment, with reasonable further progress towards attainment of a NAAQS, or with any other applicable CAA requirement.

5.2.1 Section 110(a)(2)

This CAA section contains the following SIP requirements:

1. Establishment and implementation of enforceable emission limitations.
2. Monitoring, compilation, and analysis of ambient air quality data.
3. Preconstruction review and permitting of new and modified major stationary sources.
4. Consultation with, and provisions for, the participation of affected local governments.
5. Assurance the state has adequate funds and authority to enforce the SIP and associated regulations.
6. Establishment of permit fees for stationary sources.

Nevada Revised Statutes (NRS) 445B.500 addresses the establishment, administration, and enforcement of programs for controlling air pollution in Nevada. In Clark County, these programs are administered and enforced by the Clark County Department of Air Quality. The department has more than 100 staff members and an annual budget of approximately $28 million to administer, implement, and enforce the CAA, including the development of air quality plans and regulations applicable to the PM_{10} maintenance area.

Clark County's current air quality program meets all the provisions required by Section 110(a)(2). If Clark County becomes unable to meet any of these provisions, NRS 445B.520 and 445B.530 allow the State Environmental Commission to assume jurisdiction over the local air quality management program to ensure that CAA requirements are met. EPA also has authority to impose sanctions on a state if it "finds that any requirement of an approved plan (or approved part of a plan) is not being implemented" (CAA, Section 179).

5.2.2 Section 110(l)

CAA Section 110(l) requires that SIP revisions not interfere with requirements for attainment or reasonable further progress regarding other criteria pollutants, or with any other CAA requirements. Since this plan proposes no changes to current emission reductions control measures, it poses no interference with Clark County's progress towards continued attainment of the carbon monoxide or ozone NAAQS. The only other criteria pollutant in Clark County is $PM_{2.5}$, for which Nevada is currently designated as attainment/unclassifiable under CAA Section 107(d).

5.3 PART D REQUIREMENTS

Sections 172(c) and 176(c) in Part D of the CAA lay out requirements that apply to all areas designated as nonattainment because of a NAAQS violation.

5.3.1 Section 172(c)

This CAA section contains general requirements for maintenance plans, including:

1. Implementation of reasonably available control measures, including reasonably available control technologies, for existing sources.

2. Reasonable further progress for existing sources.

3. A current EI, and periodic EIs every three years until attainment.

4. Identification and quantification of allowable emissions for new and modified stationary sources.

5. A stationary source permitting program.

6. Other measures, including enforceable emission limitations, additional control measures, and a schedule for compliance.

7. Compliance with Section 110 provisions.

8. Contingency measures.

Clark County's current air program, in conjunction with the components of this plan, meets all Section 172(c) provisions.

5.3.2 Section 176(c)

This section contains transportation and general conformity provisions applicable in maintenance areas. The transportation conformity process ensures transportation plans, programs, and projects in maintenance areas do not create new violations of the NAAQS, do not increase the frequency or severity of NAAQS violations, and do not delay timely attainment of the NAAQS. It does not

allow federal agencies to engage in, support, or provide financial assistance for licensing, permitting, or approving any project unless the project conforms to the SIP.

6.0 MAINTENANCE PLAN

6.1 INTRODUCTION

The fifth required component of an area's redesignation request is the fulfillment of CAA Section 107(d)(3)(E) requirements. These specify that for an area to be redesignated to attainment, EPA must approve a maintenance plan that meets all the conditions of CAA Section 175(a), including a comprehensive and accurate demonstration of continued maintenance of the PM_{10} NAAQS for 10 years after redesignation.

Two approaches are acceptable for demonstrating maintenance of the NAAQS (EPA 1992). The first, the emissions projections approach, compares a projected EI with an attainment EI. The second is a complex analysis using gridded dispersion modeling. Clark County chose the emissions projection approach, comparing an EI for the baseline year (2008) to an EI for the maintenance year (2023). The maintenance year was chosen to allow EPA 18 months after receipt of a complete submittal to process Clark County's redesignation request.

The baseline EI represents an emission level that would not cause a NAAQS violation—the design value concentration of 98 $\mu g/m^3$ on the design day of April 15, 2008. If the projected maintenance year concentration remains at or below the baseline year concentration, continued maintenance is demonstrated. In addition, the maintenance demonstration includes a comparison between an interim year (2015) concentration and the baseline year concentration to show maintenance throughout the 10-year period after redesignation, not just in the maintenance year. A roll-forward model was also used to support the attainment demonstration

6.1.1 Inventory Domain

Although EPA requires an EI for the entire nonattainment area, attainment can be demonstrated for a larger or smaller area if there are compelling reasons to do so. Use of smaller areas can focus the attainment analysis on relevant areas and key anthropogenic sources that affect high-concentration monitors and population areas.

In choosing a domain boundary, such factors as wind patterns and source, monitor, and receptor locations (e.g., population centers) should be considered (EPA 1991). The boundary should be established such that phenomena at the boundary have little effect on the center. Background concentrations should account for sources not explicitly modeled (40 CFR 51, App. W; EPA 1987, Appendix D; and EPA 1981, p.27.)

Based on these criteria, and consistent with the boundary used in the PM_{10} SIP attainment demonstration, Clark County selected the BLM disposal area as the domain for the maintenance demonstration. Its edges are areas of low emission density that have little effect on the places of concern (i.e., locations with high monitored values). Sources in the outlying areas are effectively accounted for by including background concentrations in the inventory. This approach is

supported by modeling work conducted in Clark County for previous studies (e.g., DRI 1997) that discovered sources of PM_{10} have a small radius of influence.

HA 212 covers roughly 960,000 acres, over half of which are under federal control:

- Bureau of Reclamation: 9,689 acres
- Desert National Wildlife Refuge: 226,728 acres
- Lake Mead National Recreational Area: 1,148 acres
- Nellis Air Force Base and Ranges: 25,124 acres
- Red Rock Canyon National Conservation Area: 195,780 acres
- Humboldt-Toiyabe National Forest: 60,073 acres.

Nonattainment area EIs were not projected for future years because Clark County based the attainment demonstration on the BLM disposal area. The demonstration was limited to this area for several reasons, including:

- All violations of the 24-hour NAAQS happened within the BLM disposal area.
- More than 99 percent of the population in the nonattainment area lives within the BLM disposal area.
- More than 98 percent of the vehicle miles traveled (VMT) in the nonattainment area are within the BLM disposal area.
- The topography within the BLM disposal area is relatively uniform, a factor that minimizes modeling uncertainty, whereas the outlying areas of the nonattainment area vary by over 8,000 feet – a factor that increases modeling uncertainty.
- All man-made emissions of PM_{10}, except one major stationary source and small percentages of minor sources, unpaved road dust, and paved road dust, lie within the BLM disposal area.
- Focusing on the BLM disposal area places a greater emphasis on sources closest to human receptors.

Before Clark County attained the PM_{10} NAAQS, all measured violations occurred within the BLM disposal area, which is also where nearly all anthropogenic emissions within the nonattainment area occur. As part of a network saturation study (DAQEM 2007b), three samplers were deployed outside the BLM disposal area but within the nonattainment area. No violations were recorded.

6.2 TRANSPORTATION INPUT DATA

Table 6-1 summarizes the transportation data (i.e., daily VMT) used to develop the EIs in Section 6.4 (RTC 2008). All other input data used in developing the EIs, such as vehicle fleet mix, seasonal/day-of-the-week adjustment factors, and hourly activity profiles, have been updated with the most current data available.

Table 6-1. Daily VMT Data Used to Develop Emission Inventories

Year	VMT (HA 212)	VMT (BLM Disposal Area)
Baseline (2008)	39,377,980	38,795,925
Interim (2015)	48,886,838	48,073,477
Maintenance (2023)	63,994,191	62,735,685

6.3 EFFICIENCY AND EFFECTIVENESS FACTORS

Control efficiency, rule effectiveness, and rule penetration factors were applied to the baseline emissions of point and nonpoint source categories affected by the AQRs, when applicable. The term "control efficiency" includes capture efficiency for point sources, which defines the percentage of emissions from a source captured by a control device. Rule effectiveness reflects the actual capability of a regulatory program to achieve the emission reductions required by regulation. Rule penetration is the assumed percentage of emissions of the targeted Source Classification Code subject to the requirements of a rule.

6.4 EMISSION INVENTORY TYPE CATEGORIES

The PM_{10} EIs were derived from estimates developed for categories including point sources, nonpoint sources, mobile, and banked emission reduction credits (ERCs). The following sections briefly discuss each category and its estimated emissions; more detailed explanations of the estimates are provided in the technical support document (Appendix A).

6.4.1 Point Sources

Clark County's point source inventory includes all airport/aircraft and Title V stationary sources inside HA 212, as well as minor stationary sources clustered together closely enough to be considered potential hot spots of emissions within the BLM disposal area.

Clark County has authority over most emission units in the county; however, Nevada state law places certain electric steam-generating units in the county under NDEP jurisdiction. The facilities within the nonattainment area over which NDEP has or had authority, partial or whole, are:

- NV Energy Clark Station. The emission units at this facility that once operated under NDEP's jurisdiction have been decommissioned. However, emission units under Clark County's jurisdiction still operate at this facility.

- NV Energy Sunrise Station. Certain emission units at this facility operate under NDEP's jurisdiction, while others operate under Clark County's jurisdiction.

The status of all units at these facilities, whether decommissioned or in current operation, was properly considered in the point source EIs.

All point source EIs for the baseline year (2008) were obtained from reports submitted by the individual sources, and reflect actual emissions for that calendar year. This information was quality assured/quality controlled by Clark County staff.

Projections were performed for 2015 and 2023 for each facility (except Nellis Air Force Base) using the 2008 EI and Economic Growth Analysis System, version 5.0, Source Classification Code growth factors, which are based on the Regional Economic Models, Inc. 6.0 model. Projections for Nellis were estimated using actual 2008 emissions and projections supplied by the source.

Linear regression was used to establish emissions projections for 2015 and 2023. To account for the possibility of a new power plant or expansions of existing plants, emissions from a theoretical power facility were included for the 2015 and 2023 EIs.

6.4.2 Nonpoint Sources

Nonpoint sources of emissions are those that fall below point-source reporting levels and are too numerous or small to identify individually. Generally, they are small-scale industrial or residential operations that use emission-generating materials or processes.

Nonpoint source emission calculations are estimated as countywide totals rather than as individual source emissions. With some exceptions, these emissions are calculated by multiplying an EPA-approved factor (emissions per unit of activity) by the appropriate activity or activity surrogate responsible for generating emissions. When available, actual activity data is used; when data is unavailable, surrogates are used, including county population or employment data by industry type (and, when applicable, by growth factors from the Economic Growth Analysis System).

6.4.3 Mobile Sources

The mobile sources category consists of on-road and non-road sources and locomotives. On-road mobile sources consist of cars, trucks, motorcycles, and other motor vehicles traveling on public roadways. Emissions from this category are vehicle exhaust, brake wear, and tire wear, all calculated using the MOVES2010a model. Re-entrained road dust from on-road sources, while included in the mobile source budgets for transportation conformity, is addressed in the nonpoint sector of this plan. Re-entrained road dust emissions for on-road emissions were calculated using the January 2011 version of AP-42.

Non-road mobile sources consist of a wide variety of equipment types that either move under their own power or can be moved from site to site. Exhaust emissions were calculated using

EPA's NONROAD model. Re-entrained unpaved road dust, while included in the mobile source budgets, is addressed in the nonpoint portion of this plan.

The third and last subcategory is locomotives, whose emissions were categorized separately from the nonpoint source inventory.

6.4.4 Banked Emission Reduction Credits

If a source voluntarily reduces emissions beyond the permit limits, and/or implements controls beyond what is required, it may apply for ERCs pursuant to Section 12.7. If the ERCs are approved, they will be banked for future use or transacted in accordance with the AQRs. Clark County may grant reciprocity for use of ERCs banked by NDEP within the county if the ERCs comply with all AQR requirements at the time of redemption, and NDEP has the authority to grant reciprocity for use of Clark County-banked ERCs at sources in Clark County that it permits. NDEP has jurisdiction over permitting, compliance, and ERC banking for sources in the county that burn fossil fuels in a boiler to produce steam for the production of electricity (NRS 445B.500); all other emission units in the county are under the jurisdiction of Clark County.

Clark County chose to account for all ERCs in the maintenance year (2023) because ERCs can be used in nonattainment areas to offset emissions of new major sources and major modifications at existing major sources. ERC emissions are accounted for in the point source emissions growth estimated for 2023 because point source emissions growth and ERCs largely overlap. To be conservative, however, Clark County is not considering the potential overlap in this demonstration.

6.5 SUMMARY OF EMISSION INVENTORIES

Table 6-2 summarizes the 2008, 2015, and 2023 PM_{10} EIs for the BLM disposal area in tons per day (tpd) for five source categories. In particular, emissions from wind erosion of vacant lands show a significant decrease over time as construction within the BLM disposal area consumes vacant lands.

Table 6-2. Summary of Total Daily PM_{10} Emissions (tpd)

Source	2008 (tpd)	2015 (tpd)	2023 (tpd)
Point Emissions:			
Subtotal:	**2.19**	**2.60**	**2.88**
Nonpoint Emissions:			
Fuel Combustion	1.23	1.29	1.38
Residential Wood Combustion	1.89	1.90	1.92
Locomotive	0.06	0.06	0.06
Paved Road	30.85	38.04	48.78
Unpaved Road	5.84	6.51	7.49
Commercial Cooking	2.19	2.52	2.83
Mineral Processing (concrete, gypsum)	0.28	0.34	0.40
Mineral Processing (stone)	0.15	0.18	0.21
Asphalt	0.33	0.37	0.40
Wind Erosion (Construction)	183.97	217.70	249.21
Construction	30.93	37.69	41.22
Sand & Gravel	0.42	0.51	0.60
Open Burning	0.02	0.02	0.02
Wind Erosion (Vacant Lands)	439.05	288.16	122.77
Structural Fires	0.02	0.02	0.03
Vehicle Fires	0.03	0.03	0.04
Subtotal:	**697.23**	**595.34**	**477.36**
On-road Emissions:			
Subtotal:	**3.08**	**2.52**	**2.75**
Nonroad Emissions:			
Subtotal:	**3.74**	**2.95**	**1.94**
Emission Reduction Credits:			
Subtotal:	**0.31**	**0.31**	**0.31**
Total:	**706.55**	**603.72**	**485.24**

Figures 6-1 and 6-2 show emission distributions in 2008 and 2023, respectively, and Figure 6-3 shows the nonpoint source category EIs for each of the three demonstration years. Appendix A provides detailed information on the methodologies used to estimate EIs.

In summary, total PM_{10} emissions decrease 31 percent (221 tpd) between 2008 and 2023.

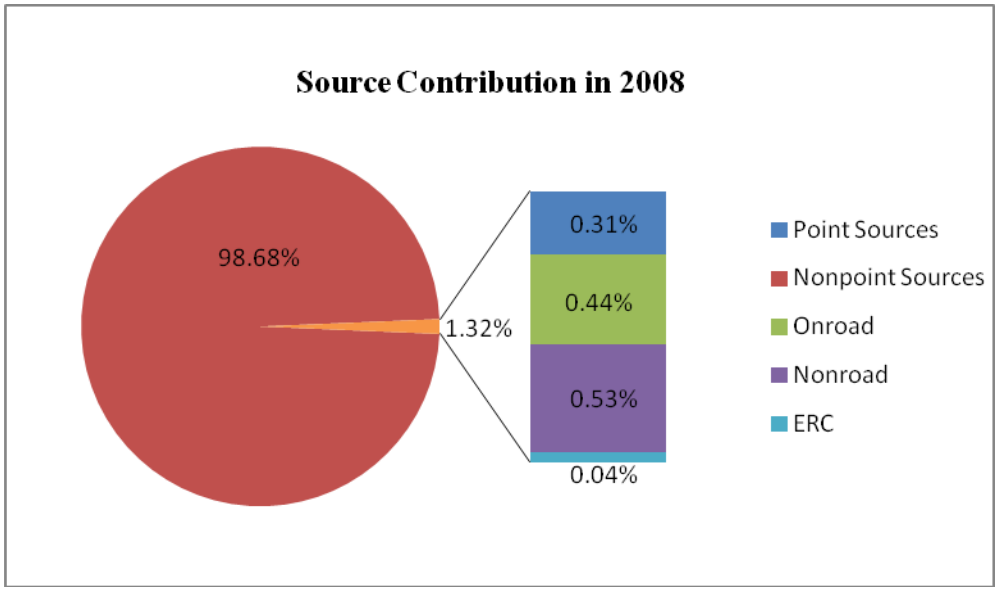

Figure 6-1. Emission Distribution in 2008.

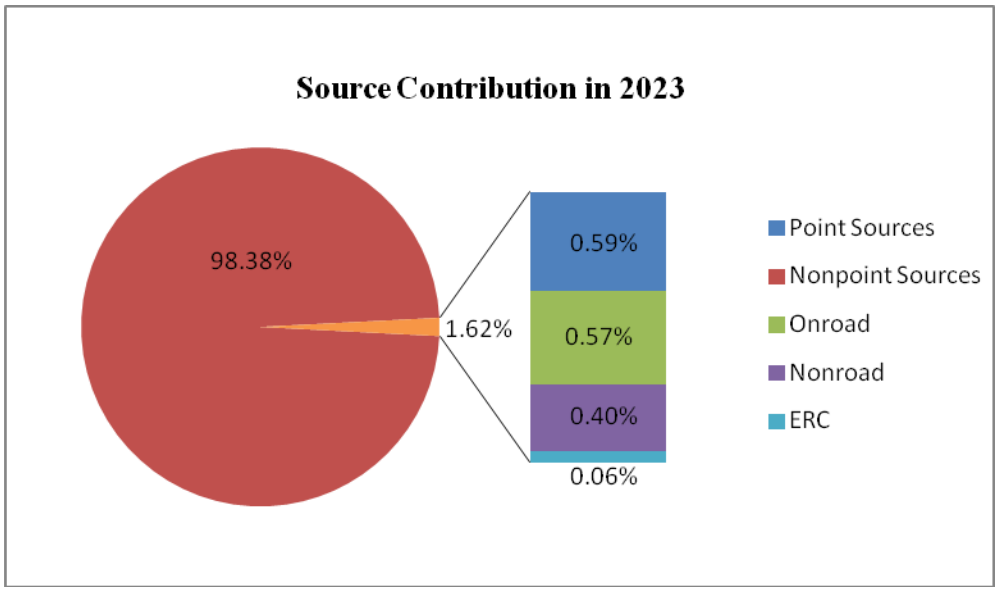

Figure 6-2. Emission Distribution in 2023.

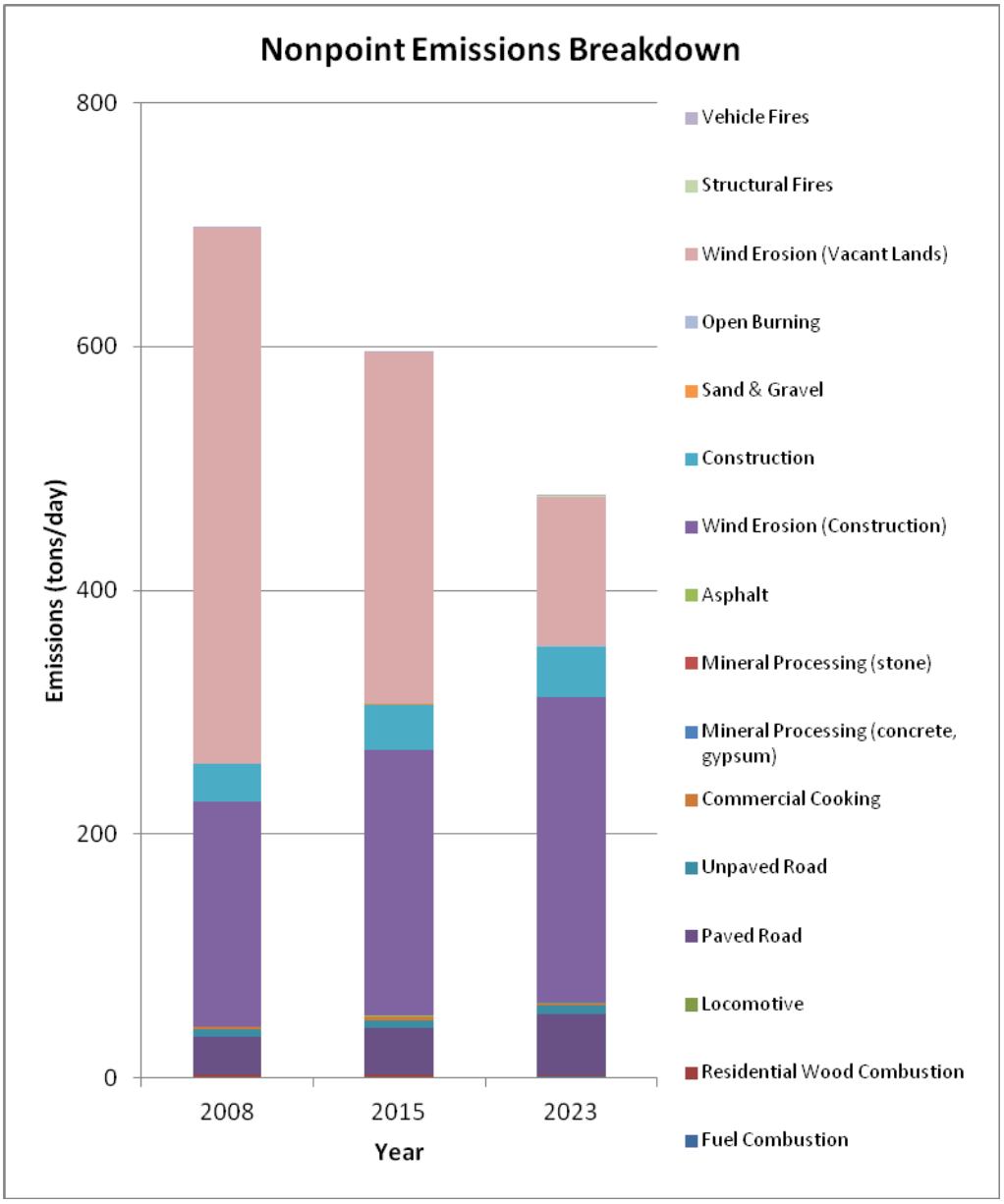

Figure 6-3. Nonpoint Emissions in the BLM Disposal Area.

6.6 MAINTENANCE DEMONSTRATION

CAA Section 175(a) requires each request for redesignation to be accompanied by a SIP revision that provides for maintenance of the NAAQS for at least 10 years after redesignation. EPA (1992) recommends using the ratio of baseline emissions to the design value, adjusted for background concentration, to determine whether projected emissions for a future year will predict concentrations in compliance with the NAAQS.

Table 6-2 and Figure 6-4 show that projected future-year PM_{10} emissions are less than 2008 emissions. Since projected emissions for 2015 and 2023 are less than 2008 emissions, maintenance of the NAAQS is demonstrated.

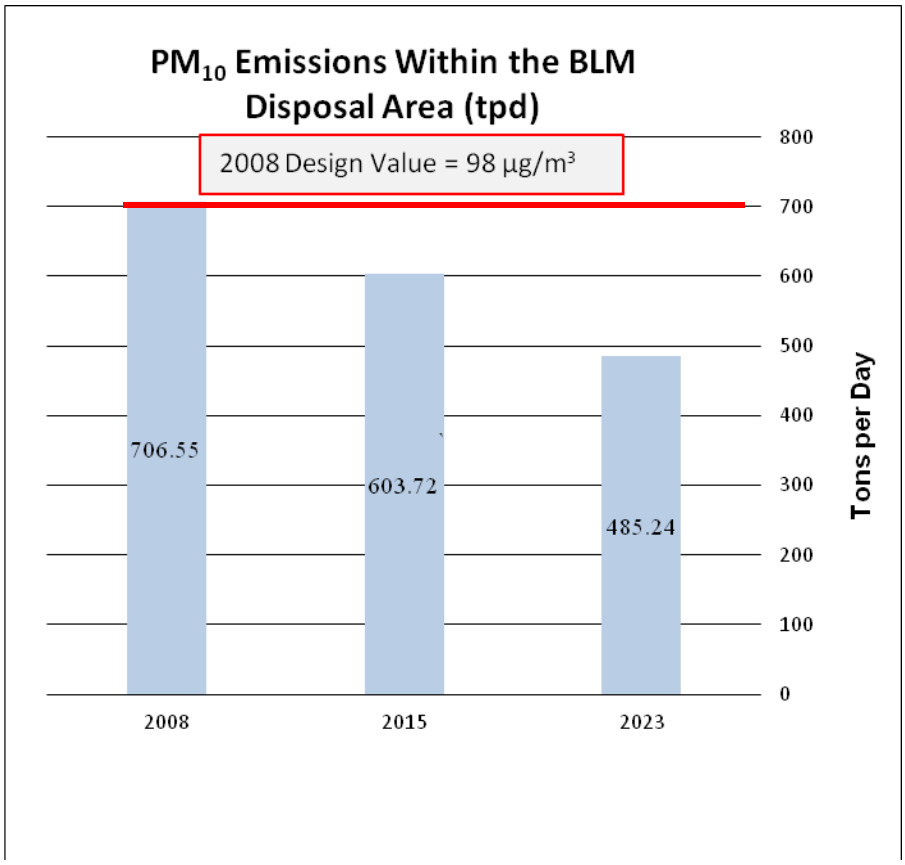

Figure 6-4. Comparison of 2008, 2015, and 2023 PM_{10} Emissions.

The EIs show a downward trend in PM_{10} emissions, mainly due to the control measures described in Section 4.4. No emission increases are expected that will threaten the demonstration of attainment; even if new sources emerge, the 2023 EI is well below the 2008 EI.

6.7 ROLLBACK MODEL

EPA recommends a combination of receptor and dispersion models, paired with reliable emission projections, to model attainment in a future year. However, receptor models cannot quantify absolute PM_{10} emission estimates in some circumstances, such as urban locations where a large fraction of particulate emissions come from nontraditional sources (e.g., construction operations or wind-blown fugitive dust). Dispersion models also have limitations that make modeling fugitive dust difficult, since uncertainties regarding emission rates, deposition rates, and plume characteristics of course fraction crustal particulates pose problems in obtaining valid results.

For these reasons, Clark County adopted the proportional rollback model approach to demonstrate attainment in the PM_{10} SIP. Since it was an accurate predictor, the same approach was used to demonstrate continuous (maintenance) attainment for 2015 and 2023.

The rollback model assumes a linear relationship between PM_{10} emissions from sources and their contribution to measured PM_{10} levels in ambient air: for example, if 25 percent of emissions in an area come from wind erosion of vacant lands, the model assumes that 25 percent of the ambient concentration measured by a monitor in that area (minus the background concentration, which remains constant) came from this wind-entrained soil. The proportional rollback model assumes that any reduction or increase in emissions will cause a corresponding reduction or increase in the ambient concentration measured at the monitoring station. The basic steps are:

1. Determine the representative monitoring station(s) and design value.
2. Define the background concentration as the lowest PM_{10} value recorded at an upwind monitoring station on the same day or during the same time period.
3. Estimate the anticipated increase or decrease in emissions from each source.
4. Apply the same percentage of increase or decrease from emissions to the design concentration.
5. Calculate the anticipated ambient concentration after the emissions change.

The PM_{10} SIP analyzed five microscale sites, in addition to completing a valley-wide analysis. Since the areas surrounding those five sites are now built out, they are no longer considered representative. Moreover, as the PM_{10} SIP stated, the percent reduction for attainment was equal or higher valley-wide than at the microscale sites. The rollback analysis for this maintenance plan therefore uses a valley-wide scale.

The analysis used a design value of 98 $\mu g/m^3$, minus the background concentration of 37 $\mu g/m^3$ measured at Jean on the design day (April 15, 2008). The Jean monitoring station is upwind of the nonattainment area, so it is often used to represent background levels in Clark County.

The referenced design-day and future-year emission calculations do not include contributions from the secondary formation of particulates, and the rollback method does not account for nonlinear secondary particulate formation. The PM_{10} SIP accounted for this by adding 3.5 $\mu g/m^3$ to the background concentration, based on past chemical mass balance studies. Including 3.5 $\mu g/m^3$ to represent secondary PM, the background level was 40.5 $\mu g/m^3$. Subtracting this background level from the design value yielded a concentration due to anthropogenic emissions of 57.5 $\mu g/m^3$ (98 $\mu g/m^3$ – 40.5 $\mu g/m^3$).

The following PM_{10} concentrations are anticipated in 2015 and 2023.

- Future year 2015:
  - Total 2008 emissions = 706.55 tpd (Table 6-2)
  - Total 2015 emissions = 603.72 tpd (Table 6-2)
  - Total 2008 anthropogenic concentration = 57.5 $\mu g/m^3$

  - Anthropogenic concentrations for 2015, determined by multiplying the 2008 anthropogenic concentration by the ratio of 2015 emissions to 2008 emissions:
    57.5 $\mu g/m^3$ • (603.72 tpd / 706.55 tpd) = 49.13 $\mu g/m^3$

  - Adding back the background concentration, which is presumed constant:
    49.13 $\mu g/m^3$ + 40.5 $\mu g/m^3$ = **89.63 $\mu g/m^3$**

- Future year 2023:

  - Emissions = 485.24 tpd (Table 6-2)

  - Concentration = (57.5 $\mu g/m^3$ • (485.24 tpd / 706.55 tpd)) + 40.5 $\mu g/m^3$ = **79.99 $\mu g/m^3$**

The concentrations predicted by the rollback analysis show that the 24-hour PM_{10} NAAQS will be maintained through 2023.

6.8 MONITORING NETWORK AND VERIFICATION OF CONTINUED ATTAINMENT

After being redesignated to attainment status, Clark County will continue to operate its air quality monitoring network to verify attainment of the PM_{10} NAAQS. Annual review of the eight State and Local Air Monitoring System monitors will be conducted in accordance with 40 CFR 58.20(d) to ensure the system continues to meet monitoring objectives.

6.9 CONTINGENCY MEASURES

CAA Section 175A(d) requires that a maintenance plan contain contingency provisions to assure prompt correction of any violation of the NAAQS. Contingency plans must also describe the methods that will be used to ensure the measures in the plan are adopted quickly if triggered. EPA (1992) states that a contingency plan does not have to contain fully adopted contingency measures, but should at least have three primary elements:

1. A list of potential contingency measures.

2. An explanation of the tracking and triggering mechanisms that will determine when contingency measures are needed.

3. A description of the process for recommending and implementing contingency measures, with specific timelines for action.

6.9.1 Potential Contingency Measures

Clark County proposes the following potential control measures as part of this maintenance plan:

- Implementing a new dust control permit requirement for certain short-term activities that disturb, or have the potential to disturb, soils that emit PM into the atmosphere, such as

mechanized weed abatement, fairs, carnivals, Christmas tree and Halloween pumpkin lots, art sales, and similar activities.

- Conducting a comprehensive review and update of the *Construction Activities Dust Control Handbook* (DAQEM 2003) to increase the effectiveness of existing BMP and to identify and develop new BMP. Updated BMP may include management practices for soil-disturbing activities not covered in current practices. Potential new BMP include practices for roadway and detention basin maintenance activities.

- Reviewing the dust mitigation plan requirements in AQR Section 90, giving consideration to reducing the acreage-trigger thresholds and incorporating additional mitigation plan criteria. Also reviewing Section 92, giving consideration to lowering applicability thresholds for unpaved parking lots.

- Reassigning staff to provide additional field enforcement of the AQRs that control sources of fugitive dust emissions.

- Mapping construction activities during inspections to collect PM_{10} data to provide greater accuracy for calculating actual emissions from construction projects.

- Developing a new dust control database that will strengthen oversight of dust control permits and improve source compliance.

- Amending current fugitive dust regulations to incorporate new technologies and measures for controlling emissions and preventing them from crossing property lines or causing a nuisance.

Clark County may use additional strategies to address any future violations in the most appropriate and effective manner.

6.9.2 Tracking and Triggering Mechanisms

The primary tracking mechanism will be Clark County's continuous PM_{10} monitoring network (Section 6.9). Clark County will examine ambient air quality monitoring data within 30 days of collection to determine if the PM_{10} NAAQS has been exceeded.

The primary trigger mechanism will be a confirmed violation of the PM_{10} NAAQS, defined as more than one exceedance day per year averaged over a three-year period. The trigger date will be 60 days from the date a monitoring station records a reading that results in a design value equal to or greater than the PM_{10} NAAQS.

The triggering of the contingency plan would not automatically require a revision of the PM_{10} SIP, nor would Clark County necessarily be redesignated to nonattainment. Instead, it would have a period of time to correct the violation by implementing one or more contingency measures. If violations continued after contingency measures were implemented, additional measures would be implemented until the violations were corrected.

The RTC's ongoing regional transportation planning process will serve as another means of tracking mobile source emissions, since the RTC revises its transportation improvement plan every three years and these revisions are subject to a transportation conformity finding. That process will serve as a periodic check on maintaining the VMT and mobile source emissions projections in this plan.

6.9.3 Action Resulting from Trigger Activation

Within 45 days of the trigger date, Clark County must notify EPA that an internal review process will begin to evaluate potential contingency measures. Within 90 days of that notification, Clark County must send EPA an information report outlining recommended actions. Clark County will then solicit stakeholder involvement through public forums (e.g., PM_{10} working groups) to refine the process of implementing the recommended actions. The BCC and/or Nevada State Environmental Commission will hold one or more public hearings to consider the recommended contingency measures, along with any others that may address the confirmed violation. The necessary measures must be adopted and implemented within 18 months of submittal of the information report to EPA.

6.10 SUBSEQUENT MAINTENANCE PLAN REVISIONS

Section 175A(b) requires that, eight years after redesignation of any area to attainment under Section 107(d), the state shall submit an additional revision of the applicable SIP that shows how the NAAQS will be maintained for 10 years after the expiration of the first 10-year period. Clark County commits to the submittal of a revised maintenance plan eight years after HA 212 is redesignated to attainment.

7.0 MOTOR VEHICLE EMISSIONS BUDGETS

Under CAA Section 176(c), transportation plans, programs, and projects in maintenance areas that are funded or approved under Title 23 of the U.S. Code or the Federal Transit Act must conform to the on-road motor vehicle emissions budgets (MVEBs) specified in the applicable SIP. In this case, 40 CFR 93.118 provides the criteria and procedures for MVEBs.

The MVEB establishes a cap on motor vehicle-related emissions that cannot be exceeded by predicted transportation system emissions. The emissions budget applies a ceiling on emissions in the year for which it is defined, and for all subsequent years until a different budget is defined for another year or a SIP revision modifies the budget. Table 7-1 lists 2008, 2015, and 2023 PM_{10} mobile source emissions for the BLM disposal area.

Table 7-1. BLM Disposal Area PM_{10} Mobile Source Emissions (tpd)

Source	2008	2015	2023
Paved road	30.85	38.04	48.78
Unpaved road (public)	0.28	0.32	0.36
Vehicle (exhaust, brake wear, and tire wear)	3.08	2.52	2.75
Road construction	1.54	1.87	2.05
Construction track-out	0.25	0.30	0.33
Wind erosion (road construction)	6.53	7.73	8.85
TOTAL	**42.53**	**50.78**	**63.12**

EPA's conformity regulation (40 CFR 93.124) allows a SIP to quantify explicitly the amount by which motor vehicle emissions could be higher while still demonstrating compliance with the maintenance requirement. The plan can then allocate some or all of this additional "safety margin" to the emissions budgets for transportation conformity purposes. The safety margin for this maintenance plan is 52 $\mu g/m^3$, the difference between the NAAQS value (150 $\mu g/m^3$) and the design value (98 $\mu g/m^3$). Using the methodology of Section 6.7, the MVEBs were recalculated to include a safety margin.

The mobile source budgets for 2008, 2015, and 2023 (Table 7-1) were adjusted to 141.41 tpd, which match the emission budgets in the PM_{10} SIP and were thus approved by EPA in 2004 (69 FR 32273). Clark County's request for the same PM_{10} budget figure is both for consistency and for RTC's familiarity with it in transportation planning. The mobile source budgets in Table 7-1 were increased by 98.88 tpd, 90.63 tpd, and 78.29 tpd for 2008, 2015 and 2023, respectively. Table 7-2 lists the adjusted emission inventories for 2008, 2015, and 2023 based on the mobile budget increases.

The design values were recalculated using the rollback model. These parameters were used to recalculate the estimated concentrations for 2008, 2015, and 2023. The revised maintenance demonstration for 2008, 2015, and 2023 still shows maintenance of the PM_{10} standard: it estimates maximum PM_{10} concentrations of 106 $\mu g/m^3$ in 2008, 97 $\mu g/m^3$ in 2015, and 86 $\mu g/m^3$ in 2023.

- Adjusted 2008 data:
  - Pre-adjusted total 2008 emissions = 706.55 tpd (Table 6-2)
  - Desired mobile source emissions budget = 141.41 tpd
  - Pre-adjusted 2008 mobile source emissions budget = 42.53 (Table 7-1)
  - Since total 2008 emissions include the pre-adjusted 2008 mobile budgets, the latter are subtracted from the total and then the desired budgets are added: 706.55 tpd - 42.53 tpd + 141.41 tpd = 805.43 tpd (adjusted 2008 EI)
  - To determine the adjusted 2008 design value:
    - Pre-adjusted anthropogenic 2008 concentration = 57.5 µg/m^3 (Section 6.7)
    - Pre-adjusted total 2008 EI = 706.55 tpd (Table 6-2)
    - Adjusted 2008 EI = 805.43 tpd
    - Background concentration = 40.5 µg/m^3 (Section 6.7)
    - To determine the adjusted 2008 anthropogenic concentration, the pre-adjusted 2008 anthropogenic concentration is multiplied by the ratio of the adjusted 2008 emissions to the pre-adjusted 2008 emissions:
      57.5 µg/m^3 • (805.43 tpd / 706.55 tpd) = 65.5 µg/m^3
    - Because the background concentration, which is constant, is not accounted for in this anthropogenic concentration, it is now added to determine the adjusted 2008 design concentration: 65.5 µg/m^3 + 40.5 µg/m^3 = **106 µg/m^3**
- Adjusted 2015 data:
  - Pre-adjusted total 2015 emissions = 603.72 tpd (Table 6-2)
  - Desired mobile source emissions budget = 141.41 tpd
  - Pre-adjusted 2015 mobile source emissions budget = 50.78 (Table 7-1)
  - In that the total 2015 emissions include the pre-adjusted 2015 mobile budgets, the latter are subtracted from the total and then the desired budgets are added: 603.72 tpd – 50.78 tpd + 141.41 tpd = 694.35 tpd (adjusted 2015 EI)
  - To determine the adjusted 2015 concentration:
    - Pre-adjusted anthropogenic 2008 concentration = 57.5 µg/m^3 (Section 6-7)
    - Adjusted 2015 EI = 694.35 tpd

- Pre-adjusted total 2008 emissions = 706.55 tpd (Table 6-2)
- Background concentration = 40.5 µg/m^3 (Section 6-7)
- The pre-adjusted 2008 anthropogenic concentration is multiplied by the ratio of the adjusted 2015 emissions to the pre-adjusted 2008 emissions = 57.5 µg/m^3 • (694.35 tpd / 706.55 tpd) = 56.5 µg/m^3
- Because the background concentration, which is constant, is not accounted for in this anthropogenic concentration, it is now added to determine the adjusted 2015 design concentration = 56.5 µg/m^3 + 40.5 µg/m^3 = **97 µg/m^3**

- Likewise, the adjusted 2023 data is calculated as:
  - Adjusted 2023 EI = 485.24 tpd – 63.12 tpd +141.41 tpd = 563.53 tpd
  - Adjusted 2015 anthropogenic concentration: (98 µg/m^3 – 40.5 µg/m^3) • (563.53 tpd / 706.55 tpd) = 45.9 µg/m^3
  - Adjusted 2023 design concentration = 45.9 µg/m^3 + 40.5 µg/m^3 = **86 µg/m^3**

Table 7-2. Revised Maintenance Demonstration

Parameter	2008	2015	2023
Concentration before adjustment (µg/m^3)	98	89.63	79.99
Background (µg/m^3)	40.5	40.5	40.5
EI (tpd)	706.55	603.72	485.24
Mobile emissions (tpd)	42.53	50.78	63.12
Adjusted EI (tpd)	805.43	694.35	563.53
Estimated concentrations after adjustment (µg/m^3)	**106**	**97**	**86**

Upon an EPA affirmative adequacy finding and approval of the MVEBs, the budgets in Table 7-3 will be used for conformity determinations in future regional transportation plans.

Table 7-3. PM_{10} MVEBs for the BLM Disposal Area (tpd)

Year	2008	2015	2023
Original	42.53	50.78	63.12
Adjustment	+ 98.88	+ 90.63	+ 78.29
MVEB	**141.41**	**141.41**	**141.41**

8.0 REFERENCES

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40 CFR 50. National Primary and Secondary Ambient Air Quality Standards.

40 CFR 51. Requirements for Preparation, Adoption, and Submittal of Implementation Plans.

40 CFR 58. Ambient Air Quality Surveillance.

40 CFR 60. Standards of Performance for New Stationary Sources.

40 CFR 93. Determining Conformity of Federal Actions to State or Federal Implementation Plans.

70 FR 20665. Clean Air Fine Particle Implementation Rule.

70 FR 71612. Final Rule to Implement the 8-Hour Ozone National Ambient Air Quality Standard-Phase 2; Final Rule to Implement Certain Aspects of the 1990 Amendments Relating to New Source Review and Prevention of Significant Deterioration as They Apply in Carbon Monoxide, Particulate Matter and Ozone NAAQS; Final Rule for Reformulated Gasoline.

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CLARK COUNTY

AIR QUALITY REGULATIONS

Revised January 29, 2020
Distributed February 4, 2020

SECTION 90: FUGITIVE DUST FROM OPEN AREAS AND VACANT LOTS

90.1 **Fugitive Dust from Open Areas and Vacant Lots**

90.1.1 **Purpose:** To limit the emission of particulate matter into the ambient air from Open Areas and Vacant Lots.

90.1.2 **Applicability:** The provisions of this regulation shall apply to Open Areas and Vacant Lots which are located in a PM_{10} nonattainment area, an area subject to a PM_{10} maintenance plan defined under 42 U.S. Code § 7505a, or the Apex Valley (hydrographic areas 216 and 217). Nothing in Section 90 of these Regulations shall be construed to prevent enforcement of Section 40 (Prohibition of Nuisance Conditions) of these Regulations. The provisions of this regulation shall not apply to normal farm cultural practices or the raising of fowl or animals. The provisions of this regulation shall not apply to Stationary Sources as defined in Section 0, except that these control measures shall be considered as part of a BACT determination.

90.1.3 **Effective Date of This Regulation:**

90.1.3.1 Section 90, adopted by the Clark County Board of County Commissioners on June 22, 2000, shall be effective in hydrographic area 212 on January 1, 2001, except as otherwise provided herein.

90.1.3.2 Section 90 shall be effective in hydrographic areas 216 and 217 on April 1, 2002, except as otherwise provided herein.

90.2 **Requirements:**

90.2.1 **Open Areas And Vacant Lots:** If Open Areas and Vacant Lots are 5,000 square feet or larger and are disturbed by any means, including use by Motor Vehicles and/or Off-Road Motor Vehicles or material dumping, then the Owner and or Operator of such Open Areas and Vacant Lots shall implement one or more of the Control Measures described in Subsection 90.2.1.1 of this regulation within 30 calendar days following the initial discovery of disturbance or vehicle use on Open Areas and Vacant Lots. The Owner and/or Operator shall implement all control measures necessary to limit the disturbance of Open Areas and Vacant Lots in accordance with the requirements of this regulation. **Advisory Notice:** In order to conserve water to the greatest extent practicable, the use of Reclaimed Water is highly encouraged.

90.2.1.1 **Control Measures:**

(a) Where there is evidence of soil disturbance by Motor Vehicles and/or Off-Road Vehicle use, prevent Motor Vehicle and/or Off-Road Vehicle trespassing, parking, and/or access, by installing barriers, curbs, fences, gates, posts, signs, shrubs, trees, or other effective traffic Control Measures. A stable surface area shall be established and maintained by using one of the Control Measures set forth in Subsections 90.2.1.1(b) or (c) or by the effective application of water in compliance with the stabilization standards set forth in Subsection 90.2.1.2. Where measures to prevent vehicular trespassing and movement are not effective, the application of water will not be utilized for surface stabilization. For the purposes of this subsection, use of or parking on Open Areas and Vacant Lots for noncommercial and non-institutional purposes by the Owner and/or Operator of such Open Areas and Vacant Lots shall not be considered vehicle use under this subsection. In addition, vehicle use related to landscaping maintenance shall not be considered vehicle use under this subsection. For the purpose of this regulation, landscape maintenance does not include grading, trenching, or any other mechanized surface disturbing activities performed to establish initial landscapes or to redesign existing landscapes; or

(b) Where a Disturbed Surface Area exists (including disturbed surfaces caused by Motor Vehicles), uniformly apply and maintain surface gravel or Dust Palliatives to all areas disturbed by Motor Vehicles in compliance with one of the stabilization standards described in Subsection 90.2.1.2 of this regulation; or

(c) Where a Disturbed Surface Area exists (including disturbed surfaces caused by motor vehicles and/or Off-Road motor Vehicles), apply and maintain an alternative control measure approved in writing by the Control Officer and the Region IX Administrator of the Environmental Protection Agency (EPA).

90.2.1.2 **Stabilization Standards:**

(a) A visible crust shall be established, as determined by Subsection 90.4.1.1 (The Drop Ball/Steel Ball Test) of these Regulations; or,

(b) A percent cover that is equal to or greater than 20% for non-erodible elements shall be established, as determined by Subsection 90.4.1.2 (Rock Test Method) of these Regulations; or,

(c) A threshold friction velocity, corrected for non-erodible elements of 100 cm/second or higher, shall be established, as determined by

Subsection 90.4.1.3 (Determination of Threshold Friction Velocity) of this regulation; or,

(d) An alternative test method approved in writing by the Control Officer and the Region IX Administrator of the EPA.

90.2.2 **Dust Mitigation Plans Required:** Any Owner and/or Operator of Open Areas and Vacant Lots having a cumulative area of 10,000 acres or greater must submit a dust mitigation plan to the department for approval by March 31, 2003, in a format prescribed by the Control Officer.

90.2.3 **Mechanized Weed Abatement and/or Trash Removal:** If machinery is used to clear weeds and/or trash from Open Areas and Vacant Lots of 5,000 square feet or larger, then the following control measures set forth in Subsection 90.2.3.1 shall be applied. **Advisory Notice:** In order to conserve water to the greatest extent practicable, the use of reclaimed water is highly encouraged.

90.2.3.1 **Control Measures**

(a) Pre-wet surface soils before mechanized weed abatement and/or trash removal occurs; and,

(b) Maintain dust control measures while mechanized weed abatement and/or trash removal is occurring; and,

(c) Pave, apply gravel, apply water, or apply a suitable Dust Palliative, in compliance with the stabilization standards set forth in Subsection 90.2.1.2 of this regulation, after mechanized weed abatement and/or trash removal occurs.

90.3 **Record Keeping Requirements**

90.3.1 **Record Keeping:** Any Person subject to the requirements of this regulation shall compile and retain records that provide evidence of Control Measure application, by indicating type of treatment or Control Measure, extent of coverage, and date applied. The records and supporting documentation shall be made available to the Control Officer within 24 hours of a written request.

90.3.2 **Record Retention:** Copies of the records required by Subsection 90.3.1 (Record Keeping Requirements) of this regulation shall be retained for at least one year.

90.4 **Test Methods**

90.4.1 **Stabilization Standards for Open Areas and Vacant Lots**: The test methods described in Subsections 90.4.1.1 through Subsections 90.4.1.3 of this regulation shall be used to determine whether an Open Area or a Vacant Lot has a stabilized surface. Should a disturbed Open Area or Vacant Lot contain more than one type of disturbance, soil, or other characteristics which are visibly distinguishable, each representative surface must be tested separately for stability in an area that represents a random portion of the overall disturbed conditions of the site, utilizing the appropriate test methods in Subsections 90.4.1.1 through Subsections 90.4.1.3 of this regulation. Depending upon test method results, include or eliminate each representative surface from the total size assessment of the Disturbed Surface Area(s).

90.4.1.1 **Soil Crust Determination** (**The Drop Ball Test):** Drop a steel ball with a diameter of 15.9 millimeters (0.625 inches) and a mass ranging from 16-17 grams from a distance of 30 centimeters (one foot) directly above the soil surface. If blowsand is present, clear the blowsand from the surfaces on which the soil crust test method is conducted. Blowsand is defined as thin deposits of loose uncombined grains covering less than 50% of an Open Area or Vacant Lot which have not originated from the representative Open Area or Vacant Lot surface being tested. If material covers a visible crust, which is not blowsand, apply the test method in Subsection 90.4.1.3 (Determination of Threshold Friction Velocity) of this regulation to the loose material to determine whether the surface is stabilized.

(a) A sufficient crust is defined under the following conditions: once a ball has been dropped according to Subsection 90.4.1.1 of this regulation, the ball does not sink into the surface, so that it is partially or fully surrounded by loose grains and, upon removal of the ball, the surface upon which it fell has not been pulverized, so that loose grains are visible.

(b) Randomly select each representative Disturbed Surface Area for the drop ball test by using a blind “over the shoulder” toss of a throwable object (for example, a metal weight with survey tape attached). Using the point of fall as the lower left hand corner, measure a 1-foot square area. Drop the ball three times within the 1-foot by 1-foot square survey area, using a consistent pattern across the survey area. The survey area shall be considered to have passed the Soil Crust Determination Test if at least two of the three times the ball was dropped, the results met the criteria in Subsection 90.4.1.1(a) of this regulation. Select at least two other survey areas that represent a random portion of the overall disturbed conditions of the site, and repeat this procedure. If the results meet the criteria of Subsection 90.4.1.1(a) of this regulation for all of the survey areas tested, then

the site shall be considered to have passed the Soil Crust Determination Test and shall be considered sufficiently crusted.

(c) At any given site, the existence of a sufficient crust covering one portion of the site may not represent the existence or protectiveness of a crust on another portion of the site. Repeat the soil crust test as often as necessary on each portion of the overall conditions of the site using the random selection method set forth in Subsection 90.4.1.1(b) of this regulation for an accurate assessment.

90.4.1.2 **Rock Test Method:** The Rock Test Method, which is similar to Subsection 90.4.1.3 (Determination of Threshold Friction Velocity) of this Regulation, examines the wind-resistance effects of rocks and other non-erodible elements on disturbed surfaces. Non-erodible elements are objects larger than 1 centimeter (cm) in diameter that remain firmly in place even on windy days. Typically, non-erodible elements include rocks, stones, glass fragments, and hardpacked clumps of soil lying on or embedded in the surface. Vegetation does not count as a non-erodible element in this method. The purpose of this test method is to estimate the percent cover of non-erodible elements on a given surface to see whether such elements take up enough space to offer protection against windblown dust. For simplification, the following test method refers to all non-erodible elements as “rocks.”

(a) Randomly select a 1 meter by 1 meter survey area within an area that represents the general rock distribution on the surface (a 1 meter by 1 meter area is slightly greater than a 3 foot by 3 foot area). Use a blind “over the shoulder” toss of a throwable object (for example, a metal weight with survey tape attached) to select the survey surface and using the point of fall as the lower left hand corner, measure a 1 meter by 1 meter survey area. Mark-off the survey area by tracing a straight, visible line in the dirt along the edge of a measuring tape or by placing short ropes, yard sticks, or other straight objects in a square around the survey area.

(b) Without moving any of the rocks or other elements, examine the survey area. Since rocks greater than 3/8 inch (1 cm) in diameter are of interest, measure the diameter of some of the smaller rocks to a get a sense of which rocks need to be considered.

(c) Mentally group the rocks greater than 3/8 inch (1cm) diameter lying in the survey area into small, medium, and large size categories. If the rocks are all approximately the same size, simply select a rock of average size and typical shape. Without removing any of the rocks from the ground, count the number of rocks in the survey area in each group and write down the resulting number.

(d) Without removing rocks, select one or two average-size rocks in each group and measure the length and width. Use either metric units or standard units. Using a calculator, multiply the length times the width of the rocks to get the average dimensions of the rocks in each group. Write down the results for each rock group.

(e) For each rock group, multiply the average dimensions (length times width) by the number of rocks counted in the group. Add the results from each rock group to get the total rock area within the survey area.

(f) Divide the total rock area, calculated in Subsection 90.4.1.2(e) of this regulation, by two (to get frontal area). Divide the resulting number by the size of the survey area (make sure the units of measurement match), and multiply by 100 for percent rock cover. For example, the total rock area is 1,400 square centimeters, divide 1,400 by 2 to get 700. Divide 700 by 10,000 (the survey area is 1 meter by 1 meter, which is 100 centimeters by 100 centimeters or 10,000 centimeters) and multiply by 100. The result is 7% rock cover. If rock measurements are made in inches, convert the survey area from meters to inches (1 inch = 2.54 centimeters).

(g) Select and mark-off two additional survey areas and repeat the procedures described in Subsection 90.4.1.2(a) through Subsection 90.4.1.2(f) of this regulation. Make sure the additional survey areas also represent the general rock distribution on the site. Average the percent cover results from all three survey areas to estimate the average percent of rock cover.

(h) If the average rock cover is greater than or equal to 20%, the surface is stable. If the average rock cover is less than 20%, follow the procedures in Subsection 90.4.1.2(i) of this regulation.

(i) If the average rock cover is less than 20%, the surface may or may not be stable. Follow the procedures in Subsection 90.4.1.3 (Determination of Threshold Friction Velocity) of this regulation and use the results from the rock test method as a correction (i.e., multiplication) factor. If the rock cover is at least 1%, such rock cover helps to limit windblown dust. However, depending on the soil's ability to release fine dust particles into the air, the percent rock cover may or may not be sufficient enough to stabilize the surface. It is also possible that the soil itself has a high enough Threshold Friction Velocity (TFV) to be stable without accounting for rock cover.

(j) After completing the procedures described in Subsection 90.4.1.2(i) of this regulation, use Table 2 of this regulation to identify the appropriate correction

factor to the TFV, depending on the percent rock cover. Multiply the correction factor by the TFV value for a final TFV estimate that is corrected for non-erodible elements.

90.4.1.3 **Determination Of Threshold Friction Velocity (TFV):** For Disturbed Surface Areas that are not crusted or vegetated, determine TFV according to the following sieving field procedure (based on a 1952 laboratory procedure published by W. S. Chepil).

(a) Obtain and stack a set of sieves with the following openings: 4 millimeters (mm), 2 mm, 1 mm, 0.5 mm, and 0.25 mm, or obtain and stack a set of standard/commonly available sieves. Place the sieves in order according to size openings, beginning with the largest size opening at the top. Place a collector pan underneath the bottom (0.25 mm) sieve. Collect a sample of loose surface material from an area at least 30 cm by 30 cm in size, to a depth of approximately 1 cm using a brush and dustpan or other similar device. Only collect soil samples from dry surfaces (i.e., when the surface is not damp to the touch). Remove any rocks larger than 1 cm in diameter from the sample. Pour the sample into the top sieve (4 mm opening) and cover the sieve/collector pan unit with a lid. Minimize escape of particles into the air when transferring surface soil into the sieve/collector pan unit. Move the covered sieve/collector pan unit by hand using a broad, circular arm motion in the horizontal plane. Complete twenty circular arm movements, ten clockwise and ten counterclockwise, at a speed just necessary to achieve some relative horizontal motion between the sieves and the particles. Remove the lid from the sieve/collector pan unit and disassemble each sieve separately, beginning with the largest sieve. As each sieve is removed, examine it for loose particles. If loose particles have not been sifted to the finest sieve through which they can pass, reassemble and cover the sieve/collector pan unit and gently rotate it an additional ten times. After disassembling the sieve/collector pan unit, slightly tilt and gently tap each sieve, and the collector pan, so that material aligns along one side. In doing so, minimize escape of particles into the air. Line up the sieves and collector pan in a row and visibly inspect the relative quantities of catch in order to determine which sieve (or whether the collector pan) contains the greatest volume of material. If a visual determination of relative volumes of catch among sieves is difficult, use a graduated cylinder to measure the volume. Estimate TFV for the sieve catch with the greatest volume using Table 1 of this Subsection, which provides a correlation between sieve opening size and TFV.

Table 1. Determination of Threshold Friction Velocity

Tyler Sieve No.	ASTM 11 Sieve No.	Opening (mm)	TFV (cm/s)
5	5	4	135
9	10	2	100
16	18	1	76
32	35	0.5	58
60	60	0.25	43
Collector Pan	—	—	30

(b) Collect at least three soil samples which represent random portions of the overall conditions of the site, repeat the above TFV test method for each sample and average the resulting TFVs together to determine the TFV uncorrected for non-erodible elements. Non-erodible elements are distinct elements, in the random portion of the overall conditions of the site, that are larger than 1 cm in diameter, remain firmly in place during a wind episode, and inhibit soil loss by consuming part of the shear stress of the wind. Non-erodible elements include stones and bulk surface material but do not include flat or standing vegetation. For surfaces with non-erodible elements, determine corrections to the TFV by identifying the fraction of the survey area, as viewed from directly overhead, that is occupied by non-erodible elements using the following procedure. For a more detailed description of this procedure, see Subsection 90.4.1.2 (Rock Test Method) of this regulation. Select a survey area of 1 meter by 1 meter that represents a random portion of the overall conditions of the site. Where many non-erodible elements lie within the survey area, separate the non-erodible elements into groups according to size. For each group, calculate the overhead area for the non-erodible elements according to the following equations:

Eq. 1: (Average length) x (Average width) = Average Dimensions.
Eq. 2: (Average Dimensions) x (Number of Elements) = Overhead Area.
Eq. 3: Overhead Area of Group 1 + Overhead Area of Group 2 (etc.) = Total Overhead Area.
Eq. 4: Total Overhead Area/2 = Total Frontal Area.
Eq. 5: (Total Frontal Area/Survey Area) x 100 = Percent Cover Of Non-Erodible Elements.

Note: Ensure consistent units of measurement (e.g. square meters or square inches when calculating percent cover).

Repeat this procedure on an additional two distinct survey areas that represent a random portion of the overall conditions of the site and average the results. Use Table 2 of this Subsection to identify the correction factor for the percent

cover of non-erodible elements. Multiply the TFV by the corresponding correction factor to calculate the TFV corrected for non-erodible elements.

Table 2. Correction Factors for Threshold Friction Velocity

Percent Cover of Non-Erodible Elements	Correction Factor
Greater than or equal to 10%	5
Greater than or equal to 5% and less than 10%	3
Less than 5% and greater than or equal to 1%	2
Less than 1%	None

History: Initial adoption: June 22, 2000
Amended: November 16, 2000; November 20, 2001; December 17, 2002; June 3, 2003; July 1, 2004; April 15, 2014; January 21, 2020.

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SECTION 91: FUGITIVE DUST FROM UNPAVED ROADS, UNPAVED ALLEYS, AND UNPAVED EASEMENT ROADS

91.1 **FUGITIVE DUST From Unpaved Roads, Unpaved Alleys, and Unpaved EASEMENT Roads**

91.1.1 **Purpose:** To limit the Emission of PARTICULATE MATTER into the AMBIENT AIR from unpaved roads, unpaved alleys, unpaved ROAD EASEMENTS and unpaved access roads for utilities and railroads.

91.1.2 **Applicability:** The provisions of this Regulation shall apply to unpaved roads, which includes unpaved alleys, unpaved ROAD EASEMENTS and unpaved access roads for utilities and railroads which are located in a PM_{10} nonattainment area, an area subject to a PM_{10} maintenance plan defined under 42 U.S. Code § 7505a, or the Apex Valley (hydrographic areas 216 and 217). Nothing in Subsections 91.1 through 91.3 of these Regulations shall be construed to prevent enforcement of Section 40 (Prohibition of NUISANCE Conditions) of these Regulations. The provisions of this Regulation shall not apply to non-commercial and non-institutional private driveways and shall not apply to horse trails, hiking paths, bicycle paths, or other similar paths that have been officially designated by a governing body for exclusive use for purposes other than travel by motor vehicles. The provisions of this Regulation shall not apply to STATIONARY SOURCES as defined in Section 0, except that these control measures shall be considered as part of a BACT determination.

91.1.3 **Effective Date Of This Regulation**:

91.1.3.1 Regulations 91.1 through 91.3 shall be effective in hydrographic area 212 on their adoption by the District Board of Health of Clark County on June 22, 2000.

91.1.3.2 Regulations 91.1 through 91.3 shall be effective in hydrographic areas 216 and 217 on April 1, 2002.

91.2 **Requirements:**

91.2.1 **Unpaved Roads:** An OWNER AND/OR OPERATOR of an unpaved road in a PM_{10} nonattainment area, an area subject to a PM_{10} maintenance plan defined under 42 U.S. Code § 7505a, or the Apex Valley (hydrographic areas 216 and 217) shall implement one of the CONTROL MEASURES set forth in Subsection 91.2.1.3 of this Regulation, except as set forth in Subsection 91.2.1.1 of this Regulation. For the purpose of this Regulation, the CONTROL MEASURES shall be considered effectively implemented when the unpaved roadway complies with the stabilization standards set forth in Subsection 91.2.1.4 of this Regulation. **Advisory Notice:** In order to

conserve water to the greatest extent practicable, the use of RECLAIMED WATER is highly encouraged.

91.2.1.1 **Implementation Of CONTROL MEASURES For Existing Unpaved Roads:**

91.2.1.1.1 OWNERS AND/OR OPERATORS of existing unpaved roads that were constructed prior to June 22, 2000 in hydrographic area 212 shall implement one of the CONTROL MEASURES set forth Subsection 91.2.1.3 of this Regulation according to the following schedule:

(a) CONTROL MEASURES shall be implemented for one third (1/3) of the total miles of unpaved roads having vehicular traffic of 150 vehicles or more per day in accordance with Subsection 91.2.1.3 (CONTROL MEASURES) of this Regulation by June 1, 2001.

(b) CONTROL MEASURES shall be implemented for two thirds (2/3) of the total miles of unpaved roads having vehicular traffic of 150 vehicles or more per day in accordance with Subsection 91.2.1.3 (CONTROL MEASURES) of this Regulation by June 1, 2002.

(c) CONTROL MEASURES shall be implemented for all unpaved roads having vehicular traffic of 150 vehicles or more per day in accordance with Subsection 91.2.1.3 (CONTROL MEASURES) of this Regulation by June 1, 2003.

(d) CONTROL MEASURES set forth in Subsection 91.2.1.3 shall be implemented for existing unpaved roads on which vehicular traffic is equal to or greater than 150 vehicles per day that develops after June 1, 2003. CONTROL MEASURES shall be implemented within 365 calendar days following the initial discovery that vehicular traffic equals or exceeds 150 vehicles per day and that the road surface does not comply with the stabilization standards set forth in Subsection 91.2.1.4 of this Regulation. The CONTROL OFFICER may require short-term stabilization of any unpaved road subject to Subsection 91.2.1.1(d).

(e) Non-federal Requirement: CONTROL MEASURES set forth in Subsection 91.2.1.3 shall be implemented for existing unpaved roads having vehicular traffic of less than 150 vehicles per day within 365 calendar days following the initial discovery that the road surface does not comply with the stabilization standards set forth in Section 91.2.1.4 of this Regulation. The requirements of this Subsection (91.2.1.1 (e) shall not constitute applicable State Implementation Plan requirements pursuant to Section 189 of the federal Clean Air Act. The CONTROL OFFICER may require short-term stabilization of any unpaved road subject to Subsection 91.2.1.1 (e)). For the purpose of this Subsection, the CONTROL

MEASURES shall be considered effectively implemented when the unpaved road complies with the stabilization standards set forth in Subsection 91.2.1.4 of this Regulation.

91.2.1.1.2 OWNERS AND/OR OPERATORS of existing unpaved roads that were constructed prior to April 1, 2002 in hydrographic areas 216 and 217 shall implement one of the CONTROL MEASURES set forth Subsection 91.2.1.3 of this Regulation according to the following schedule:

(a) CONTROL MEASURES shall be implemented for one third (1/3) of the total miles of unpaved roads having vehicular traffic of 150 vehicles or more per day in accordance with Subsection 91.2.1.3 (CONTROL MEASURES) of this Regulation by April 1, 2003.

(b) CONTROL MEASURES shall be implemented for two thirds (2/3) of the total miles of unpaved roads having vehicular traffic of 150 vehicles or more per day in accordance with Subsection 91.2.1.3 (CONTROL MEASURES) of this Regulation by April 1, 2004.

(c) CONTROL MEASURES shall be implemented for all unpaved roads having vehicular traffic of 150 vehicles or more per day in accordance with Subsection 91.2.1.3 (CONTROL MEASURES) of this Regulation by April 1, 2005.

(d) CONTROL MEASURES set forth in Subsection 91.2.1.3 shall be implemented for existing unpaved roads on which vehicular traffic is equal to or greater than 150 vehicles per day that develops after April 1, 2005. CONTROL MEASURES shall be implemented within 365 calendar days following the initial discovery that vehicular traffic equals or exceeds 150 vehicles per day and that the road surface does not comply with the stabilization standards set forth in Subsection 91.2.1.4 of this Regulation. The CONTROL OFFICER may require short-term stabilization of any unpaved road subject to Subsection 91.2.1.1(d).

(e) Non-federal Requirement: CONTROL MEASURES set forth in Subsection 91.2.1.3 shall be implemented for existing unpaved roads having vehicular traffic of less than 150 vehicles per day within 365 calendar days following the initial discovery that the road surface does not comply with the stabilization standards set forth in Section 91.2.1.4 of this Regulation. The requirements of this Subsection (91.2.1.1 (e) shall not constitute applicable State Implementation Plan requirements pursuant to Section 189 of the federal Clean Air Act. The CONTROL OFFICER may require short-term stabilization of any unpaved road subject to Subsection 91.2.1.1 (e)). For the purpose of this Subsection, the CONTROL MEASURES shall be considered effectively implemented when the

unpaved road complies with the stabilization standards set forth in Subsection 91.2.1.4 of this Regulation.

91.2.1.2 No unpaved roads or alleys may be constructed in public thoroughfares in hydrographic area 212 after June 22, 2000, or in hydrographic areas 216 and 217 after April 1, 2002, unless the unpaved road is an interim component of an active paving project.

91.2.1.3 **CONTROL MEASURES:**

(a) PAVE, or

(b) Apply DUST PALLIATIVES, in compliance with the stabilization standards set forth in Subsection 91.2.1.4 of this Regulation, or

(c) Apply and maintain and alternative CONTROL MEASURE approved in writing by the CONTROL OFFICER and the Region IX Administrator of the EPA.

91.2.1.4 **Stabilization Standards:** For the purpose of this rule, CONTROL MEASURES shall be considered effectively implemented when stabilization observations for FUGITIVE Dust EMISSIONS from unpaved roads and unpaved alleys do not exceed 20% OPACITY and do not equal or exceed 0.33 oz/ft^2 silt loading, or do not exceed 6% silt content, as determined by Subsection 91.4.1 of these Regulations.

91.3 **Record Keeping Requirements**

91.3.1 **Record Keeping:** Any person subject to the requirements of this Regulation shall compile and retain records that provide evidence of CONTROL MEASURE application, by indicating type of treatment or CONTROL MEASURE, extent of coverage, and date applied. The records and supporting documentation shall be made available to the CONTROL OFFICER within 24 hours from written or verbal request.

91.3.2 **Records Retention:** Copies of the records required by Subsection 91.3.1 (Record Keeping Requirements) of this Regulation shall be retained for at least one year.

91.3.3 **Reports Required:** In addition to complying with the record keeping requirements specified in Subsection 91.3.1, OWNERS of unpaved roads shall be subject to the requirements set forth in Subsection 91.2.1.1, and shall prepare and submit a written report to the CONTROL OFFICER documenting compliance with the provisions of Subsection 91.2.1.1. This report shall be prepared for the years 2001, 2002, and 2003 for OWNERS of unpaved roads in hydrographic areas 212, for the years 2003, 2004, and 2005 for OWNERS of unpaved roads in hydrographic areas 216 and

217, and shall be submitted to the CONTROL OFFICER no later than October first of each year and shall include:

91.3.3.1 The total miles of unpaved roads under the jurisdiction of the OWNER and the miles PAVED during the reporting period subject to the requirements of Subsection 91.2.1.1. Miles of PAVING for roads subject to Subsections 91.2.1.1.1(a), 91.2.1.1.1(b), and 91.2.1.1.1(c) must be listed separately from paving of roads found to be subject Subsection 91.2.1.1.1 (d). Miles of PAVING for roads subject to Subsections 91.2.1.1.2(a), 91.2.1.1.2(b), and 91.2.1.1.2(c) must be listed separately from paving of roads found to be subject Subsection 91.2.1.1.2(d).

91.4 Test Methods

91.4.1 Stabilization Test Methods For Unpaved Roads And Unpaved Alleys:

91.4.1.1 **OPACITY Test Method**: The purpose of this test method is to estimate the percent OPACITY of FUGITIVE DUST plumes caused by vehicle movement on unpaved roads, unpaved alleys, and unpaved EASEMENTS. This method can only be conducted by an individual who has received certification as a qualified Visible EMISSIONS Evaluator.

(a) Step 1: Stand at least 16.5 feet from the FUGITIVE DUST source in order to provide a clear view of the EMISSIONS with the sun oriented in the 140-degree sector to the back. Following the above requirements, make OPACITY observations so that the line of vision is approximately perpendicular to the dust plume and wind direction. If multiple plumes are involved, do not include more than one plume in the line of sight at one time.

(b) Step 2: Record the FUGITIVE DUST source location, source type, method of control used, if any, observer's name, certification data and affiliation, and a sketch of the observer's position relative to the FUGITIVE DUST source. Also, record the time, estimated distance to the FUGITIVE DUST source location, approximate wind direction, estimated wind speed, description of the sky condition (presence and color of clouds), observer's position to the FUGITIVE DUST source, and color of the plume and type of background on the visible emission observation form both when OPACITY readings are initiated and completed.

(c) Step 3: Make OPACITY observations, to the extent possible, using a contrasting background that is perpendicular to the line of vision. Make OPACITY observations approximately 1 meter above the surface from which the plume is generated. Note that the observation is to be made at only one visual point upon generation of a plume, as opposed to visually tracking the entire length of a

dust plume as it is created along a surface. Make two observations per vehicle, beginning with the first reading at zero seconds and the second reading at five seconds. The zero-second observation should begin immediately after a plume has been created above the surface involved. Do not look continuously at the plume but, instead, observe the plume briefly at zero seconds and then again at five seconds.

(d) Step 4: Record the OPACITY observations to the nearest 5% on an observational record sheet. Each momentary observation recorded represents the average OPACITY of EMISSIONS for a 5-second period. While it is not required by the test method, EPA recommends that the observer estimate the size of vehicles which generate dust plumes for which readings are taken (e.g. mid-size passenger car or heavy-duty truck) and the approximate speeds the vehicles are traveling when readings are taken.

(e) Step 5: Repeat Step 3 (Subsection 91.4.1.1(c) of this Regulation) and Step 4 (Subsection 91.4.1.1 (d) of this Regulation) until you have recorded a total of 12 consecutive OPACITY readings. This will occur once six vehicles have driven on the source in your line of observation for which you are able to take proper readings. The 12 consecutive readings must be taken within the same period of observation but must not exceed 1 hour. Observations immediately preceding and following interrupted observations can be considered consecutive.

(f) Step 6: Average the 12 OPACITY readings together. If the average OPACITY reading equals 20% or lower, the source is in compliance with the OPACITY standard described in Section 91 of these Regulations.

91.4.1.2 **Silt Content Test Method:** The purpose of this test method is to estimate the silt content of the trafficked parts of unpaved roads, unpaved alleys, and unpaved EASEMENTS. The higher the silt content, the greater the amount of fine dust particles that are entrained into the atmosphere when cars and trucks drive on unpaved roads, unpaved alleys, and unpaved EASEMENTS.

(a) Equipment:

(1) A set of sieves with the following openings: 4 millimeters (mm), 2 mm, 1 mm, 0.5 mm and 0.25 mm, a lid, and collector pan

(2) A small whiskbroom or paintbrush with stiff bristles and dustpan 1 foot in width (the broom/brush should preferably

have one, thin row of bristles no longer than 1.5 inches in length)

(3) A spatula without holes

(4) A small scale with half ounce increments (e.g., postal/ package scale)

(5) A shallow, lightweight container (e.g., plastic storage container)

(6) A sturdy cardboard box or other rigid object with a level surface

(7) A calculator

(8) Cloth gloves (optional for handling metal sieves on hot, sunny days)

(9) Sealable plastic bags (if sending samples to a laboratory)

(10) A pencil/pen and paper

(b) Step 1: Look for a routinely traveled surface, as evidenced by tire tracks (only collect samples from surfaces that are not damp due to precipitation or dew). This statement is not meant to be a standard in itself for dampness where watering is being used as a CONTROL MEASURE. It is only intended to ensure that surface testing is done in a representative manner. Use caution when taking samples to ensure personal safety with respect to passing vehicles. Gently press the edge of a dustpan (1 foot in width) into the surface four times to mark an area that is 1 square foot. Collect a sample of loose surface material using a whiskbroom or brush and slowly sweep the material into the dustpan, minimizing escape of dust particles. Use a spatula to lift heavier elements such as gravel. Only collect dirt/gravel to an approximate depth of 3/8 inch or 1 cm in the 1 square foot area. If you reach a hard, underlying subsurface that is greater than 3/8 inch in depth, do not continue collecting the sample by digging into the hard surface. In other words, you are only collecting a surface sample of loose material down to 1 cm. In order to confirm that samples are collected to 1 cm in depth, a wooden dowel or other similar narrow object at least one foot in length can be laid horizontally across the survey area while a metric ruler is held perpendicular to the dowel.

- At this point, you can choose to place the sample collected into a plastic bag or container and take it to an independent

laboratory for silt content analysis. A reference to the procedure the laboratory is required to follow is at the end of this section.

(c) Step 2: Place a scale on a level surface. Place a lightweight container on the scale. Zero the scale with the weight of the empty container on it. Transfer the entire sample collected in the dustpan to the container, minimizing escape of dust particles. Weigh the sample and record its weight.

(d) Step 3: Stack a set of sieves in order according to the size openings specified above, beginning with the largest size opening (4 mm) at the top. Place a collector pan underneath the bottom (0.25 mm) sieve.

(e) Step 4: Carefully pour the sample into the sieve stack, minimizing escape of dust particles by slowly brushing material into the stack with a whiskbroom or brush (on windy days, use the trunk or door of a car as a wind barricade). Cover the stack with a lid. Lift up the sieve stack and shake it vigorously up, down and sideways for at least 1 minute.

(f) Step 5: Remove the lid from the stack and disassemble each sieve separately, beginning with the top sieve. As you remove each sieve, examine it to make sure that all of the material has been sifted to the finest sieve through which it can pass; e.g. material in each sieve (besides the top sieve that captures a range of larger elements) should look the same size. If this is not the case, re-stack the sieves and collector pan, cover the stack with the lid, and shake it again for at least 1 minute (you only need to reassemble the sieve(s) that contain material, which requires further sifting).

(g) Step 6: After disassembling the sieves and collector pan, slowly sweep the material from the collector pan into the empty container originally used to collect and weigh the entire sample. Take care to minimize escape of dust particles. You do not need to do anything with material captured in the sieves; only the collector pan. Weigh the container with the material from the collector pan and record its weight.

(h) Step 7: If the source is an unpaved road, multiply the resulting weight by 0.38. If the source is an UNPAVED PARKING LOT, multiply the resulting weight by 0.55. The resulting number is the estimated silt loading. Then, divide by the total weight of the sample you recorded earlier in Step 2 (Subsection 91.4.1.2(c) of this Regulation) and multiply by 100 to estimate the percent silt content.

(i) Step 8: Select another two routinely traveled portions of the unpaved road or UNPAVED PARKING LOT and repeat this test method. Once you have calculated the silt loading and percent silt content of the 3 samples collected, average your results together.

(j) Step 9: Examine Results. If the average silt loading is less than 0.33 oz/ft², the surface is stable. If the average silt loading is greater than or equal to 0.33 oz/ft², then proceed to examine the average percent silt content. If the source is an unpaved road, unpaved alley, or unpaved EASEMENT and the average percent silt content is 6% or less, the surface is stable. If your field test results are within 2% of the standard (for example, 4%-8% silt content on an unpaved road, alley, or EASEMENT), it is recommended that you collect 3 additional samples from the source according to Step 1 (Subsection 91.4.1.2(b) of this Regulation) and take them to an independent laboratory for silt content analysis.

(k) Independent Laboratory Analysis: You may choose to collect 3 samples from the source, according to Step 1 (Subsection 91.4.1.2(b) of this Regulation), and send them to an independent laboratory for silt content analysis rather than conduct the sieve field procedure. If so, the test method the laboratory is required to use is:

"Procedures For Laboratory Analysis Of Surface/Bulk Loading Samples", (Fifth Edition, Volume I, Appendix C.2.3 "Silt Analysis", 1995), AP-42, Office of Air Quality Planning & Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina

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SECTION 92: FUGITIVE DUST FROM UNPAVED PARKING LOTS AND STORAGE AREAS

92.1 Fugitive Dust from Unpaved Parking Lots and Storage Areas 2
92.1.1 Purpose 2
92.1.2 Applicability 2
92.2 Definitions 2
92.3 Requirements 2
92.3.1.1 New Unpaved Parking Lots or Storage Areas 3
92.3.1.2. Control Measures 3
92.4 Performance Standards 4
92.4.1 Stabilization Standards 4
92.4.2 Prohibition of Dust Over Property Line 4
92.5 Recordkeeping Requirements 4
92.5.1 Recordkeeping 4
92.5.2 Records Retention 5
92.6 Test Methods 5
92.6.1 Stabilization Test Methods for Unpaved Parking Lots and Storage Areas 5
92.6.1.1 Opacity Test Method 5
92.6.1.2. Silt Content Test Method 6

92.1 Fugitive Dust from Unpaved Parking Lots and Storage Areas

92.1.1 Purpose

The purpose of this section is to limit the emission of particulate matter into the ambient air from unpaved parking lots, including storage areas as defined in Section 0.

92.1.2 Applicability

The provisions of this regulation shall apply to unpaved parking lots and storage areas which are located in a PM_{10} nonattainment area, an area subject to a PM_{10} maintenance plan defined under 42 U.S. Code § 7505a, or in the Apex Valley (hydrographic areas 216 and 217), and which are not regulated by Section 94. Unpaved parking lots and storage areas include automobile impound yards, wrecking yards, automobile dismantling yards, salvage yards, material handling yards, equestrian staging facilities, and storage yards. For the purposes of this regulation, maneuvering shall not include military maneuvers or exercises conducted on federal facilities. Nothing in Sections 92.1 through 92.6 shall be construed to prevent enforcement of Section 40 ("Prohibition of Nuisance Conditions"). The provisions of this regulation shall not apply to stationary sources as defined in Section 0, except that these control measures shall be considered as part of a BACT determination.

92.2 Definitions

(a) The following term has the meanings set forth below for the purposes of Section 92. Any term not defined in these paragraphs shall have the meaning given in Section 0 or the Clean Air Act.

(b) "Equestrian staging area" means the area(s) used exclusively to load, unload, and saddle horses; organize riders before a ride; and park vehicles used to transport horses.

92.3 Requirements

92.3.1 The owner and/or operator of an existing unpaved parking lot or storage area in a PM_{10} nonattainment area, an area subject to a PM_{10} maintenance plan defined under 42 U.S. Code § 7505a, or in the Apex Valley (hydrographic areas 216 and 217) shall implement one or more of the control measures described in Section 92.3.1.2 as necessary to comply with the stabilization standards of Section 92.4.1. For unpaved parking lots and storage areas that are utilized intermittently, for a period of 35 days or less during the calendar year, the owner and/or operator shall implement one or more of the control measures described in Section 92. 3.1.2 during the period that the unpaved parking lot or storage area is

utilized for vehicle parking or storage. For the purpose of this regulation, the control measures set forth in Section 92.3.1.2 shall be considered effectively implemented when the unpaved parking lot or storage area meets the stabilization standards described in Section 92.4.1.

92.3.1.1 New Unpaved Parking Lots or Storage Areas

No unpaved parking lots or storage areas may be constructed in hydrographic areas 212, 216, or 217 as of January 1, 2003; or in any other hydrographic area upon it being designated as nonattainment for PM_{10}; or in any other hydrographic area upon it being subject to a PM_{10} maintenance plan defined under 42 U.S. Code § 7505a except as provided in this section.

(a) **Exemptions.** The requirements of this Section shall not be applicable to parking lots for rural public facilities, such as trailheads, campgrounds, and similar facilities where paved parking lots would conflict with the rural nature of these facilities, provided such unpaved parking lot is stabilized in accordance with Sections 92. 3.1.2(b) through (d) prior to being used. For the purposes of this Section, a rural public facility shall not include any facility located within the BLM Disposal Boundary.

(b) **Material Storage and Handling Areas.** If an area is used for storing and handling of landscaping, aggregate, and other similar bulk materials, the owner and/or operator shall implement one or more of the control measures described in Section 92.3.1.2, subject to the approval of the Control Officer, provided, however, that all access, parking, and loading areas used by on-road vehicles shall be paved.

(c) **Tracked, Non-Rubber Tired Vehicle, or Heavy Equipment Storage Areas.** If an area is used primarily for storage of non-rubber tired vehicles or equipment that the control officer has determined to be of such weight as to damage or destroy pavement (e.g., heavy equipment), the owner and/or operator shall implement one or more of the control measures described in Section 92.3.1.2, subject to the approval of the Control Officer, provided, however, that all access, parking, and loading areas primarily used by rubber-tired vehicles shall be paved.

(d) **Equestrian Staging Areas:** Areas designed and used exclusively for the loading, unloading, and saddling of horses for equestrian activities shall be exempt from the paving requirements of this section if control measures applied to the designated areas meet the performance standards of Section 92.4. Posted vehicle speed

limits for vehicles using such designated areas shall not exceed 10 miles per hour.

92.3.1.2 Control Measures

(a) Pave;

(b) Apply dust palliatives, in compliance with the stabilization standards set forth in Section 92. 4.1;

(c) Apply dust palliatives to vehicle travel lanes within the parking lot or storage area in compliance with the stabilization standards set forth in Section 92.4.1, and uniformly apply and maintain surface gravel or recycled asphalt to a depth of two inches on the vehicle parking areas;

(d) Apply and maintain an alternative control measure approved in writing by the Control Officer and the EPA Region 9 Administrator.

92.4 Performance Standards

92.4.1 Stabilization Standards

For the purpose of this regulation, control measures shall be considered effectively implemented when stabilization observations for fugitive dust emissions from unpaved parking lots or storage areas do not exceed 20 percent opacity and do not equal or exceed 0.33 oz/ft^2 silt loading, or do not exceed 8 percent silt content, as determined by Section 92.6 (“Test Methods”), except in areas on which gravel has been applied under the provisions of Section 92.3.1.2(c).

92.4.2 Prohibition of Dust Over Property Line

Where Best Available Control Measures provided for in this regulation have not been applied, no owner and/or operator of an unpaved parking lot or storage area shall permit a dust plume from that unpaved parking lot or storage area to cross a property line.

92.5 Recordkeeping Requirements

92.5.1 Recordkeeping

Any person subject to the requirements of this regulation shall compile and retain records that provide evidence of control measure application, by indicating type of treatment or control measure, extent of coverage, and date applied. The records and supporting documentation shall be made available to the Control Officer within 24 hours of a written request.

92.5.2 Records Retention

Copies of the records required by Section 92.5.1 shall be retained for at least one year. Facilities subject to Section 12.5 ("Part 70 Operating Permit Requirements") shall maintain records in accordance with Part 70 record keeping requirements.

92.6 Test Methods

92.6.1 Stabilization Test Methods for Unpaved Parking Lots and Storage Areas

92.6.1.1 Opacity Test Method

The purpose of this test method is to estimate the percent opacity of fugitive dust plumes caused by vehicle movement on unpaved parking lots and storage areas. This method can only be conducted by an individual who has received certification as a qualified Visible Emissions Evaluator.

(a) Step 1: Stand at least 16.5 feet from the fugitive dust source in order to provide a clear view of the emissions, with the sun oriented in the 140-degree sector to the back. Following the above requirements, make opacity observations so that the line of vision is approximately perpendicular to the dust plume and wind direction. If multiple plumes are involved, do not include more than one plume in the line of sight at one time.

(b) Step 2: Record the fugitive dust source location, source type, method of control used (if any), evaluator's name, certification data and affiliation, and a sketch of the observer's position relative to the fugitive dust source. Also, record the time, estimated distance to the fugitive dust source location, approximate wind direction, estimated wind speed, description of the sky condition (presence and color of clouds), and color of the plume and type of background on the visible emission observation form when opacity readings are both initiated and completed.

(c) Step 3: Make opacity observations, to the extent possible, using a contrasting background that is perpendicular to the line of vision. Make opacity observations approximately 1 meter above the surface from which the plume is generated. Note that the observation is to be made at only one visual point upon generation of a plume, as opposed to visually tracking the entire length of a dust plume as it is created along a surface. Make two observations per vehicle, beginning with the first reading at zero seconds and the second reading at five seconds. The zero-second observation should begin immediately after a plume has been created above

the surface involved. Do not look continuously at the plume but, instead, observe the plume briefly at zero seconds and then again at five seconds.

(d) Step 4: Record the opacity observations to the nearest 5 percent on an observational record sheet. Each momentary observation recorded represents the average opacity of emissions for a five-second period. While it is not required by the test method, EPA recommends that the observer estimate the size of vehicles that generate dust plumes for which readings are taken (e.g., mid-size passenger car or heavy-duty truck) and the approximate speeds the vehicles are traveling when readings are taken.

(e) Step 5: Repeat Steps 3 and 4 until you have recorded a total of 12 consecutive opacity readings. This will occur once six vehicles have driven on the source in your line of observation for which you are able to take proper readings. The 12 consecutive readings must be taken within the same period of observation, but must not exceed one hour. Observations immediately preceding and following interrupted observations can be considered consecutive.

(f) Step 6: Average the 12 opacity readings together. If the average opacity reading equals 20 percent or lower, the source is in compliance with the opacity standard described in this regulation.

92.6.1.2 Silt Content Test Method

The purpose of this test method is to estimate the silt content of the trafficked parts of unpaved parking lots and storage areas. The higher the silt content, the greater the amount of fine dust particles that are entrained into the atmosphere when cars and trucks drive on unpaved parking lots or storage areas.

(a) Equipment:

(1) Set of sieves with the following openings: 4 millimeters (mm), 2 mm, 1 mm, 0.5 mm, and 0.25 mm; a lid; and collector pan;

(2) Small whiskbroom or paintbrush with stiff bristles and dustpan one foot in width (the broom/brush should preferably have one thin row of bristles no longer than 1.5 inches in length);

(3) Spatula without holes;

(4) Small scale with half-ounce increments (e.g., postal/package scale);

(5) Shallow, lightweight container (e.g., plastic storage container);

(6) Sturdy cardboard box or other rigid object with a level surface;

(7) Basic calculator;

(8) Cloth gloves (optional for handling metal sieves on hot, sunny days);

(9) Sealable plastic bags (if sending samples to a laboratory); and

(10) Pencil/pen and paper.

(b) Step 1: Look for a routinely traveled surface, as evidenced by tire tracks (only collect samples from surfaces that are not damp due to precipitation or dew). This statement is not meant to be a standard in itself for dampness where watering is being used as a control measure; it is only intended to ensure that surface testing is done in a representative manner. Use caution when taking samples to ensure personal safety with respect to passing vehicles. Gently press the edge of a dustpan (1 foot in width) into the surface four times to mark an area that is 1 square foot. Collect a sample of loose surface material using a whiskbroom or brush and slowly sweep the material into the dustpan, minimizing escape of dust particles. Use a spatula to lift heavier elements such as gravel. Only collect dirt/gravel to an approximate depth of 3/8 inch or 1 cm in the 1 square foot area. If you reach a hard, underlying subsurface that is greater than 3/8 inch in depth, do not continue collecting the sample by digging into the hard surface. In other words, you are only collecting a surface sample of loose material down to 1 cm. In order to confirm that samples are collected to 1 cm in depth, a wooden dowel or other similar narrow object at least one foot in length can be laid horizontally across the survey area while a metric ruler is held perpendicular to the dowel.

(1) At this point, the sample can be collected into a plastic bag or container and take it to an independent laboratory for silt content analysis. A reference to the procedure the laboratory is required to follow is at the end of this section.

(c) Step 2: Place a scale on a level surface. Place a lightweight container on the scale. Zero the scale with the weight of the empty container on it. Transfer the entire sample collected in the dustpan to the container, minimizing escape of dust particles. Weigh the sample and record its weight.

(d) Step 3: Stack a set of sieves in order according to the size openings specified above, beginning with the largest size opening (4 mm) at the top. Place a collector pan underneath the bottom (0.25 mm) sieve.

(e) Step 4: Carefully pour the sample into the sieve stack, minimizing escape of dust particles by slowly brushing material into the stack with a whiskbroom or brush (on windy days, use the trunk or door of a car as a wind barricade). Cover the stack with a lid. Lift the sieve stack and shake it vigorously up, down, and sideways for at least 1 minute.

(f) Step 5: Remove the lid from the stack and disassemble each sieve separately, beginning with the top sieve. As you remove each sieve, examine it to make sure that all of the material has been sifted to the finest sieve through which it can pass; e.g., material in each sieve (besides the top sieve that captures a range of larger elements) should look the same size. If this is not the case, restack the sieves and collector pan, cover the stack with the lid, and shake it again for at least 1 minute (you only need to reassemble the sieve(s) that contain material, which requires further sifting).

(g) Step 6: After disassembling the sieves and collector pan, slowly sweep the material from the collector pan into the empty container originally used to collect and weigh the entire sample. Take care to minimize escape of dust particles. You do not need to do anything with material captured in the sieves; only the collector pan. Weigh the container with the material from the collector pan and record its weight.

(h) Step 7: If the source is an unpaved road, multiply the resulting weight by 0.38. If the source is an unpaved parking lot or storage area, multiply the resulting weight by 0.55. The resulting number is the estimated silt loading. Then, divide by the total weight of the sample you recorded earlier in Step 2 and multiply by 100 to estimate the percent silt content.

(i) Step 8: Select another two routinely traveled portions of the unpaved road or unpaved parking lot and repeat this test method. Once you have calculated the silt loading and percent silt content of the three samples collected, average your results together.

(j) Step 9: Examine the results. If the average silt loading is less than 0.33 oz/ft^2, the surface is stable. If the average silt loading is greater than or equal to 0.33 oz/ft^2, then examine the average percent silt content. If the source is an unpaved parking lot or storage area and the average percent silt content is 8 percent or less, the surface is

stable. If your field test results are within 2 percent of the standard (for example, 6-10 percent silt content on an unpaved parking lot or storage area), it is recommended that you collect three additional samples from the source according to Step 1 and take them to an independent laboratory for silt content analysis.

(k) You may choose to collect three samples from the source, according to Step 1, and send them to an independent laboratory for silt content analysis rather than conduct the sieve field procedure. If so, the test method the laboratory is required to use is described in Volume 1, Appendix C.2.3 ("Silt Analysis") of EPA's *Procedures For Laboratory Analysis of Surface/Bulk Loading Samples* (1995, fifth edition).

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SECTION 93: FUGITIVE DUST FROM PAVED ROADS AND STREET SWEEPING EQUIPMENT

93.1 **Fugitive Dust from Paved Roads and Street Sweeping Equipment**

93.1.1 **Purpose:** To limit the Emission of particulate matter into the ambient air from paved roads and Paved alleys.

93.1.2 **Applicability:** The provisions of this regulation shall apply to Paved roads and Paved alleys which are located in a PM_{10} nonattainment area, an area subject to a PM_{10} maintenance plan defined under 42 U.S. Code § 7505a, or the Apex Valley (hydrographic areas 216 and 217). Nothing in Subsections 93.1 through 93.4 of these Regulations shall be construed to prevent enforcement of Section 40 (Prohibition of Nuisance Conditions) of these Regulations. The provisions of this regulation shall not apply to non-commercial and non-institutional private driveways. The provisions of this regulation shall not apply to Stationary Sources as defined in Section 0, except that these Control Measures shall be considered as part of a BACT determination.

93.2 **Requirements:**

93.2.1 **Paved Road Development Standards:** Owners and/or Operators having jurisdiction over, or ownership of, public or private Paved roads shall construct, or require to be constructed, all new or modified Paved roads in conformance with the road shoulder width and drivable median stabilization requirements as specified below:

93.2.1.1 New construction, modification, or approvals of Paved roads shall be constructed with a Paved travel section, and four (4) feet of Paved or stabilized shoulder on each side of the Paved travel section. The four (4) feet of shoulder shall be Paved or stabilized with a dust palliative or gravel to prevent the trackout of mud and dirt to the Paved section. Where shoulder stabilization is used in place of paving, the stabilized shoulders must be maintained in compliance with the stabilization standards set forth in Subsection 93.2.1.5 of this regulation.

93.2.1.2 New construction, modification, or approvals of Paved roads on which vehicular traffic is greater than or equal to 3,000 vehicles per day after March 1, 2003 shall be constructed with a Paved travel section, and eight (8) feet of stabilized shoulder adjacent to the Paved travel section where right-of-way is available for the stabilized shoulder. Where the right-of-way is not available for the full eight (8) feet of stabilized shoulder, curbing shall be installed adjacent to the shoulder. Stabilized shoulders must be maintained in

compliance with the stabilization standards set forth in Subsection 93.2.1.5 of this regulation.

93.2.1.3 Where curbing is constructed adjacent to and contiguous with the travel lane or Paved shoulder of a road, the shoulder width design standards specified in Subsection 93.2.1.1 shall not be applicable.

93.2.1.4 Where Paved roads are constructed, or modified with shoulders and/or medians, the shoulders and/or medians shall be constructed as set forth below. If the shoulder, median, or extended right-of-way is located in a limited access freeway right-of-way, then the requirements of Section 90 apply.

(a) With curbing, or

(b) With solid paving across the median, or

(c) Apply dust palliatives, in compliance with the stabilization standards set forth in Subsection 93.2.1.5 of this regulation, or

(d) Apply two (2) inches of gravel in compliance with the stabilization standards set forth in Subsection 93.2.1.5 of this regulation, or

(e) With materials that prevent the trackout of mud and dirt to the Paved section such as landscaping or decorative rock.

93.2.1.5 Stabilization Standards: For the purpose of this regulation, the unpaved shoulders and medians of Paved roads shall be considered to have Control Measures effectively implemented when Fugitive Dust Emissions do not exceed 20% Opacity and silt loading does not equal or exceed 0.33 oz/ft^2 silt loading, as determined by Subsection 93.4.1 (Test Methods-Stabilized Paved Road Shoulders and Medians) of these Regulations, except for unpaved shoulders on which gravel has been applied under the provisions of Subsection 93.2.1.1. Failure to comply with either the 20% Opacity limit or silt loading limit indicates that the shoulder is not stable. Where gravel is utilized to prevent trackout from unpaved shoulders and medians of Paved roads, surface gravel shall be uniformly applied and maintained to a depth of two (2) inches to comply with the 20% Opacity standards set forth in Subsection 93.4.1.1 of these Regulations and the gravel depth and Silt Content Test Method set forth in Subsection 93.4.1.3 of these Regulations. For the purposes of this section, the term gravel shall include “aggregate” and shall mean unconsolidated material greater than 0.25 (1/4) inch but less than three (3) inches, and contain no more than six (6) percent silt, by dry weight, that will pass through a No. 200 sieve. Failure to comply with either the 20% Opacity limit or the Gravel Depth and Silt Content Test Method indicates that the shoulder is not stable.

93.2.1.6 Requirements For existing nonconforming Paved roads: Owners and/or Operators having jurisdiction over, or ownership of, existing public or private Paved roads which do not conform with the requirements of Subsections 93.2.1.1 through 93.2.1.5 of this regulation, shall reconstruct, or require to be reconstructed, the existing nonconforming Paved road within 365 calendar days following the initial discovery that the road fails to meet the requirements set forth in Subsections 93.2.1.1 through 93.2.1.5 of these Regulations. The Control Officer may require short-term stabilization of any Paved road subject to the requirements set forth in Subsections 93.2.1.1 through 93.2.1 of these Regulations. Other stabilization methods of equal or greater effectiveness may be implemented with the written approval of the Control Officer, providing emissions do not exceed 20% Opacity, unless the US EPA Region 9 objects to such approval within ninety (90) days from the date notification of the proposed alternative stabilization method is sent to the US EPA Region 9 by the Control Officer. If the US EPA Region 9 does not object within the ninety (90) days from the date notification, the proposed alternative stabilization method may be implemented. If the US EPA Region 9 objects to the proposed alternative stabilization method, the proposed alternative stabilization method shall require written approval from both the Control Officer and the US EPA Region 9 prior to the implementation of the proposed alternative stabilization method.

93.2.2 **Street Sweeper Requirements:** After January 1, 2001, any Owner and/or Operator which utilizes street sweeping equipment or street sweeping services for street sweeping on Paved roads or Paved parking lots, shall acquire or contract to acquire only certified PM_{10}-efficient street sweeping equipment.

93.2.2.1 PM_{10}-Efficient Street Sweepers: For the purposes of Subsection 93.2.2 of this regulation, a PM_{10}-efficient street sweeper is a street sweeper which has been certified by the South Coast Air Quality Management District (California) (SCAQMD) to comply with the District's performance standards set forth in SCAQMD Rule 1186 utilizing the test methods set forth in SCAQMD Rule 1186, Appendix A.

93.2.3 **Equipment Restriction:** The use of dry rotary brushes and blower devices for the removal of dirt, rock, or other debris from a Paved road or Paved parking lot is prohibited without the use of sufficient wetting to limit the visible emissions to not greater than 20%Oopacity when measured as set forth in Subsection 93.4.1.1. The use of dry rotary brushes or blower devices without the use of water is expressly prohibited.

93.2.4 **Crack Seal Equipment Requirements:** After December 31, 2005 any Owner and/or Operator which utilizes crack seal cleaning equipment shall acquire, or contract to acquire, only vacuum type crack cleaning seal equipment.

93.3 **Record Keeping and Reporting Requirements**

93.3.1 **Record Keeping:** Any Person subject to the requirements of this regulation shall compile and retain records that provide evidence of Control Measure application, by indicating type of treatment or Control Measure, extent of coverage, and date applied. The records and supporting documentation shall be made available to the Control Officer within 24 hours of a written request.

93.3.2 **Reporting Requirements:** Owners and/or Operators having jurisdiction over Paved roads shall prepare and submit a written report to the department documenting compliance with the provisions of this regulation. This report shall be prepared annually on a calendar year basis. The reports shall be transmitted no later than 90 days after the end of the calendar year and shall include:

93.3.2.1 The total miles of Paved roads under the jurisdiction of the Owner and/or Operator and the miles of Paved roads constructed or modified during the reporting period.

93.3.2.2 For newly constructed or modified roads, documentation on how the requirements of Subsections 93.2.1.1 through 93.2.1.5 have been met.

93.3.2.3 Other information which may be needed by the Control Officer for compliance with EPA requirements for enforcement of this regulation.

93.3.3 **Records Retention:** Copies of the records required by Subsection 93.3.1 (Record Keeping Requirements) of this regulation shall be retained for at least one year.

93.4 **Test Methods**

93.4.1 **Stabilization Test Methods for Unpaved Shoulders and Medians of Paved Roads:**

93.4.1.1 Opacity Test Method: The purpose of this test method is to estimate the percent Opacity of Fugitive Dust plumes caused by vehicle movement on unpaved road shoulders and medians of Paved roads. This method can only be conducted by an individual who has received certification as a qualified observer.

(a) Step 1: Stand at least 20 feet from the Fugitive Dust source in order to provide a clear view of the Emissions with the sun oriented in the 140-degree sector to the back. Following the above requirements, make Opacity observations so that the line of vision is approximately

perpendicular to the dust plume and wind direction. If multiple plumes are involved, do not include more than one plume in the line of sight at one time.

(b) Step 2: Record the Fugitive Dust source location, source type, method of control used, if any, observer's name, certification data and affiliation, and a sketch of the observer's position relative to the Fugitive Dust source. Also, record the time, estimated distance to the Fugitive Dust source location, approximate wind direction, estimated wind speed, description of the sky condition (presence and color of clouds), observer's position to the Fugitive Dust source, and color of the plume and type of background on the visible Emission observation form both when Opacity readings are initiated and completed.

(c) Step 3: Make Opacity observations, to the extent possible, using a contrasting background that is perpendicular to the line of vision. Make Opacity observations approximately 3 feet above the surface from which the plume is generated. Note that the observation is to be made at only one visual point upon generation of a plume, as opposed to visually tracking the entire length of a dust plume as it is created along a surface. Make two observations per vehicle, beginning with the first reading at zero seconds and the second reading at five seconds. The zero-second observation should begin immediately after a plume has been created above the surface involved. Do not look continuously at the plume but, instead, observe the plume briefly at zero seconds and then again at five seconds.

(d) Step 4: Record the Opacity observations to the nearest 5% on an observational record sheet. Each momentary observation recorded represents the average Opacity of Emissions for a 5-second period. While it is not required by the test method, EPA recommends that the observer estimate the size of vehicles which generate dust plumes for which readings are taken (e.g. mid-size passenger car or heavy-duty truck) and the approximate speeds the vehicles are traveling when readings are taken.

(e) Step 5: Repeat Step 3 (Subsection 93.4.1.1 (c) of this regulation) and Step 4 (Subsection 93.4.1.1 (d) of this regulation) until you have recorded a total of 12 consecutive Opacity readings. This will occur once six vehicles have driven on the source in your line of observation for which you are able to take proper readings. The 12 consecutive readings must be taken within the same period of observation but must not exceed 1 hour. Observations immediately preceding and following interrupted observations can be considered consecutive.

(f) Step 6: Average the 12 Opacity readings together. If the average Opacity reading equals 20% or lower, the source is in compliance with the Opacity standard described in Section 93 of these Regulations.

93.4.1.2 Silt Loading Test Method: The purpose of this test method is to estimate the silt loading of the representative surfaces of dust palliative and untreated shoulders and medians of Paved roads. The higher the silt loading, the greater the amount of fine dust particles that are entrained into the atmosphere when vehicles drive on unpaved shoulders and medians of Paved roads.

(a) Equipment:

(1) A set of sieves with the following openings: 4 millimeters (ASTM No. 5), 2 millimeters, (ASTM No. 10), 1 millimeter (ASTM No. 18), 0.5 millimeter (ASTM No. 35) and 0.25 millimeter (ASTM No. 60), (or a set of standard/commonly available sieves), a lid, and collector pan.

(2) Equipment necessary to collect a sample of material from the surface of the subject area. (e.g., a small whisk broom or paintbrush with bristles no longer than 1.5 inches, dustpan, spatula, shallow container, sealable plastic bags.)

(3) Equipment necessary to complete field analysis of material. (e.g., weighting scale with half once increments, calculator, writing material.)

(b) Step 1: Look for a representative surface within four (4) feet of the edge of the pavement. [Only collect samples from surfaces that are not damp due to precipitation or dew. This statement is not meant to be a standard in itself for dampness where watering is being used as a Control Measure. It is only intended to ensure that surface testing is done in a representative manner.] Gently press the edge of a dustpan into the surface to mark an area that is 1 square foot. Collect a sample of loose surface material using a whiskbroom or brush and slowly sweep the material into the dustpan, minimizing escape of dust particles. Use a spatula or similar device to lift heavier elements such as gravel. Only collect dirt/gravel to an approximate depth of 3/8 inch in the 1 square foot area. If you reach a hard, underlying subsurface that is less than 3/8 inch in depth, do not continue collecting the sample by digging into the hard surface. In other words, you are only collecting a surface sample of loose material down to 3/8 inch. In order to confirm that samples are

collected to 3/8 inch in depth, a wooden dowel or other similar narrow object at least one foot in length can be laid horizontally across the survey area while a ruler is held perpendicular to the dowel.

- At this point, you can choose to place the sample collected into a plastic bag or container and return to the department facilities to complete the remaining steps or take it to an independent laboratory for silt loading analysis. A reference to the procedure the laboratory is required to follow is at the end of this section.

(c) Step 2: Place a scale on a level surface. Place a lightweight container on the scale. Zero the scale with the weight of the empty container on it.

(d) Step 3: Stack a set of sieves in order according to the size openings specified above, beginning with the largest size opening (4 mm) at the top. Place a collector pan underneath the bottom (0.25 mm) sieve.

(e) Step 4: Carefully pour the sample into the sieve stack, minimizing escape of dust particles by slowly brushing material into the stack with a whiskbroom or brush, (on windy days, use the trunk or door of a car as a wind barricade). Cover the stack with a lid. Lift up the sieve stack and shake it vigorously up, down and sideways or place on a powered shaker for at least 1 minute.

(f) Step 5: Remove the lid from the stack and disassemble each sieve separately, beginning with the top sieve. As you remove each sieve, examine it to make sure that all of the material has been sifted to the finest sieve through which it can pass; e.g., material in each sieve (besides the top sieve that captures a range of larger elements) should look the same size. If this is not the case, re-stack the sieves and collector pan, cover the stack with the lid, and shake it again for at least 1 minute (you only need to reassemble the sieve(s) that contain material, which requires further sifting).

(g) Step 6: After disassembling the sieves and collector pan, slowly sweep the material from the collector pan into the empty container calibrated on the scale in Step 2 (Subsection 93.4.1.2(c)). Take care to minimize escape of dust particles. You do not need to do anything with material captured in the sieves; only the collector pan. Weigh the container with the material from the collector pan and record its weight.

(h) Step 7: Multiply the resulting weight by 0.38. The resulting number is the estimated silt loading.

(i) Step 8: Select another two representative surfaces of the unpaved road shoulder or median and repeat this test method. Once you have calculated the silt loading of the 3 samples collected, average your results together.

(j) Step 9: Examine Results. If the average silt loading is less than 0.33 oz/ft^2, the surface is stable.

(k) Independent Laboratory Analysis: You may choose to collect 3 samples from the source, according to Step 1 (Subsection 93.4.1.2 (b) of this regulation), and send them to an independent laboratory for silt loading analysis rather than conduct the sieve field procedure. If so, the test method the laboratory is required to use is:

"Procedures for Laboratory Analysis of Surface/Bulk Loading Samples", (Fifth Edition, Volume I, Appendix C.2.3 "Silt Analysis", 1995), AP-42, Office of Air Quality Planning & Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina

93.4.1.3 **GRAVEL DEPTH AND SILT CONTENT TEST METHOD:** The purpose of this two (2) part test method is to estimate the gravel depth and silt content of graveled road shoulders and medians of Paved roads. Two (2) inches of gravel are required to prevent vehicle tires from digging through the gravel. The higher the silt content in the top inch of the gravel, the greater the amount of fine dust particles that are entrained into the atmosphere when vehicles drive on gravel-stabilized shoulders.

(a) Equipment necessary to collect a sample of material from the surface of the subject area, including a sampling device one (1) foot by one (1) foot by one (1) inch deep, and other equipment such as, a small whisk broom or paintbrush with bristles no longer than 1.5 inches, dustpan, spatula, shallow container, sealable plastic bags, ruler, and wood dowel or similar straight edge device.

(b) Step 1: Look for a section within four (4) feet of the edge of pavement that has an existing gravel surface that appears representative of the gravel shoulder. Using the spatula, remove the gravel from a three (3) to five (5) inch diameter area to the depth of the applied gravel surface. Make sure that the removed gravel is placed well away from the cleared area. Place a wooden dowel or other similar narrow object across the cleared survey area, and

measure, perpendicular to the narrow object, to depth of the cleared area to determine the depth of the gravel material. If the depth of the gravel material is less than two (2) inches, the area fails and is not considered stable. If the depth of the gravel material is two (2) inches or greater, go to Step 2 (Subsection 93.4.1.3 (c) of this regulation).

(c) Step 2. Using the one (1) foot by one (1) foot by one (1) inch deep sampling frame, gently press the edges of the frame into the road shoulder surface to a depth of one (1) inch. Collect the sample of loose surface material using the whiskbroom, brush, spatula, and dustpan to collect the material into the sample bag, minimizing escape of dust particles. Collect all material to a one (1) inch depth in the one (1) square foot sampling frame.

(d) Step 3. Repeat Steps 1 and 2 to obtain two (2) additional samples for a total of three (3) samples. In the event any sampled location is found to have less than (2) inches of gravel under Step 1, the shoulder is considered to be unstable. Do not proceed with additional sampling.

(e) Step 4. Laboratory Analysis: Samples collected from this source, according to Step 3 (Subsection 93.4.1.3 (d) of this regulation), are sent to a laboratory for silt content analysis. The test method the laboratory is required to use is:

i. Wet screen the entire sample through a one (1) inch sieve.

ii. For all material passing through the one (1) inch sieve, use ASTM No. 200 wet Sieve Method to determine the percentage content of silt.

(f) Step 5: Examine Results. Average the silt content for the (3) samples. If the average silt content of the three samples is equal to or less than or six (6) percent, the surface is stable.

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SECTION 94: PERMITTING AND DUST CONTROL FOR CONSTRUCTION ACTIVITIES

94.1 **Purpose.**

94.1.1 The purpose of this section of the Air Quality Regulations is:

(a) To limit the Emission of Particulate Matter into the ambient air by preventing, controlling, and mitigating Fugitive Dust from Construction Activities; and

(b) To establish Fugitive Dust control standards for Clark County, define reasonable precautions for the prevention and control of Fugitive Dust from all Construction Activities and to establish thresholds for enforcement of these standard.

94.2 **Applicability.**

94.2.1 This section of the Air Quality Regulations applies to all Construction Activities that disturb or have the potential to disturb soils and that emit or have the Potential to Emit Particulate Matter into the atmosphere. This section covers the requirements for a Dust Control Permit and a Dust Mitigation Plan as well as the application procedures.

94.2.2 For the purpose of this regulation, Construction Activities include, but are not limited to, the following practices:

(a) Land clearing, maintenance, and land cleanup using machinery;

(b) soil and rock excavation or removal;

(c) soil or rock hauling;

(d) soil or rock crushing or screening;

(e) filling, compacting, stockpiling and grading;

(f) explosive blasting;

(g) demolition;

(h) implosion;

(i) handling of building materials capable of entrainment in air (e.g., sand, cement powder);

(j) abrasive blasting;

(k) concrete, stone, and tile cutting;

(l) mechanized Trenching;

(m) initial landscaping;

(n) operation of motorized machinery;

(o) driving vehicles on a Construction site; and

(p) establishing and/or using staging areas, parking areas, material storage areas, or access routes to or from a Construction site.

94.2.3 This regulation shall not apply to operation of Emission Units or activities permitted under any other section of the Air Quality Regulations, with the specific exception that any Construction Activities that occur at such facilities and the land area that Various Location Operating Permits are located on shall be subject to this regulation. In all permits issued under the Air Quality Regulations the provisions of this section shall be considered as part of a BACT determination.

94.2.4 This regulation shall not apply to Normal Farm Cultural Practices and existing equestrian facilities that are in compliance with zoning requirements.

94.2.5 This regulation shall not apply to emergency activities that may disturb the soil, conducted by any utility or government agency in order to prevent public injury or restore critical utilities to functional status.

94.3 **Definitions.**

94.3.1 For the purpose of this section of the Air Quality Regulations, terms listed in this subsection have the meanings ascribed.

94.3.2 Best Available Control Measures (BACM): means those Control Measures that are the best available with current technology for reducing or eliminating the release of Particulate Matter into the atmosphere from Construction Activities. These include but are not limited to all measures listed in the Construction Activities Dust Control Handbook as Best Management Practices, any control measure required by a Corrective Action Order, and any other Control Measures required by the Control Officer.

94.3.3 Construction Activities Dust Control Handbook: means the reference manual used to complete a Dust Control Permit and a Dust Mitigation Plan, and contains a listing of the Best Management Practices, copies of which are on file at the department.

94.3.4 Department: means the Clark County Nevada department responsible for the air quality programs.

94.3.5 Dust Mitigation Plan: means an attachment to a Dust Control Permit that lists all the Construction Activities that shall occur and the Best Management Practices that shall be used, to mitigate dust at a permitted site. Upon approval of the application the Dust Mitigation Plan becomes an enforceable part of the dust control permit.

94.3.6 Gravel: means a mineral or rock aggregate ranging in size from 0.25 inch to 3 inch on its longest dimension that is either natural or the product of a mineral processing operation and contains no more than 6% silt, by weight.

94.4 **Permits Required, Exemptions from Required Permit and Responsibility when Exempt.**

94.4.1 Prior to engaging in any Construction Activities, the property Owner and/or Operator, who is the owner's designee shall apply for and obtain a dust control permit from the department.

94.4.2 A dust control permit shall not be required for soil disturbing or Construction Activities less than 0.25 acre in overall area, mechanized Trenching less than one hundred (100) feet in length, or for mechanical demolition of any structure smaller than one thousand (1,000) square feet.

94.4.3 The following activities shall not require a dust control permit:

(a) Landscaping by an individual at his/her place of residence;

(b) Emergency maintenance activities conducted by government agencies on publicly maintained roads, road shoulders, right-of-ways and on public flood control facilities; or,

(c) Weed removal or Dust Palliative application projects conducted solely for the purpose of compliance with weed abatement or vacant land dust control regulations, wherein no grade elevation changes, no soil or rock is imported or exported, or no cut and fill operations occur. Importing of gravel or rock for use as a Dust Palliative is allowed under this subsection.

94.5 **Permit Applications.**

94.5.1 Application for issuance or Renewal of a dust control permit shall be made on a form and in a manner prescribed by the Control Officer.

94.5.2 Each application shall be accompanied by payment of a fee in accordance with Section 18.

94.5.3 Public agency maintenance projects, performed by that agency's employees, may be eligible for a waiver of permit fees upon approval of the Control Officer.

94.5.4 All applications for a Dust Control Permit shall include a Dust Mitigation Plan with appropriate Control Measures from the Construction Activities Dust Control Handbook for every construction activity to be conducted. Other Control Measures that are at least as effective as Control Measures contained in the Construction Activities Dust Control Handbook may be implemented

provided they meet the criteria outlined in Section 2 of the introduction to the Best Management Practices section of the handbook and with the approval of the Control Officer.

94.5.5 An application for a Dust Control Permit for a Construction project ten (10) acres or more in area, for Trenching activities one (1) mile or greater in length, or for structure demolition using implosive or explosive blasting techniques, shall be required to submit a detailed supplement to the Dust Mitigation Plan. This supplement shall be in the form of a written report and shall, at minimum, detail the project description, the area and schedule of the phases of land disturbance, the Control Measures and the contingency measures to be used for all Construction Activities. This supplement shall become part of the Dust Control Permit as an enforceable permit condition.

94.5.6 An application for a Dust Control Permit that includes demolition of a structure One thousand (1,000) square feet or greater in area or explosive blasting of rock or soil, shall include the appropriate supplemental form that is provided in Attachment 1 of the Construction Activities Dust Control Handbook for each activity. These forms shall become part of the Dust Control Permit as an enforceable permit condition.

94.5.7 If an applicant elects not to use the Soil Maps in the Dust Control Handbook for the purpose of determining the appropriate Best Management Practices, and the application is for a Dust Control Permit for a construction project of fifty (50) acres or more in area, then the application shall contain an actual soils analysis of the entire project. The soils analysis shall use the appropriate ASTM test method to determine soil types. If the soils analysis identifies two or more soil types, the area of each soil type shall be shown on a map of the project. A copy of the map shall be included in the application for the Dust Control Permit. The soils analysis shall utilize at least one (1) sample taken from the top one (1) foot of soil for each soil type identified. The soils analysis shall use the appropriate ASTM test to determine the silt content and optimum moisture of the sample(s). The application for the Dust Control Permit shall contain the particulate Emission potential (PEP) for each soil type identified calculated from the results of the soils analysis and the Silt Content vs. Optimum Moisture Content Chart (figure 2) in the Construction Activities Dust Control Handbook. The choice of Best Management Practices for the Dust Mitigation Plan may be different for each soil type area, if not, the highest PEP identified on the project shall be used.

94.5.8 The application shall be signed by the property owner or the owner's designee as listed on the "Owner's Designee for Dust Control Permit for Construction Activities" form.

94.5.9 Upon approval, the completed Dust Control Permit application, Dust Mitigation Plan and related maps and forms shall become a part of the Dust Control Permit.

94.5.10 If the applicant is notified by the Control Officer that the Dust Control Permit application is incomplete and requests additional information and the applicant fails to provide the requested information within 30 days of such notice, the application will be terminated and all fees submitted will not be refundable.

94.6 **Dust Control Permit Requirements.**

94.6.1 Issuance or Renewal of each Dust Control Permit requires payment of a Dust Control Permit fee in accordance with Section 18.

94.6.2 A Dust Control Permit is to be granted subject to the right of inspection of such affected land without prior notice by the Control Officer.

94.6.3 The permit shall be granted subject to, but not limited to, the following conditions:

(a) The permittee is responsible for ensuring that all persons abide by the conditions of the permit and these Regulations;
(b) The permittee is responsible for supplying complete copies of the Dust Control Permit including the Dust Mitigation Plan, to all project contractors and subcontractors; and,
(c) The permittee is responsible for all permit conditions, until a Certificate of Project Completion (form DCP 08 see Attachment 1) has been submitted by the permittee and approved by the Control Officer.

94.6.4 The signature of the Owner and/or Operator who is the Owner's designee on the Dust Control Permit shall constitute agreement to accept responsibility for meeting the conditions of the permit and for ensuring that Best Available Control Measures are implemented throughout the project site.

94.6.5 Requirements and conditions of the Dust Control Permit shall be made a part of the specifications of the Construction contract between the owner and prime contractor and contracts between the prime contractor and applicable subcontractors. Said contracts must provide a monetary allowance for any dust control options specified in the Dust Mitigation Plan. The amount of the allowance may be specified either by the Owner, competitively bid, or negotiated by and amongst the parties.

94.6.6 Projects less than 0.25 acres in area under common control that are either contiguous or separated only by a public or private roadway and that cumulatively equal or exceed 0.25 acre in area are also required to obtain a Dust Control Permit. These projects are required to meet all Dust Control Permit requirements based on cumulative area. All contiguous projects under common control may be required to obtain and operate under a single permit, at the discretion of the Control Officer.

94.6.7 A Dust Control Permit shall be required for routine, public agency road maintenance, road shoulder maintenance, flood control facility maintenance, and maintenance activities that disturb soil and are capable of causing Fugitive Dust. Such Dust Control Permits may be issued based upon written monthly, quarterly, semi-annual, or annual schedules of work for routine maintenance activities. Such permits shall include a Dust Mitigation Plan listing all activities to be performed that may disturb the soil, and shall include Best Management Practices for all these activities. Public agencies shall quantify miles and acres of maintenance activities to be performed under the conditions of the Dust Control Permit.

94.6.8 The permit holder shall notify the department in writing within ten (10) days following the cessation of active operations on all or part of a Construction site when cessation will extend thirty (30) days or longer.

94.6.9 A Dust Control Permit is valid for one calendar year from the date of issuance.

94.6.10 A complete copy of the Dust Control Permit shall be kept on the project site at all times that Construction Activities occur and made available upon request of the Control Officer.

94.7 **General and Administrative Standards.**

94.7.1 Anyone engaging in Construction Activities on a site having a Dust Control Permit shall be subject to all conditions set forth in that permit. Failure to comply with any condition set forth in the permit shall be in violation of this section of the Air Quality Regulations.

94.7.2 The Construction Activities Dust Control Handbook, excluding all attachments, is adopted and made a part of this section of the Air Quality

Regulation, as if it were fully set forth herein, except as amended by this regulation.

94.7.3 **Dust Control Permit: Restrictions on issuance; Suspension; Revocation; Requirement for Bond; Right to Appeal:**

94.7.3.1 Permits shall not be issued to an applicant having outstanding unpaid department fees and/or penalties, not under appeal.

94.7.3.2 If an Owner and/or Operator has three (3) Notices of Violation that have been adjudicated by the Hearing Officer at the same project for which the Dust Control Permit was issued, the Control Officer or his/her representative may suspend or revoke the permit. Upon suspension or revocation of a permit, all activities that are authorized by that permit shall cease. The Control Officer shall post notices of suspension or revocation conspicuously on the property involved. The notice shall state the reasons and indicate the date and time of suspension and/or revocation. The suspension or revocation shall remain in effect until such time as rescinded by the Control Officer. If the permit has been suspended, the permit may be reinstated. If revoked, a new permit will not be issued until an application is made and fees paid in accordance with Section 18 of these Regulations. The permittee shall have a right to hearing before the Hearing Officer within five (5) working days from date of issuance of the suspension or revocation. Alternatively, in such instances, the Control Officer may require compliance with Subsection 94.7.6 for all operators of earth moving or soil disturbing equipment.

94.7.3.3 If during any 180 day period an Owner and/or Operator has three (3) Notices of Violation that have been adjudicated by the Hearing Officer for the same Construction site, the Control Officer shall require the posting of a surety bond to ensure implementation of the mitigation measures set forth in the approved Dust Control Permit for the subject site. If an Owner and/or Operator has two (2) or more Notices of Violation that have been adjudicated by the Hearing Officer from the department for: failure to obtain a Dust Control Permit; failure to implement Best Management Practices; or failure to comply with a Corrective Action Order, the Control Officer may, as a condition of obtaining or maintaining a Dust Control Permit, issue a Corrective Action Order requiring the Owner and/or Operator to post a surety bond to ensure the implementation of the mitigation measures set forth in said Dust Control Permits.

The Owner and/or Operator shall provide the Control Officer the surety bond executed in a form acceptable to the Control Officer for the approved Dust Control Permit as the principal with a corporation authorized to transact surety business in the State of Nevada. The Owner and/or Operator shall condition the surety bond upon the faithful performance of all other conditions of the permit and faithful compliance with the provisions of these

Regulations. The surety bond shall remain in effect until the Construction Activity specified in the said Dust Control Permit is complete and the department closes the said Dust Control Permit. The amount of each bond required by this section shall equal the estimated cost of implementing the dust Control Measures set forth in the approved Dust Control Permit plus an additional 10% of the estimated cost to cover contingencies, as determined by the department.

94.7.3.4 Any Person aggrieved by a decision of the Control Officer pursuant to this section may appeal in accordance with Section 7 of these Regulations.

94.7.4 **Corrective Action Orders (CAO) and Notices of Violation (NOV).**

94.7.4.1 If it is found that any provision of Section 94, a Dust Control Permit, or a Dust Mitigation Plan has not been complied with, the Control Officer may issue a Corrective Action Order to any Owner and/or Operator or other person that they may be in violation of these Regulations and said finding shall be corrected within a specified period of time, dependent upon the scope and extent of the problem.

94.7.4.2 The failure to comply with the corrective measures of a Corrective Action Order within the specified period of time shall be a violation of this section of the Air Quality Regulations.

94.7.4.3 Regardless of whether a Corrective Action Order has been issued, the Control Officer may issue a Notice of Violation upon determination that the Owner and/or Operator is out of compliance with any provisions of this section of the Air Quality Regulations, a Dust Control Permit, a Dust Mitigation Plan, or upon the failure to comply with a previously issued Corrective Action Order.

94.7.4.4 The Control Officer, or his/her designee shall be further empowered to enter upon any said land where any loose soil or dust problem exists, and to take such remedial and corrective action as may be deemed appropriate to cope with and relieve, reduce, or remedy the loose soil, dust situation or condition, when the Owner and/or Operator fails to do so.

94.7.4.4.1 Any cost incurred in connection with any such remedial or corrective action by the department or any person acting for the department shall be reimbursed by the land Owner and/or Operator. If these costs are not reimbursed the Control Officer may request a lien be placed on the subject lands that shall remain in full force and effect until any and all such costs have been collected.

94.7.4.5 Any additional Control Measures prescribed by the Control Officer in a Corrective Action Order, issued to the holder of a Dust Control Permit, shall become a part of that permit's Dust Mitigation Plan.

94.7.5 **Dust Control Monitor.**

94.7.5.1 Any Construction project having 50 acres or more of actively disturbed soil at any given time shall be required by the Control Officer to have in place an individual designated as the Dust Control Monitor with full authority to ensure that dust Control Measures are implemented, including inspections, record keeping, deployment of resources, and shut-down or modification of Construction Activities as needed. This individual shall be listed on the Construction Site Dust Control Monitor form provided in Attachment 1 of the Construction Activities Dust Control Handbook.

94.7.5.2 A Dust Control Monitor shall also be required for individually permitted projects that have less than fifty (50) acres of actively disturbed soil if they are:

(a) under common control and are either contiguous or separated by a public or private roadway and cumulatively have fifty (50) acres or more of actively disturbed soil; or

(b) under common control and not contiguous, but are contained within a common master-planned community and cumulatively have fifty (50) acres or more of disturbed soil.

94.7.5.3 The Dust Control Monitor shall be present at all times Construction Activities occur on the project site and shall devote the majority of his/her time specifically to managing dust prevention and control on the site.

94.7.5.4 The requirement for a Dust Control Monitor shall lapse when:

(a) the area of actively disturbed soil becomes less than fifty (50) acres;

(b) the previously disturbed areas have been stabilized in accordance with the requirements of these Regulations; and,

(c) the stabilization has been approved and the acreage verified by the Control Officer.

94.7.5.5 A Dust Control Monitor shall be considered qualified when he/she has met the following minimum qualifications:

(a) successfully completed the Basic Dust Control Class;

(b) successfully completed the Dust Control Monitor Class;

(c) two years of experience in the Construction industry; and,

(d) successfully completed a course that certifies him/her in Visual Emissions Evaluation (VEE) that has been approved or is conducted by the Control Officer.

94.7.5.6 For a Dust Control Monitor to maintain his/her certification he/she must successfully complete the Dust Control Monitor class at least once every three years.

94.7.6 **Dust Control Class.**

94.7.6.1 The Construction site superintendent or other designated on-site representative of the project developer and all Construction site supervisors and foremen shall be required to have successfully completed a Dust Control Class.

94.7.6.2 Water truck and water pull driver(s) for each Construction project shall be required to have successfully completed a ~~Clark County Department of Air Quality and Environmental Management~~ Dust Control Class.

94.7.6.3 All individuals required to attend and successfully complete the Dust Control Class shall do so at least once every three years.

94.7.6.4 Construction site workers and equipment operators, may be required to attend a Dust Control Class as a remedial or corrective measure.

94.7.7 **Signage Requirements.**

94.7.7.1 For each Dust Control Permit issued where the project site is less than or equal to ten (10) acres, or for Trenching projects between one hundred (100) feet and one (1) mile in length, or for demolition of a structure totaling one thousand (1,000) square feet or more, the permittee shall install a sign on the project site prior to commencing Construction activity that is visible to the public and measures, at minimum, four (4) feet wide by four (4) feet high, conforming to department policy on Dust Control Permit Design and Posting of Signage listed in Attachment 4 of the Construction Activities Dust Control Handbook.

94.7.7.2 For each Dust Control Permit issued where the project site is over ten (10) acres, or for Trenching projects aggregating one (1) mile or greater in length, the permittee shall install a sign on the project site prior to commencing Construction Activity and visible to the public and measures, at minimum, eight (8) feet wide by four (4) feet high, conforming to department policy on Dust Control Permit Design and Posting of Signage listed in Attachment 4 of the Construction Activities Dust Control Handbook.

94.7.7.3 Projects shorter than two (2) weeks in duration may request a waiver of the requirement of posting a Dust Control Permit Sign.

94.7.8 **Record Keeping.**

94.7.8.1 On a site having a Dust Control Permit a written record of self-inspection shall be made each day soil disturbing work is conducted. The "Record of Daily Dust Control" form provided in Appendix A of the Construction Activities Dust Control Handbook, or other written record that provides at a minimum the same information, shall be completed.

94.7.8.2 Records of Construction site self-inspections shall be kept for a minimum of one (1) year or for six (6) months beyond the project duration, whichever is longer. Self-inspection records include daily inspections for crusted or damp soil, trackout conditions and cleanup measures, daily water usage, Dust Suppressant application records, etc.

94.7.8.3 For Control Measures involving chemical or organic soil stabilization, records shall indicate the type of product applied, vendor name, label instructions for approved usage, and the method, frequency, concentration, and quantity of application.

94.8 Soil Stabilization Standards.

94.8.1 All permittees, contractors, Owners, operators, or other persons involved in Construction Activities shall employ Control Measures as set forth in the Construction Activities Dust Control Handbook.

94.8.2 One or a combination of the following methods shall be used to maintain dust control on all disturbed soils on Construction sites and staging areas:

(a) The soil shall be maintained in a sufficiently damp condition to prevent loose grains of soil from becoming dislodged when the disturbed soil is tested using the Drop Ball Test outlined in Subsection 94.12.5; or

(b) The soil shall be crusted over by application of water, as demonstrated by the Drop Ball Test outlined in Subsection 94, 12.5; or

(c) The soil shall be completely covered with clean gravel or treated with a Dust Suppressant approved by the Control Officer, to the extent necessary to pass a Drop Ball Test outlined in Subsection 94.12.5.

94.8.3 When a Construction site or part thereof becomes inactive for a period of thirty (30) days or longer, long-term stabilization shall be implemented within ten (10) days following the cessation of active operations.

94.8.4 Stockpiles located within one hundred (100) yards of occupied buildings shall not be constructed over eight (8) feet in height.

94.8.5 Stockpiles over eight (8) feet high shall have a road bladed to the top to allow water truck access or shall have a sprinkler irrigation system installed, used and maintained.

94.9 **Best Available Control Measures (BACM)**

94.9.1 Any person who engages in a Construction activity as defined in this regulation shall employ BACM for the purpose of dust control.

94.9.2 All Control Measures that are necessary to maintain soil stability as well those listed in an approved Dust Mitigation Plan, shall be implemented twenty four (24) hours a day, seven (7) days a week, until the permit is closed in accordance with Subsection 94.6.3(c).

94.9.3 In the event there are wind conditions that cause Fugitive Dust Emissions; in excess of 20% Opacity using the Time Averaged Method or Intermittent Emissions Method, in excess of 50% Opacity using the Instantaneous Method, or one hundred (100) yards in length from the point of origin, in spite of the use of Best Available Control Measures, all Construction Activities that may contribute to these Emissions shall immediately cease. Water trucks and water pulls shall continue to operate under these circumstances, unless wind conditions are such that the continued operation of watering equipment cannot reduce Fugitive Dust Emissions or that continued equipment operation poses a safety hazard.

94.9.4 If a Dust Control Permit is not required, the Owners, operators, or any other person involved in Construction Activities shall employ Best Management Practices, as set forth in the Construction Activities Dust Control Handbook and comply with the soil stabilization standards listed in Subsections 94.8 and Emissions standards listed in Subsection 94.11.

94.10 **Construction Activities Violations.**

94.10.1 Any of the following circumstances constitute a violation of the Clark County Air Quality Regulations:

(a) Failure to obtain an approved Dust Control Permit before engaging in activities that disturb or have the potential to disturb soils and/or cause or have the potential to cause Fugitive Dust to enter the air.

(b) Failure to obtain an approved Dust Control Permit for all areas subject to Construction Activities.

(c) Conducting a Construction Activity as defined by Subsection 94.2 for which no specified control option is indicated in the approved Dust Control Permit or the Dust Mitigation Plan.

(d) Failure to perform any duty to allow or carry out an inspection, entry, or monitoring activity required by the department.

(e) Failure to renew or obtain a new permit, prior to a Dust Control Permit expiring, provided the site does not meet the exemption requirements for a Dust Control Permit as defined in Subsection 94.4.2.

(f) Failure to implement any item that is listed as a “Requirement” in the Best Management Practices section of the Construction Activities Dust Control Handbook for an applicable Construction Activity.

(g) Failure to implement any Best Management Practice listed in an approved Dust Control Permit / Dust Mitigation Plan.

(h) Failure to maintain static (not actively worked) project soils with adequate surface crusting to prevent wind erosion as measured by test method “Soil Crust Determination (The Drop Ball Test)” in Subsection 94.12.5, or alternative Control Measures approved in the Dust Mitigation Plan.

(i) Failure to comply with any record keeping requirements of this section.

(j) Failure to maintain project haul routes or haul roads in a stable condition as measured by the Intermittent Emissions test method outlined in Section 94.12.3.

(k) Failure to have a Dust Control Monitor in place, per Subsection 94.7.5, for a Construction project.

(l) Allowing Fugitive Dust Emissions to exceed the standards set forth in Subsections 94.11.1 through 94.11.4.

(m) Using a dry rotary brush or blower device without sufficient water to limit Emissions per Subsection 94.11.5.

(n) Allowing mud or dirt to be tracked out onto a Paved road that exceed the standards set forth in Subsection 94.11.6.

(o) Failure to comply with any other provision of this section.

94.11 Emission Standards.

94.11.1 No person shall cause or permit the handling, transporting, or storage of any material in a manner that allows visible Emissions of Particulate Matter to exceed: 20% Opacity using the Time Averaged Method or the Intermittent Emissions Method; 50% Opacity using the Instantaneous Method. These test methods are set forth in Subsection 94.12.

94.11.2 No person shall cause or permit the handling, transporting, or storage of any material in a manner that allows a dust plume that extends one hundred (100) yards or more, horizontally or vertically, from the point of origin.

94.11.3 Where a Dust Control Permit is required and has not been issued or in the event Best Available Control Measures have not been fully implemented, no person shall cause or permit the handling, transportation, or storage of any material in a manner that exceeds the limits listed in any one of the following:

(a) The limits set forth in Subsection 94.11.1; or

(b) Allow a dust plume to extend more than one hundred (100) feet, horizontally or vertically, from the point of origin; or

(c) Allow a dust plume to cross a property line.

94.11.4 Visible Emissions from abrasive blasting shall be limited to no more than an average of 40% Opacity for any period aggregating three (3) minutes in any sixty (60) minute period, utilizing the test method set forth in Subsection 94.12.

94.11.5 The use of dry rotary brushes and blower devices for removal of deposited mud/dirt trackout from a Paved road is prohibited, unless sufficient water is applied to limit the visible Emissions to an Opacity of not greater than: 20% Opacity using the Time Averaged Method or Intermittent Emissions Method; 50% Opacity using the Instantaneous Method. These test methods are set forth in Subsection 94.12. The use of rotary brushes without water is prohibited.

94.11.6 Mud or dirt shall not be allowed to be tracked out onto a Paved road where such mud or dirt extends fifty (50) feet or more in cumulative length from the point of origin or allow any trackout to accumulate to a depth greater than 0.25 inch. Notwithstanding the preceding, all accumulations of mud or dirt on curbs, gutters, sidewalks, or Paved roads including trackout less than fifty (50) feet in length and 0.25 inch in depth, shall be cleaned and maintained to eliminate emissions of Fugitive Dust. At a minimum all trackout must be cleaned up by the end of the workday or evening shift, as applicable.

94.12 Test Methods

94.12.1 Visual Determination of Opacity of Emissions from Sources of Visible Emissions.

Applicability: This method is applicable for the determination of the Opacity of Emissions from sources of visible Emissions the Time Averaged Method requires averaging of visible Emission readings over a specific time period to determine the Opacity of visible Emissions. The Time Averaged Method is applicable to continuous Emissions sources. The Intermittent Emissions Method requires averaging a set number of visible Emissions readings to determine the Opacity of visible Emissions. The Intermittent Emissions Method is applicable to intermittent Emissions sources. The Instantaneous Method sets an Opacity limit that shall not be exceeded at any time. The Instantaneous Method is applicable to any Emissions source and is a non-federal requirement.

Principle: The Opacity of Emissions of a source of visible Emissions is determined visually by an observer who has current certification approved

by the Control Officer, as a qualified Visible Emissions Evaluator, using US EPA Method 9.

Procedures: A qualified Visible Emissions Evaluator shall use the procedures set forth in Subsections 94.12.2, 94.12.3, and 94.12.4 for visually determining the Opacity of Emissions.

94.12.2 Time Averaged Method: These procedures is for evaluating continuous Fugitive Dust Emissions and are for the determination of the Opacity of continuous Fugitive Dust Emissions by a qualified observer. Continuous Fugitive Eust Emissions sources include activities that produce Emissions continuously during operations such as earthmoving, grading, and Trenching. Emissions from these types of continuous activities are considered continuous even though speed of the activity may vary and Emissions may be controlled to 100%, producing no visible emissions, during parts of the operation. The qualified observer should do the following:

(a) Position: Stand at a position at least twenty (20) feet from the Fugitive Dust source in order to provide a clear view of the Emissions with the sun oriented in the 140° sector to the back. Consistent as much as possible with maintaining the above requirements, make Opacity observations from a position such that the line of sight is approximately perpendicular to the plume and wind direction. The observer may follow the Fugitive Dust plume generated by mobile earth moving equipment, as long as the sun remains oriented in the 140° sector to the back. As much as possible, do not include more than one plume in the line of sight at one time.

(b) Field Records: Record the name of the site, Fugitive Dust source type (e.g., earthmoving, grading, trenching), method of control used, if any, observer's name, certification data and affiliation, and a sketch of the observer's position relative to the Fugitive Dust source. Also, record the time, estimated distance to the Fugitive Dust source location, approximate wind direction, estimated wind speed, description of the sky condition (presence and color of clouds), observer's position relative to the Fugitive Dust source, and color of the plume and type of background on the visible Emission observation when Opacity readings are initiated and completed.

(c) Observations: Make Opacity observations, to the extent possible, using a contrasting background that is perpendicular to the line of sight. Make Opacity observations at a point just beyond where material is no longer being deposited out of the plume (normally three (3) feet above the surface from which the plume is generated). The initial observation should begin immediately after a plume has been created above the surface involved. Do not look continuously at the plume, but instead observe the plume momentarily at 15-second intervals. For Fugitive Dust from earthmoving equipment, make Opacity observations at a point just beyond where material is not being deposited out of the

plume (normally three (3) feet above the mechanical equipment generating the plume).

(d) Recording Observations: Record the Opacity observations to the nearest 5% every fifteen (15) seconds on an observational record sheet. Each momentary observation recorded represents the average Opacity of Emissions for a fifteen (15) second period. If a multiple plume exists at the time of an observation, do not record an Opacity reading. Mark an "x" for that reading. If the equipment generating the plume travels outside of the field of observation, resulting in the inability to maintain the orientation of the sun within the 140° sector or if the equipment ceases operating, mark an "x" for the fifteen (15) second interval reading. Readings identified as "x" shall be considered interrupted readings.

(e) Data Reduction For Time-Averaged Method: For each set of twelve (12) or twenty four (24) consecutive readings, calculate the appropriate average Opacity. Sets shall consist of consecutive observations, however, readings immediately preceding and following interrupted readings shall be deemed consecutive and in no case shall two sets overlap, resulting in multiple violations.

94.12.3 Intermittent Emissions Method: This procedure is for evaluating intermittent Fugitive Dust Emissions: This procedure is for the determination of the Opacity of intermittent Fugitive Dust Emissions by a qualified observer. Intermittent Fugitive Dust Emissions sources include activities that produce Emissions intermittently such as screening, dumping, and stockpiling where predominant Emissions are produced intermittently. The qualified observer should do the following:

(a) Position: Stand at a position at least twenty (20) feet from the Fugitive Dust source in order to provide a clear view of the Emissions with the sun oriented in the 140° sector to the back. Consistent as much as possible with maintaining the above requirements, make Opacity observations from a position such that the line of sight is approximately perpendicular to the plume and wind direction. As much as possible, do not include more than one plume in the line of sight at one time.

(b) Field Records: Record the name of the site, Fugitive Dust source type (e.g., pile, material handling, transfer, loading, sorting), method of control used, if any, observer's name, certification data and affiliation, and a sketch of the observer's position relative to the Fugitive Dust source. Also, record the time, estimated distance to the Fugitive Dust source location, approximate wind direction, estimated wind speed, description of the sky condition (presence and color of clouds), observer's position relative to the Fugitive Dust source, and color of the plume and type of background on the visible emission observation when Opacity readings are initiated and completed.

(c) Observations: Make Opacity observations, to the extent possible, using a contrasting background that is perpendicular to the line of sight. Make Opacity observations at a point just beyond where material is no longer being deposited out of the plume (normally three (3) feet above the surface from which the plume is generated). Make two observations per plume at the same point, beginning with the first reading at zero (0) seconds and the second reading at five (5) seconds. The zero (0) second observation should begin immediately after a plume has been created above the surface involved.

(d) Recording Observations: Record the Opacity observations to the nearest 5% on an observational record sheet. Each momentary observation recorded represents the average Opacity of Emissions for a five (5) second period.

(e) Repeat Subsection 94.12.3(c) of this regulation and Subsection 94.12.3(d) of this regulation until you have recorded a total of 12 consecutive Opacity readings. This will occur once six intermit plumes on which you are able to take proper readings have been observed. The 12 consecutive readings must be taken within the same period of observation but must not exceed 1 hour. Observations immediately preceding and following interrupted observations can be considered consecutive.

(f) Average the 12 Opacity readings together. If the average Opacity reading equals 20% or lower, the source is in compliance with the averaged method Opacity standard described in this Section.

94.12.4 Instantaneous Method: This is a non-federal procedure for evaluation of Fugitive Dust Emissions: This procedure is for the instantaneous determination of the Opacity of Fugitive Dust Emissions by a qualified observer. This method is a Clark County local requirement and is not submitted as part of the applicable State Implementation Plan. The qualified observer should do the following:

(a) Position: Stand at a position at least twenty (20) feet from the Fugitive Dust source in order to provide a clear view of the Emissions with the sun oriented in the 140° sector to the back. Consistent as much as possible with maintaining the above requirements, make Opacity observations from a position such that the line of sight is approximately perpendicular to the plume and wind direction. The observer may follow the Fugitive Dust plume generated by mobile earth moving equipment, as long as the sun remains oriented in the 140° sector to the back. As much as possible, do not include more than one plume in the line of sight at one time.

(b) Field Records: Record the name of the site, Fugitive Dust source type (e.g., earthmoving, grading, storage pile, material handling, transfer, loading, sorting), method of control used, if any, observer's name, certification data and affiliation, and a sketch of the observer's position

relative to the Fugitive Dust source. Also, record the time, estimated distance to the Fugitive Dust source location, approximate wind direction, estimated wind speed, description of the sky condition (presence and color of clouds), observer's position relative to the Fugitive Dust source, and color of the plume and type of background on the visible emission observation when Opacity readings are initiated and completed.

(c) Observations: Make Opacity observations, to the extent possible, using a contrasting background that is perpendicular to the line of sight. Make Opacity observations at a point just beyond where material is no longer being deposited out of the plume (normally three (3) feet above the surface from which the plume is generated).

(d) Recording Observations: Record the Opacity observations to the nearest 5%.

(e) Data Reduction for Instantaneous Regulations: Evaluate all observations for conformance with the instantaneous regulation.

94.12.5 Soil Crust Determination (The Drop Ball Test):

(a) Drop a steel ball with a diameter of 0.625 (5/8th) inch and a mass ranging from 0.56-0.60 ounce from a distance of one (1) foot directly above the soil surface. If blowsand is present, clear the blowsand from the surfaces on which the soil crust test method is conducted. Blowsand is defined as thin deposits of loose uncombined grains covering less than 50% of a project site that have not originated from the representative surface being tested. If material covers a visible crust, which is not blowsand, apply the test method in Subsection 90.4.1.3 (Determination of Threshold Friction Velocity) of this regulation to the loose material to determine whether the surface is stabilized.

A sufficient crust is defined under the following conditions: once a ball has been dropped according to Subsection 90.4.1.1 of this regulation, the ball does not sink into the surface, so that it is partially or fully surrounded by loose grains and, upon removing the ball, the surface upon which it fell has not been pulverized, so that loose grains are visible.

(b) Randomly select each representative disturbed surface for the drop ball test by using a blind "over the shoulder" toss of a throwable object (e.g., a metal weight with survey tape attached). Using the point of fall as the lower left hand corner, measure a one (1) foot square area. Drop the ball three times within the 1-foot by 1-foot square survey area, using a consistent pattern across the survey area. The survey area shall be considered to have passed the Soil Crust Determination Test if at least two out of the three times that the ball was dropped, the results met the criteria in Subsection

90.4.1.1(a) of this regulation. Select at least two other survey areas that represent a random portion of the overall disturbed conditions of the site, and repeat this procedure. If the results meet the criteria of Subsection 90.4.1.1(a) of this regulation for all of the survey areas tested, then the site shall be considered to have passed the Soil Crust Determination Test and shall be considered sufficiently crusted.

(c) At any given site, the existence of a sufficient crust covering one portion of the site may not represent the existence or protectiveness of a crust on another portion of the site. Repeat the soil crust test as often as necessary on each portion of the overall conditions of the site using the random selection method set forth in Subsection 90.4.1.1(b) of this regulation for an accurate assessment.

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History: Initial adoption: June 22, 2000
Amended: November 16, 2000; March 18, 2003; June 3, 2003; July 1, 2004; January 21, 2020.

Appendix D: Dust Alerts Issued on October 25, 2020 and Compliance Information

A Construction Notice was issued for October 25, 2020, due to high winds from a frontal passage lofting and transporting dust from the Great Basin and northern Mojave Desert regions into Clark County, Nevada. Table 1 provides Construction Site Investigation information from October 25, 2020. October 25, 2020 was a Sunday and Clark County DES was closed. Therefore, no Construction Site Information was collected for that day. However, we provide the Construction Site Investigation information from October 23, 2020, the last workday before the dust event. All enforcement and compliance documentation associated with the October 25 high-wind dust event are also included in this Appendix.

Table 1. Construction site investigation inspections that took place on October 23, 2020, just prior to the October 25, 2020 dust event.

Permit No.	Project Name	Inspection No.	Inspected By	Type	Inspected On	Action Taken
52391	North Las Vegas VGT1	87090	Carlton Monroe	Follow-up	10/23/2020 14:30	Issued NON With Possible NOV
50967	Meranto Ranch	87089	Allan Gutierrez	Pre-Construction Notice	10/23/2020 14:12	Verified Permittee Received CN/DA
41372	Napa Ridge 5	87088	Allan Gutierrez	Pre-Construction Notice	10/23/2020 13:49	Verified Permittee Received CN/DA
52909	Sage Glen	87087	Allan Gutierrez	Pre-Construction Notice	10/23/2020 13:33	Verified Permittee Received CN/DA
50952	Cadence 1-F1 & 1-F2	87142	Mike Englehart	Pre-Construction Notice	10/23/2020 13:20	Issued Verbal Directive With Possible NOV
52783	Traffic Signal Improvements, Bid No. 605535-19	87086	Allan Gutierrez	Pre-Construction Notice	10/23/2020 13:13	No Action Taken
51013	RPM Project: Fire Station #30-Design & Construction	87085	Allan Gutierrez	Pre-Construction Notice	10/23/2020 13:08	Verified Permittee Received CN/DA
52307	EOS Camino & Craig	87084	Carlton Monroe	Pre-Construction Notice	10/23/2020 13:05	Verified Permittee Received CN/DA
49965	Kaktus Life III	87083	Allan Gutierrez	Pre-Construction Notice	10/23/2020 12:54	Verified Permittee Received CN/DA
52484	Maule Multi-Family Apartments	87081	Allan Gutierrez	Pre-Construction Notice	10/23/2020 12:48	Verified Permittee Received CN/DA
51642	Credit One Bank Phase II	87080	Allan Gutierrez	Pre-Construction Notice	10/23/2020 12:38	Verified Permittee Received CN/DA

50514	Craig & Camino	87082	Carlton Monroe	Pre-Construction Notice	10/23/2020 12:35	Verified Permittee Received CN/DA
52042	Uncommons	87079	Allan Gutierrez	Pre-Construction Notice	10/23/2020 12:21	Verified Permittee Received CN/DA
48449	Villages At Tule Springs	87078	Carlton Monroe	Pre-Construction Notice	10/23/2020 11:55	Verified Permittee Received CN/DA
51782	Copper Mountain Solar 5	87138	Mike Englehart	Pre-Construction Notice	10/23/2020 11:05	Possible NOV
47847	Tule Springs	87076	Carlton Monroe	Pre-Construction Notice	10/23/2020 11:00	Issued NON With Possible NOV
50768	Warm Springs & Jones 1-2, 4, 6	87074	Allan Gutierrez	Pre-Construction Notice	10/23/2020 10:56	Verified Permittee Received CN/DA
48289	Village @ Tule Springs Village 3	87072	Carlton Monroe	Pre-Construction Notice	10/23/2020 10:35	Verified Permittee Received CN/DA
52018	LAS NAP 14, 15, & 16	87073	Allan Gutierrez	Pre-Construction Notice	10/23/2020 10:22	Verified Permittee Received CN/DA
46740	Runvee Parcel 2	87071	Carlton Monroe	Pre-Construction Notice	10/23/2020 9:55	Verified Permittee Received CN/DA
52391	North Las Vegas VGT1	87091	Anita Karr	Pre-Construction Notice	10/23/2020 9:30	Issued NON With Possible NOV
51384	Beltway Business Park 11, 12	87069	Allan Gutierrez	Routine	10/23/2020 9:01	No Action Taken
52626	Arco Aliante	87070	Carlton Monroe	Pre-Construction Notice	10/23/2020 8:40	Issued NON With Possible NOV
15534	Complaint #66126 and 66130	87160	Scott Rowsell	Complaint Inv	10/23/2020 16:00	No Action Taken
52437	Compaint #66125	87077	Allan Gutierrez	Complaint Inv	10/23/2020 11:23	Verbal Warning

Compliance and Enforcement Documentation from the **October 25, 2020**, High-Wind Dust Event in Clark County, Nevada

Authors for each record are listed in the top-left corner of each page, if applicable.

2020-10-25

Construction Notice

From: AQDCP@ClarkCountyNV.gov
To: AQDCP
Subject: Clark County Air Quality is Issuing a Construction Notice
Date: Friday, October 23, 2020 9:52:47 AM
Importance: High

Clark County Department of Environment and Sustainability,

Division of Air Quality

CONSTRUCTION NOTICE

For Sunday October 25, 2020 thru Monday October 26, 2020

Attention Dust Control Permit Holders, Contractors, and Stationary Sources

The National Weather Service and the weather models used by the Division of Air Quality (Air Quality) are showing the potential for high winds beginning Sunday evening and lasting throughout Monday afternoon. The forecast is for **sustained winds of 15-20 mph,** with gusts to **30-35 mph.**

Air Quality directs all permittees to inspect their site(s) and employ Best Available Control Measures to stabilize all disturbed soils. Permittees with multiple sites should contact each site superintendent or dust monitor to ensure compliance with the Clark County Air Quality Regulations.

BLASTING: This forecast is for wind gusts of 30-35 mph or more. Project operators should not load blasting materials or perform any blasting operations. You are required to monitor National Weather Service for wind speeds, if wind gusts above 25 mph are stated, discontinue charging additional blast holes. Limit the blast to holes charged at the time the wind report is made.

Air Quality will continue to monitor these forecasts for any further wind development. If the weather forecast is upgraded and conditions warrant, you will be notified of a Dust Advisory.

It is important this Construction Notice be sent to all supervisors, foremen, and subcontractors working on your construction projects and at PM_{10} stationary sources.

Please direct questions about this Construction Notice to a DAQ compliance supervisor at (702) 455-5942.

2020-10-25

Enforcement

EXHIBIT B

DES
DEPARTMENT OF ENVIRONMENT AND SUSTAINABILITY

Division of Air Quality
4701 W. Russell Rd. Suite 200 2nd Floor
Las Vegas, NV 89118
Main Number: (702)455-5942
Fax Number: (702)383-9994

CONSTRUCTION SITE INSPECTION REPORT

Inspection No. 87076

Officer:	Date:	Start Time:	End Time:	Type:	Complaint No.:	Permit No.:
Carlton Monroe	Oct 23, 2020	11:00 AM	11:50 AM	Pre-Construction Notice		**47847**

Permittee:	Project Name:	Project Location:
KB Home LV Inc.	Tule Springs	Dorrell Lane/Clayton St.

Weather:	Rain:	Temperature:	Wind Speed:	Wind Gust:	Wind Direction:	Site Status:
Clear	No	true	00-04 mph	0 mph	Variable	Active

PCF Submitted:	Workers Present:	Spoke With:	Title:	Comm. Method:
No	Yes	Perry Vaughn	Project Manager	Phone Message
		Spoke With:	Title:	Comm. Method:

Is the project in compliance with all air quality requirements? **No**

Action Taken:	Issued NON With Possible NOV	Violation in 1000 feet of:	Residential

Emission Compliance: **Yes**

Fugitive Dust Source:	Heavy Equipment	Plume Length:	25 Feet
Opacity:		Opacity Test Method:	

BMP Compliance: **No**

Project Soils:	Unstable	Size of Instability:	0.5 acres
Trackout Device:	No - Needed	Has Trackout:	Yes
Mitigation Equipment:	Inadequate	Soil Crust Determination:	Fail

Admin Compliance: **Yes**

Acreage Permitted:	3.2 acres	Observed Acreage:	3.2 acres	Project Size:	Less than or equal to permitted
Staging/Parking Area:	On-Site	DCOP Sign:	Yes	DCOP Onsite:	Not Verified
SS Permit(s):	No Equipment	SS Permit No.			

Inspector Notes: Approved By: Anita Karr

I conducted a pre construction inspection and observed dry, loose, and powdery soil conditions in a staging yard area. Evidence suggests that this staging yard has not been stabilized for multiple days (3 inches deep in some areas). I also observed trackout greater than .25 of an inch on the side walk and in the street; all infractions are within 1000 feet of a residential area. I left a message for the project manager informing him of the construction notice this weekend. I reminded him that trackout greater than .25 of an inch in thickness must be cleaned up immediately and soil conditions must be maintained in a stable condition 24/7. I informed him that I would be issuing a Notice of Noncompliance that will likely result in a Notice of Violation.

DES
DEPARTMENT OF ENVIRONMENT AND SUSTAINABILITY

EXHIBIT D

Division of Air Quality
4701 W. Russell Rd. Suite 200 2nd Floor
Las Vegas, NV 89118
Main Number: (702)455-5942
Fax Number: (702)383-9994

NOTICE OF NONCOMPLIANCE

Issued To: KB Home LV Inc. | Project Name: Tule Springs

Location: Dorrell Lane/Clayton St.

Dust Control Permit No: 47847 | Date: Oct 23, 2020 | Time: 11:50 AM

This notice is to advise you that an inspection of your site has found it in noncompliance of the conditions specified in your Dust Control Permit and/or Clark County Air Quality Regulations (AQRs).

Unstable Soil Conditions – Provide and maintain adequate measures to prevent fugitive dust by maintaining all project soils in a visibly damp, crusted, or otherwise stabilized condition per AQR Section 94.8. This applies 24 hours a day 7 days a week.

Trackout
Remove all trackout and soil debris on Blissful Peak immediately.
Install / Repair trackout control device.

Additional Instructions / Other Noncompliance Items
- Observed dry, loose, and powdery soils in a staging area on site (.54 acres)
- Evidence suggests that the area has not been stabilized in several days
- Observed trackout greater than .25 of an inch in thickness on Blissful Peak Street
- Please mitigate discrepancies per the above instructions and respond with your corrective measures

Pursuant to AQR Section 4.3, the noncompliance status detailed above may result in the issuance of a Notice of Violation, which includes the imposition of civil penalties.

- **Failure to comply with this notice may result in additional enforcement action that includes a Notice of Violation.**
- **Please contact DAQ representative below regarding questions related to this notice.**

Person Notified:

Aric Bonner	Responsible Official	KB Home LV Inc.
(Printed Name)	(Title)	(Company)

abonner@kbhome.com
(Email Address)

Person Notified:

Perry Vaughn	Designated Onsite Representative	KB Home LV Inc.
(Printed Name)	(Title)	(Company)

pvaughn@kbhome.com
(Email Address)

DAQ Representative:

Carlton Monroe		702-249-7407
(Printed Name)		(Phone Number)

AK

SENT: 10/23/2020 @ 5:10 pm

DES
DEPARTMENT OF ENVIRONMENT AND SUSTAINABILITY

EXHIBIT F

Division of Air Quality
4701 W. Russell Rd. Suite 200 2nd Floor
Las Vegas, NV 89118
Main Number: (702)455-5942
Fax Number: (702)383-9994

CONSTRUCTION SITE INSPECTION REPORT

Inspection No. 87146

Officer:	Date:	Start Time:	End Time:	Type:	Complaint No.:	Permit No.:
Carlton Monroe	Oct 27, 2020	11:30 AM	11:45 AM	Follow-up		**47847**

Permittee:	Project Name:	Project Location:
KB Home LV Inc.	Tule Springs	Dorrell Lane/Clayton St.

Weather:	Rain:	Temperature:	Wind Speed:	Wind Gust:	Wind Direction:	Site Status:
Clear	No	true	00-04 mph	0 mph	Variable	Active

PCF Submitted:	Workers Present:	Spoke With:	Title:	Comm. Method:
No	Yes			
		Spoke With:	Title:	Comm. Method:

Is the project in compliance with all air quality requirements? **Yes**

Action Taken:	No Action Taken	Violation in 1000 feet of:	Not Applicable

Emission Compliance: **Yes**

Fugitive Dust Source:		Plume Length:	
Opacity:		Opacity Test Method:	

BMP Compliance: **Yes**

Project Soils:	Stable	Size of Instability:	
Trackout Device:	Yes - Effective	Has Trackout:	No
Mitigation Equipment:	Adequate	Soil Crust Determination:	Not Necessary/Not Performed

Admin Compliance: **Yes**

Acreage Permitted:	3.2 acres	Observed Acreage:	3.2 acres	Project Size:	Less than or equal to permitted
Staging/Parking Area:	On-Site	DCOP Sign:	Yes	DCOP Onsite:	Not Verified
SS Permit(s):	No Equipment	SS Permit No.			

Inspector Notes: Approved By: Andrew Kirk

I conducted a follow up inspection and observed a stable site. There is no further action required at this time.

Clark County Nevada Department of Environment and Sustainability
4701 W Russell Road, Suite 200, Las Vegas, NV 89118
Phone (702) 455-5942 Fax (702) 383-9994
AirQuality@clarkcountynv.gov

RECEIPT

KB HOME LAS VEGAS, INC.
5795 WEST BADURA AVE., SUITE 180
LAS VEGAS, NV 89118

Invoice #	Invoice Date	Invoice By	Invoice Type	Due Date
047809	1/27/2021	SHERRIER	DUST CONTROL ENFORCEMENT	2/26/2021

Quantity	Description	Fee Code	Fee	Total
	PENALTY UNCONTESTED	SPEN02		$2,750.00
	02/02/2021 CHECK (20369879)	PAYMENT		($2,750.00)

Notes: NOV #9494, DCOP #47847, H/O 1/21/2021

Subtotal:	$2,750.00
Paid:	($2,750.00)
Adjustments:	$0.00
Balance Due:	$0.00

2020-10-25

Construction Site Investigation Table

October 25, 2020, was a Sunday. The last workday was October 23, 2020. We have included the Construction Site Inspections for that day as well as the NOV #9494 that resulted from noncompliance on October 23, 2020.

2020-10-23

Permit No.	Project Name	Inspection No.	Inspected By	Type	Inspected On	Action Taken
52391	North Las Vegas VGT1	87090	Carlton Monroe	Follow-up	10/23/2020 14:30	Issued NON With Possible NOV
50967	Meranto Ranch	87089	Allan Gutierrez	Pre-Construction Notice	10/23/2020 14:12	Verified Permittee Received CN/DA
41372	Napa Ridge 5	87088	Allan Gutierrez	Pre-Construction Notice	10/23/2020 13:49	Verified Permittee Received CN/DA
52909	Sage Glen	87087	Allan Gutierrez	Pre-Construction Notice	10/23/2020 13:33	Verified Permittee Received CN/DA
50952	Cadence 1-F1 & 1-F2	87142	Mike Englehart	Pre-Construction Notice	10/23/2020 13:20	Issued Verbal Directive With Possible NOV
52783	Traffic Signal Improvements, Bid No. 605535-19	87086	Allan Gutierrez	Pre-Construction Notice	10/23/2020 13:13	No Action Taken
51013	RPM Project: Fire Station #30-Design & Construction	87085	Allan Gutierrez	Pre-Construction Notice	10/23/2020 13:08	Verified Permittee Received CN/DA
52307	EOS Camino & Craig	87084	Carlton Monroe	Pre-Construction Notice	10/23/2020 13:05	Verified Permittee Received CN/DA
49965	Kaktus Life III	87083	Allan Gutierrez	Pre-Construction Notice	10/23/2020 12:54	Verified Permittee Received CN/DA
52484	Maule Multi-Family Apartments	87081	Allan Gutierrez	Pre-Construction Notice	10/23/2020 12:48	Verified Permittee Received CN/DA
51642	Credit One Bank Phase II	87080	Allan Gutierrez	Pre-Construction Notice	10/23/2020 12:38	Verified Permittee Received CN/DA
50514	Craig & Camino	87082	Carlton Monroe	Pre-Construction Notice	10/23/2020 12:35	Verified Permittee Received CN/DA
52042	Uncommons	87079	Allan Gutierrez	Pre-Construction Notice	10/23/2020 12:21	Verified Permittee Received CN/DA
48449	Villages At Tule Springs	87078	Carlton Monroe	Pre-Construction Notice	10/23/2020 11:55	Verified Permittee Received CN/DA
51782	Copper Mountain Solar 5	87138	Mike Englehart	Pre-Construction Notice	10/23/2020 11:05	Possible NOV
47847	Tule Springs	87076	Carlton Monroe	Pre-Construction Notice	10/23/2020 11:00	Issued NON With Possible NOV
50768	Warm Springs & Jones 1-2, 4, 6	87074	Allan Gutierrez	Pre-Construction Notice	10/23/2020 10:56	Verified Permittee Received CN/DA
48289	Village @ Tule Springs Village 3	87072	Carlton Monroe	Pre-Construction Notice	10/23/2020 10:35	Verified Permittee Received CN/DA
52018	LAS NAP 14, 15, & 16	87073	Allan Gutierrez	Pre-Construction Notice	10/23/2020 10:22	Verified Permittee Received CN/DA
46740	Runvee Parcel 2	87071	Carlton Monroe	Pre-Construction Notice	10/23/2020 9:55	Verified Permittee Received CN/DA
52391	North Las Vegas VGT1	87091	Anita Karr	Pre-Construction Notice	10/23/2020 9:30	Issued NON With Possible NOV
51384	Beltway Business Park 11, 12	87069	Allan Gutierrez	Routine	10/23/2020 9:01	No Action Taken
52626	Arco Aliante	87070	Carlton Monroe	Pre-Construction Notice	10/23/2020 8:40	Issued NON With Possible NOV
15534	Complaint #66126 and 66130	87160	Scott Rowsell	Complaint Inv	10/23/2020 16:00	No Action Taken
52437	Compaint #66125	87077	Allan Gutierrez	Complaint Inv	10/23/2020 11:23	Verbal Warning

Appendix E: Preparing for and Responding to Exceptional Events

This Appendix provides the Clark County Department of Environment and Sustainability's procedures for preparing for and responding to exceptional events.

DEPARTMENT OF AIR QUALITY PROCEDURE

AQP-018.R0

PREPARING FOR AND RESPONDING TO EXCEPTIONAL EVENTS

Revision 0

August 9, 2018

Division:	Administrative	Pages:	18
Effective Date:	8/15/2018	Revised Date:	N/A

TABLE OF CONTENTS

1.0 SCOPE/APPLICABILITY 4

2.0 DEFINITIONS 4

3.0 ROLES AND RESPONSIBILITIES 5
3.1 Department Director 6
3.2 Monitoring Division 6
3.2.1 Monitoring Division Manager 6
3.2.2 Monitoring Division Staff 6
3.3 Compliance and Enforcement Division 7
3.3.1 Compliance and Enforcement Division Manager 7
3.3.2 Compliance and Enforcement Division Staff 7
3.4 Planning Division 7
3.4.1 Planning Division Manager 7
3.4.2 Planning Division Staff 8
3.5 Public Information Administrator and Clark County Public Information Officer ..8
3.6 Author 8

4.0 PROCEDURE 9
4.1 Issuance of Advisories and Alerts 9
4.1.1 Templates 9
4.1.2 Before Issuance 9
4.1.3 During Issuance 10
4.1.4 After Issuance 11
4.1.5 Timing 11
4.2 Monitoring Division Duties: Data Collection 12
4.2.1 Communication 12
4.2.2 Data Collection, Preservation, and Oversight 12
4.2.3 Audits 13
4.2.4 Data Flagging 13
4.3 Compliance and Enforcement Division Duties: Mitigation Measures 14
4.4 Planning Division Duties: Demonstration Package Preparation 14
4.5 Mechanisms to Consult with Other Air Quality Managers 15
4.6 Annual Training Meeting 16

5.0 RECORDS 16

6.0 ADVISORY AND ALERT RECORDS REFERENCES 16

7.0 FORMS 16

ACRONYMS AND ABBREVIATIONS

Acronyms

AQI	Air Quality Index
AQS	Air Quality System
BACM	Best Available Control Measures
CFR	Code of Federal Regulations
DAQ	Clark County Department of Air Quality
EPA	U.S. Environmental Protection Agency
LEADS	Leading Environmental Analysis and Display System
ManVal	Manual Validation
NAAQS	National Ambient Air Quality Standards
PIA	DAQ Public Information Administrator
PIO	Clark County Public Information Officer
QA	quality assurance
USG	Unhealthy for Sensitive Groups

Abbreviations

mph	miles per hour
PM_{10}	particulate matter with a mean aerodynamic diameter of 10 microns or less
$PM_{2.5}$	particulate matter with a mean aerodynamic diameter of 2.5 microns or less

1.0 SCOPE/APPLICABILITY

This procedure describes the processes required to prepare for and respond to an exceptional event within Clark County, in conformance with Title 40, Part 51.930 of the Code of Federal Regulations (40 CFR 51.930). It outlines staff roles, responsibilities, and activities before, during, and after an exceptional event, and the training necessary to prepare for an event.

This procedure applies to all Clark County Department of Air Quality (DAQ) employees tasked with preparing for and responding to exceptional events, including preparation of exceptional event demonstration packages.

2.0 DEFINITIONS

Advisory: A written notification typically communicated electronically and issued when forecast conditions are favorable for pollutant levels to exceed the National Ambient Air Quality Standards (NAAQS) i.e., when the air quality conditions are, at a minimum, Unhealthy for Sensitive Groups (USG) on the U.S. Environmental Protection Agency's (EPA's) Air Quality Index (AQI)—or when high pollutant levels are apparent to the public even if the AQI levels only reach the Moderate level.

Air Quality Index (AQI): A system developed by the U.S. Environmental Protection Agency (EPA) to uniformly characterize levels of the major air pollutants regulated under the Clean Air Act. It comprises six ranges: Good (0 – 50), Moderate (51 – 100), Unhealthy for Sensitive Groups (101 – 150), Unhealthy (151 – 200), Very Unhealthy (201 – 300), and Hazardous (301 – 500).

Air Quality System (AQS): An EPA database that contains measurements of criteria and hazardous air pollutant concentrations in all 50 states, the District of Columbia, Puerto Rico, and the Virgin Islands.

Alert: A written notification that is typically communicated electronically when air quality levels are expected to reach the Unhealthy level or higher on the AQI, or when high pollutant levels are apparent to the public even if AQI levels may only reach the USG level.

Best available control measures (BACM): The most effective measures for controlling fugitive particulate matter (PM) emissions, according to EPA guidance.

Construction Notice: A notice issued at predicted wind speeds below the dust advisory levels, that directs permittees to immediately inspect their sites, employ BACM, and avoid blasting operations at threshold wind speeds. It also informs recipients that compliance officers will inspect sites to ensure BACM is being implemented.

Data flag for exceptional events: Special data qualifier code from a list of exceptional event categories used to flag data submitted to AQS and to request its exclusion of the data.

EnviroFlash: An EPA system that sends daily e-mails containing air quality forecast information.

Exceptional event: An event that (1) affects air quality, (2) is not reasonably controllable or preventable, (3) is caused by human activity unlikely to recur at a particular location, or (4) is a natural event, and that is determined by the EPA administrator to be an exceptional event in accordance with 40 CFR 50.14. Exceptional events include, but are not limited to, high-wind, transported dust, wildfire, and fireworks events.

Informational flag (I-flag): Data code from a list of codes that provides information on data entered into AQS.

Leading Environmental Analysis and Display System (LEADS): DAQ's primary data management tool for continuous monitoring.

Manual Validation (ManVal): A database query tool that staff can use to view data, and to flag any suspect data by applying appropriate flags and justifying data validation.

Preliminary indication of an exceedance: A value in LEADS that exceeds the NAAQS before field checks, audits, and data validation are conducted.

Request flag (R-flag): Special data qualifier code from a list of exceptional event categories used to flag data submitted to AQS and request its exclusion for regulatory purposes.

Verified exceedance: A value in AQS that exceeds the NAAQS after field checks, required audits, and data validation are conducted.

3.0 ROLES AND RESPONSIBILITIES

This section details the roles and responsibilities of DAQ staff and management in preparing and responding to exceptional events. Specific responsibilities are described in detail in Section 4.0, "Procedures."

There are two general categories of health-based notifications issued by DAQ and Clark County: advisories and alerts. The focus of the advisory and alert processes is to provide prompt notification to affected or potentially affected communities whenever air quality concentrations exceed or are expected to exceed an applicable NAAQS. Advisories and alerts generally fall into one of the following categories, or a combination thereof: Dust Advisory/Alert, Fine Particulate Matter Advisory/Alert, Seasonal Ozone Advisory, Ozone Advisory/Alert, and Smoke Advisory/Alert. All advisories and alerts are primarily health-based notifications and are issued to the school district, health district, parks and recreation departments, local municipalities, local media, and interested members of the general public. Advisories and alerts include educational material and tips on how to limit exposure and mitigate emissions.

Construction Notices are issued at lower-level wind thresholds than Dust Advisories to dust control permit holders, contractors, and selected stationary sources and are primarily mitigation-

based proactive measures. Constructions Notices are not public announcements of potential health risks, nor do they involve action of the PIA or PIO. After a Construction Notice is issued, a general advisory or an alert may be issued if changing weather conditions elevate the concern to health-based. During such instances, dust control permit holders, contractors, and selected stationary sources are issued a tailored form of the public advisory/alert with language specifically tailored to their operations and dust abatement requirements

3.1 Department Director

The director (or designee) will review and approve this procedure. It will be the director's responsibility to ensure department-wide implementation of, and adherence to, this procedure. When division managers are unavailable, the director will be responsible for approving the issuance or updating of an advisory or alert.

3.2 Monitoring Division

3.2.1 Monitoring Division Manager

The Monitoring Division manager is the primary approving authority for the issuance of an advisory or alert. If required, the manager (or designee) shall serve as the DAQ spokesperson during an exceptional event and follow the guidance in ADM-010, "News Media Policy."

3.2.2 Monitoring Division Staff

Monitoring Division staff are responsible for the following tasks, as assigned:

1. Monitoring weather and pollutant data, forecasting pollutant AQI levels for morning posts to the DAQ and EPA AirNow websites, posting updates throughout the day as necessary, and determining the potential severity of an event.

2. Coordinating with the Clark County Public Information Officer (PIO) and the DAQ Public Information Administrator (PIA) on preparing, issuing, updating, and posting advisories and alerts.

3. Coordinating with the Compliance and Enforcement Division on the merits of issuing a Construction Notice or Dust Advisory/Alert.

4. Making recommendations to the Monitoring Division manager on the issuance of advisories and alerts.

5. Performing audits as needed.

6. Confirming monitoring site exceedances recorded during an event, providing a final quality check of exceedance data, and flagging the data in AQS.

7. Collaborating with Planning Division staff in developing meteorological analyses of exceptional events.

3.3 Compliance and Enforcement Division

3.3.1 Compliance and Enforcement Division Manager

The Compliance and Enforcement Division manager (or designee) is responsible for:

1. Coordinating with the Dust/Asbestos Section supervisor and the Monitoring Division air quality forecaster on the necessity of issuing a Construction Notice or an advisory/alert during dust events.

2. Ensuring, through the Dust/Asbestos Section supervisor, that if a decision is made to issue a Construction Notice, it is e-mailed to all Dust Control Permit holders, contractors, and selected stationary sources with included language directing recipients to forward the notice to all applicable supervisors, foremen, and subcontractors working on a construction project or at the stationary source.

3. Ensuring, through the Dust/Asbestos Section supervisor, that if a decision is made to issue a Dust Advisory/Alert, a tailored form of that public advisory/alert shall be e-mailed to all Dust Control Permit holders, contractors, and selected stationary sources with language directing recipients to forward the advisory/alert to all applicable supervisors, foremen, and subcontractors working on a construction project or at the stationary source.

4. Deploying compliance officers to the field during a dust event to focus surveillance and enforcement activities on sources of fugitive dust and to gather documentation, such as photos, videos, and inspections.

3.3.2 Compliance and Enforcement Division Staff

Compliance and Enforcement Division staff are responsible for the following tasks, as assigned:

1. Conducting field inspections of potentially violating sources before and during a forecasted dust event.

2. Issuing alleged violators a Notice of Noncompliance, Warning Notice, or Notice of Violation, as warranted, and requesting sources employ best management practices to correct the alleged violation(s).

3. Ensuring that inspection forms and other documentation contain site-specific information related to field enforcement activities, including observations made, actions taken, directions given, response effectiveness, and outcomes.

3.4 Planning Division

3.4.1 Planning Division Manager

The Planning Division manager (or designee) is responsible for:

1. Informing the Monitoring Division manager, (or designee) of samples needed during fireworks displays and other smoke events.

2. Determining which filter samples will be sent out for laboratory analysis.

3. Informing the Compliance and Enforcement Division manager, (or designee) of unique or event-specific documentation that may be needed for a demonstration package.

4. Ensuring that exceptional event demonstration packages are assembled and submitted to EPA within the regulatory time frame after occurrence of an exceptional event.

5. If required, serving (or appointing a Planning staff member to serve) as DAQ spokesperson during an exceptional event and following ADM-010 accordingly.

6. Reporting the status of exceptional event demonstration packages to the department director as a metric.

3.4.2 Planning Division Staff

Planning Division staff are responsible for the following tasks, as assigned:

1. Collaborating with the Monitoring Division in developing meteorological analyses. This includes informing the air quality forecaster of the scope and level of detail required for the meteorological portion of an exceptional event demonstration package, although it is up to Planning Division staff to determine what is ultimately included in a package.

2. Requesting and approving I-flags and R-flags.

3. Preparing reports and exceptional event demonstration packages.

4. Maintaining a table that tracks exceedance events, exceptional events (with summary), the status of exceptional events, and exceptional event demonstration packages.

5. Reporting the status of exceptional event demonstration packages to the Planning Division manager.

3.5 Public Information Administrator and Clark County Public Information Officer

The PIA is responsible for coordinating media and public requests for information. During an exceptional event, the PIA will coordinate with the air quality forecaster to get advisories and alerts to the department director, the PIO, and local media. The PIA may serve as spokesperson for an exceptional event in Clark County, with ADM-010 as a key resource. The PIO will coordinate the release of advisories and alerts to the media, along with media interview requests.

3.6 Author

The author will carefully consider all reviewer comments and incorporate them as applicable before finalizing the procedure.

4.0 PROCEDURE

4.1 Issuance of Advisories and Alerts

This section lists the steps for ensuring that DAQ notices and advisories/alerts are issued in a timely manner and standard format.

4.1.1 Templates

1. The Planning Division manager or designee, shall work with the PIA and/or the PIO to develop templates for advisories and alerts.

2. All advisories and alerts issued to the public shall include the following elements, which are intended to educate affected or potentially affected communities on actions to reduce exposure to elevated pollutant concentration levels during and after an exceedance:

    a. A Clark County logo, header, and footer provided by the PIO.

    b. Issuance date and effective period of the advisory or alert.

    c. Educational statement on the health impact of the pollutant(s), followed by a statement advising sensitive individuals to consult a doctor.

    d. A statement on air quality conditions, with a link to the forecast page of the DAQ website.

    e. A brief description of the AQI and a statement encouraging the public to subscribe to the EnviroFlash service, with an embedded link.

    f. Measures the public can take to reduce exposure and mitigate the effects of the pollutant(s) involved.

4.1.2 Before Issuance

1. The PIA shall coordinate with the PIO before issuing advisories/alerts to the public and media.

2. When forecasted wind conditions predict, at a minimum, sustained wind speeds of 20 miles per hour (mph) or frequent wind gusts of 30 mph, the air quality forecaster shall coordinate with the Dust/Asbestos Section supervisor on the necessity of issuing a **Construction Notice** to Dust Control Permit holders, contractors, and stationary sources. Other factors to consider include average soil moisture content and loose soil reservoir depletion.

3. When forecasted wind conditions predict, at a minimum, sustained speeds of 25 mph or frequent gusts of 40 mph, or when fine dust is brought into the valley but winds have diminished, the air quality forecaster shall coordinate with the Dust/Asbestos Section supervisor on the necessity of issuing a **Dust Advisory/Alert**, pending management approval.

Other factors to consider when determining whether to issue a Dust Advisory include average soil moisture content and loose soil reservoir depletion.

4. For all other pollutant advisories/alerts, the air quality forecaster shall determine the appropriateness of issuance.

5. Advisories shall be issued only when it is reasonably certain that forecasted conditions may cause air quality levels to exceed the NAAQS (i.e., to reach or exceed the AQI USG level), or when high pollutant levels are apparent to the public even if AQI levels only reach the Moderate level.

6. Alerts shall be issued only when it is reasonably certain that forecasted conditions may cause or are causing air quality levels to reach the AQI Unhealthy level or higher, or when high pollutant levels are apparent to the public even if AQI levels only reach USG levels.

7. Seasonal ozone advisories and holiday firework event advisories shall be issued in a timely manner.

8. The air quality forecaster shall draft all notices and advisories/alerts using approved templates.

9. The air quality forecaster shall submit a draft advisory/alert to the Monitoring Division manager for approval. If the Monitoring Division manager is unavailable, then one of the following managers, in the order listed, must approve the issuance:

    a. Compliance and Enforcement Division

    b. Planning Division

    c. Permitting Division

    d. Department director.

10. The air quality forecaster shall provide the PIA a copy of the approved advisory/alert for review and comment. If the PIA is unavailable to coordinate with the PIO, the air quality forecaster shall coordinate directly with the PIO.

11. The air quality forecaster shall advise the Dust/Asbestos Section supervisor of the issuance of an advisory/alert, including the expected duration and wind speeds, after providing the PIA/PIO a copy of the approved advisory/alert.

4.1.3 <u>During Issuance</u>

1. After approval of an advisory/alert, the PIA will provide it to the following, at a minimum:

    a. Clark County School District

    b. Southern Nevada Health District

    c. Clark County Department of Parks and Recreation

d. Cities of Las Vegas, Henderson, North Las Vegas, and Boulder City

e. Local media (radio and television)

f. Social media.

2. The PIA will notify all DAQ staff when issuing an advisory/alert.

4.1.4 After Issuance

1. The air quality forecaster shall:

a. Notify the Dust/Asbestos Section supervisor when a manager has approved the issuance of a Dust Advisory/Alert.

b. Post the advisory/alert on the DAQ website's monitoring page, updating the forecast and comment block if needed.

c. Update the EPA AirNow forecast page to match anticipated pollutant levels, if necessary.

d. Prepare a manual e-mail distribution through EnviroFlash.

e. Store copies of the advisory/alert on the DAQ website and in appropriate network folders for future documentation.

f. Observe air quality concentration levels throughout the event to see if the duration or description in the advisory/alert should be revised.

g. Obtain Monitoring Division manager approval to update the website and/or issue a new advisory/alert, and to advise the PIO of changes if (a) conditions improve so that the advisory/alert is no longer necessary, (b) conditions indicate that the duration of the advisory/alert should be extended, or (c) conditions indicate the level of the advisory/alert should be raised. If the Monitoring manager is unavailable, see Section 4.1.2.(6) for the list (in order) of managers who must approve discontinuation or revision of an advisory/alert.

2. The Dust/Asbestos Section supervisor shall email Construction Notices and Dust Advisories to all Dust Control Permit holders and selected stationary sources.

4.1.5 Timing

1. Once DAQ forecasts an upcoming event, advisories/alerts should be issued as early as possible.

2. Recurring seasonal or event advisories should be agreed upon by the air quality forecaster, the PIA, and the PIO at least a few days prior to issuance.

3. To optimize media coverage, specific advisories for developing air quality conditions should, if possible, be issued the day before the event. If this is not possible, the advisories should be issued no later than 11:00 a.m. on the day of the event.

4. Alerts of imminent or occurring pollutant concentrations in the Unhealthy AQI level should be released as early as possible, preferably by 11:00 a.m.

4.2 Monitoring Division Duties: Data Collection

This section describes the Monitoring Division's processes to collect and maintain data pertinent to an exceptional event.

4.2.1 Communication

1. When informed by the air quality forecaster of conditions that may require issuing an advisory/alert, the Field Operations Section supervisor will instruct Monitoring Division staff before they leave for the field to suspend routine checks or maintenance during and immediately after the potential event.

2. Pursuant to Section 4.4, Planning Division staff shall determine whether exceedance data should be flagged for an exceptional event. The Field Operations supervisor shall relay this determination to the senior monitoring technician responsible for data validation before he/she submits data from the event to AQS.

3. The senior monitoring technician with data validation duties shall notify the air quality forecaster and all Monitoring and Planning Division supervisors and managers when submits flagged data to AQS.

4.2.2 Data Collection, Preservation, and Oversight

1. Monitoring field staff shall:

    a. Refrain from routine quality control checks or other maintenance activities on instruments, samplers, and equipment during or immediately after the event to ensure uninterrupted data collection.

    b. Confirm site exceedances recorded during an event and provide an initial quality check of exceedance data.

    c. Collect manual sampler data on the event from monitoring stations.

    d. Store PM filter-based samples collected during the event until the Planning manager or designee, decides whether to send the filters to an EPA-approved laboratory for analysis of chemical wildfire markers, fireworks markers, or other components.

    e. If the Planning Division Manager or designee, has requested additional sampling on holidays historically associated with $PM_{2.5}$ exceedances in the Las Vegas Valley (e.g.,

New Year's Eve, Independence Day), collect additional filter samples for laboratory analyses independent of, but in conjunction with, required sampling schedules.

2. The air quality forecaster shall begin compiling additional meteorology and pollutant data as soon as possible when an exceptional event is forecast or occurs.

3. As soon as practicable, but no later than two months after a Planning Division request, the air quality forecaster shall provide documentation on the meteorological conditions associated with an exceedance to the Planning Division for inclusion in an exceptional event demonstration package.

4. The air quality forecaster shall coordinate with assigned Planning Division staff on the content and scope of each meteorological analysis.

4.2.3 Audits

The senior monitoring technician with quality assurance (QA) duties shall:

1. Discuss with the QA Section supervisor the appropriateness of auditing instruments that indicated exceedances, and audit each as necessary.

2. Discuss any audit results with the senior monitoring technician responsible for data validation.

3. Conduct an audit even if only one monitoring site records a probable exceedance, unless the results of recent audits make this unnecessary.

4. Conduct an audit when two or more monitors indicate exceedances if the senior monitoring technician with QA audit duties and the QA Section supervisor determine one is needed.

4.2.4 Data Flagging

The senior monitoring technician with data validation duties shall:

1. If preliminary results (pre-audit and pre-data validation) indicate an exceedance, notify their supervisor which ManVal informational flags should apply. The supervisor will notify all Monitoring staff and the Planning manager or designee, and instruct Monitoring field personnel which ManVal qualifying flags and notations to apply to their sites' data and logs.

2. Verify whether an exceedance occurred after reviewing all data and audits.

3. If an exceedance has occurred, flag data in AQS (in accordance with consultations between Planning and Monitoring) with both informational and qualifying flags to notify EPA of DAQ's intent to exclude a potential exceptional event pursuant to 40 CFR 50.14(c)(2).

4.3 Compliance and Enforcement Division Duties: Mitigation Measures

This section describes the Compliance and Enforcement Division's role in identifying, studying, and implementing mitigation measures, including approaches to abate or minimize contributing, controllable sources of identified pollutants.

1. During dust-related exceptional events, compliance officers shall:

    a. Survey assigned areas for sites with blowing dust.

    b. Document application of BACM on sites to ensure compliance with Dust Control Permit conditions and regulations.

    c. Conduct on-site evaluations to determine if soils are stable or unstable.

    d. Perform required field tests, fill out construction site inspection forms, and take digital photos showing the extent of unstable soils and blowing dust.

    e. Conduct site surveillance and compliance evaluations of stationary sources to determine compliance with permit conditions and regulations related to controlling dust emissions.

2. Alleged violators will be issued a Notice of Noncompliance, Warning Notice, or Notice of Violation, as appropriate. Sources will be requested to employ best management practices to correct any violations. Historical patterns, monitoring data, and citizen complaints will be taken into consideration in enforcement actions.

3. The Dust/Asbestos Section Supervisor shall compile all field documentation after a dust event and provide it to the Planning Division as soon as practicable.

4. The Compliance and Enforcement Division Manager may direct, upon request of the Planning Division Manager, that officers respond in the field during transport pollution events that cause high concentrations of PM_{10} or $PM_{2.5}$, even if wind speeds are low. (Additional field enforcement will generally not be requested for high-level ozone events, wildfire smoke events, or fireworks smoke events.)

4.4 Planning Division Duties: Demonstration Package Preparation

This section describes the Planning Division's role in identifying, studying, and implementing mitigation measures, including processes to collect and maintain data pertinent to an exceptional event.

1. The Planning manager or designee, will communicate with the Monitoring manager, or designee, for if additional PM filter-based media runs are needed during and after an exceptional event to capture PM and chemical marker data. This request shall delineate specific monitors, time frames, and days of capture.

2. If high PM levels result from transported dust events, the Planning manager may request enforcement activity on a case-by-case basis. This activity may consist of documenting effective controls on local sources, taking digital photos, and/or recording observations, such as predominant wind direction and the presence of local sources of fugitive dust.

3. When an exceptional event occurs, Planning staff may proceed to the field to collect specific data, such as photos of problematic sites, when they believe certain areas require field documentation.

4. If the Planning manager, or designee, determines that a demonstration package should be prepared after an exceptional event, Planning staff shall:

    a. Collect associated field data from Compliance and Enforcement Division staff and coordinate with the air quality forecaster to develop a meteorological analysis of the event.

    b. Collect news items filed by local media regarding the exceptional event.

    c. Prepare a brief report summarizing the event, including the associated meteorological reasoning and analysis provided by the air quality forecaster.

    d. If they receive positive comments and a recommendation from EPA, complete the demonstration package and conduct the 30-day public comment period required by Clark County and EPA, and posting of the draft package on the DAQ website for public review.

    e. Submit the package, including any public comments received, to EPA Region 9 in accordance with 40 CFR 50.14(c)(3).

    f. After submittal to EPA, replace the public review drafts on the website with final versions that include both the published public notices and the documentation of public comments.

4.5 Mechanisms to Consult with Other Air Quality Managers

1. 40 CFR Section 51.930(b)(2)(ii)(D) requires mechanisms to consult with "other air quality managers" in the "affected area" regarding the appropriate responses to abate and minimize impacts. In promulgating the 2016 Exceptional Events Rule, EPA clarified the meaning of "other air quality managers," stating, "[c]onsultation could include collaboration between potentially affected local, state, tribal and federal air quality managers and/or emergency response personnel" (81 FR 68211, 68273). Based on historical exceptional event demonstrations submitted by DAQ, the "affected area" that extends beyond the boundaries of Clark County typically includes portions of Arizona or California.

2. Air quality managers from EPA, Arizona, California, and Nevada participate in a Southwest Exceptional Events Working Group, which meets by teleconference quarterly (more frequently if needed). This group serves as the primary mechanism for consultation among air quality managers in regionally affected areas. When air quality in an area is affected by

a foreseeable or ongoing exceptional event, important available information, such as wind direction and speeds, can immediately be sent to working group members. In addition, Clark County will maintain a supplemental list of air quality managers who can be contacted, including tribal air quality managers (Moapa and Paiute), Bureau of Land Management air quality managers, and fire officials (city and county).

4.6 Annual Training Meeting

The Monitoring Division manager (or designee) shall coordinate a meeting each February to discuss and prepare for exceptional events in the coming year.

5.0 RECORDS

The steps taken in this procedure will create the following records:

- Construction Site Inspection Records.

6.0 ADVISORY AND ALERT RECORDS REFERENCES

The following documents were used in developing this procedure:

- 72 FR 13560. “Treatment of Data Influenced by Exceptional Events; Final Rule.”
- 40 CFR Parts 50.1, 50.14, and 51.930.
- EPA 2012. “Draft Guidance on the Preparation of Demonstrations in Support of Requests to Exclude Ambient Air Quality Data Affected by High Winds under the Exceptional Events Rule.”
- DAQ 2018. “Clark County Mitigation Plan for Exceptional Events.”

7.0 FORMS

The following news release templates associated with this procedure are available on the network drive:

- Construction notice
- Dust advisory
- Dust alert
- Fine particulate matter advisory
- Fine particulate matter alert
- Seasonal ozone advisory
- Ozone advisory
- Ozone alert

- Ozone/dust advisory
- Ozone/dust alert
- Smoke advisory
- Smoke alert
- Smoke/dust advisory
- Smoke/dust alert
- Smoke/ozone advisory
- Smoke/ozone alert.

Revision History

No.	Date	Author	Description of Change	Affected Pages
0	8/15/18	R. Langston	Original issuance	All

Reviews

Rev/ Mod No.	Date	Reviewer	Comments

APPROVALS:

Department Director — Date: 8/9/18

Compliance and Enforcement Division Manager — Date: 08-08-2018

Monitoring Division Manager — Date: 8-8-2018

Permitting Division Manager — Date: 8/9/18

Acting

Planning Division Manager — Date: 8-8-2018

Author — Date: 8-8-2018

Appendix F: Documentation of the Public Comment Process

The 30-day Public Comment Period for the October 25, 2020 Exceptional Event demonstration occurred between November 15 and December 15, 2023. The demonstration and associated appendices were posted on the Clark County DES website for public review and comment. The documentation in this Appendix provide evidence of the Public Comment process. No comments were received from the public during this comment period.

Notice of Public Comment

NOTICE OF PUBLIC COMMENT PERIOD ON FINAL EXCEPTIONAL EVENT DEMONSTRATIONS

NOTICE IS HEREBY GIVEN of a public comment period on the final exceptional event demonstrations identified below. The Exceptional Events Rule (EER), codified at 40 CFR 50.1, 50.14, and 51.930, allows air agencies to petition the U.S. Environmental Protection Agency (EPA) to exclude air quality monitoring data influenced by exceptional events from applicable regulatory determinations. Between 2020 and 2022, Clark County recorded several exceedances of the 24-hour PM_{10} National Ambient Air Quality Standard due to impacts from high wind dust events. The following table details these exceedances. The Clark County Department of Environment and Sustainability (DES) developed these demonstrations to show that exceedances would not have occurred without impacts from windblown dust and requests exclusion of event-related data from use in regulatory determinations in accordance with the EER.

NOTICE IS FURTHER GIVEN that a 30-day public comment period will begin on November 15th, 2023, and end at 5:00 PM on December 15th, 2023, in accordance with the requirements of 40 CFR 50.14(c)(3)(v). The public may review and provide written comments on these demonstrations during this period. Copies of the demonstrations are available for review on the DES website at:
https://www.clarkcountynv.gov/government/departments/environment_and_sustainability/public_communications/public_notices.php.

Any written comments must be received by DES at 4701 W. Russell Road, Suite 200, Las Vegas, Nevada 89118, by 5:00 PM on December 15th, 2023. Comments should be addressed to Air Quality Planning Section at the same mailing address, emailed to aqplanning@clarkcountynv.gov, or faxed to (702) 383-9994.

Published: November 15th, 2023

Marci D. Henson, Director

Figure 10. Notice of Public Comment Period on November 15, 2023 signed by Director Marci D. Henson.

Final 2018 and 2020 Exceptional Events

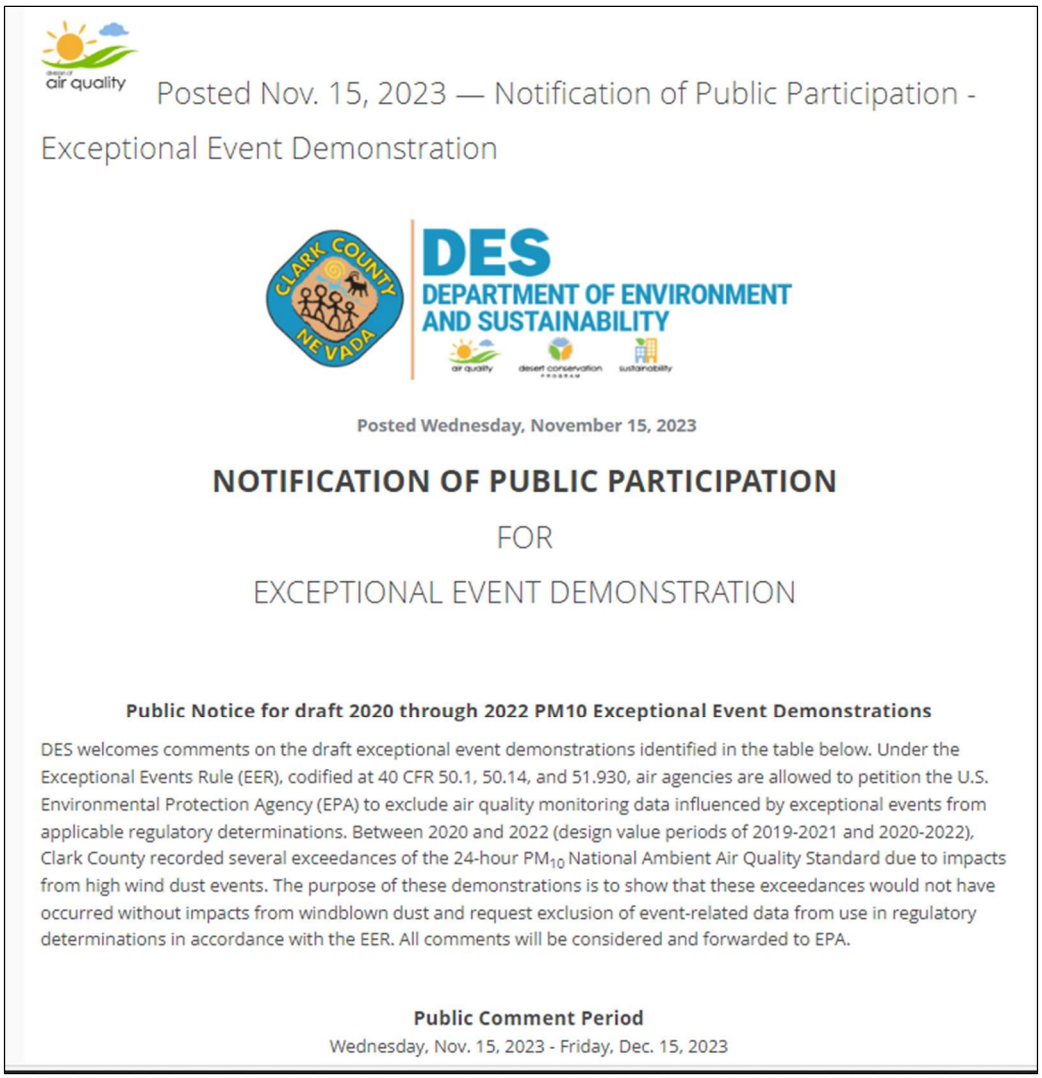
Date of Event	Type of Event	Site Name	Exceedance Concentration (µg/m3)
09/08/2020	High Wind	Jerome Mack	302
		Paul Meyer	198
		Walter Johnson	159
		Joe Neal	181
		Green Valley	209
		Sunrise Acres	222
		Boulder City	193
		Jean	162
10/25/2020	High Wind Dust	Jerome Mack	210
		Sunrise Acres	163
02/21/2022	High Wind Dust	Green Valley	192
		Liberty High School	225
		Jerome Mack	199
		Sunrise Acres	169
		Garrett Jr. High	167
		Jean	197
04/11/2022	High Wind Dust	Virgin Valley	158
		Paul Meyer	335
		Mountains Edge	259
		Walter Johnson	341
		Palo Verde	333
		Joe Neal	359
		Green Valley	340
		Liberty High School	365
		Jerome Mack	300
		Sunrise Acres	367
		Jean	236
		Casino Center	318
		Walnut Rec.	396
05/08/2022	High Wind Dust	Virgin Valley	182
		Paul Meyer	229
		Mountains Edge	258
		Walter Johnson	204
		Palo Verde	220
		Joe Neal	188
		Green Valley	215
		Liberty High School	242
		Jerome Mack	196
		Sunrise Acres	219
		Jean	177
		Casino Center	200
		Walnut Rec.	249
05/28/2022	High Wind Dust	Liberty High School	169
		Jerome Mack	158
		Jean	179
		Walnut Rec.	155
05/29/2022	High Wind Dust	Green Valley	183
		Liberty High School	204

Figure 11. List of all High-Wind Dust Exceptional Events for review during the Public Comment Period during November 15-December 15, 2023.

		Jerome Mack Jean Walnut Rec.	175 218 179
09/08/2022	High Wind Dust	Paul Meyer Walter Johnson Joe Neal Green Valley Liberty High School Jerome Mack Sunrise Acres Garret Jr. High Walnut Rec.	234 307 513 586 285 445 468 350 278
09/09/2022	High Wind Dust	Paul Meyer Walter Johnson Palo Verde Joe Neal Green Valley Jerome Mack Sunrise Acres Walnut Rec.	160 229 212 429 231 341 273 471
10/22/2022	High Wind Dust	Paul Meyer Mountains Edge Walter Johnson Palo Verde Joe Neal Green Valley Liberty High School Jerome Mack Sunrise Acres Garret Jr. High Jean Walnut Rec.	280 326 300 231 230 269 351 280 269 313 224 291

Figure 12. Continued list of all High-Wind Dust Exceptional Events for review during the Public Comment Period during November 15-December 15, 2023.

DES Website Notices



Posted Nov. 15, 2023 — Notification of Public Participation - Exceptional Event Demonstration

DES
DEPARTMENT OF ENVIRONMENT AND SUSTAINABILITY

Posted Wednesday, November 15, 2023

NOTIFICATION OF PUBLIC PARTICIPATION

FOR

EXCEPTIONAL EVENT DEMONSTRATION

Public Notice for draft 2020 through 2022 PM10 Exceptional Event Demonstrations

DES welcomes comments on the draft exceptional event demonstrations identified in the table below. Under the Exceptional Events Rule (EER), codified at 40 CFR 50.1, 50.14, and 51.930, air agencies are allowed to petition the U.S. Environmental Protection Agency (EPA) to exclude air quality monitoring data influenced by exceptional events from applicable regulatory determinations. Between 2020 and 2022 (design value periods of 2019-2021 and 2020-2022), Clark County recorded several exceedances of the 24-hour PM_{10} National Ambient Air Quality Standard due to impacts from high wind dust events. The purpose of these demonstrations is to show that these exceedances would not have occurred without impacts from windblown dust and request exclusion of event-related data from use in regulatory determinations in accordance with the EER. All comments will be considered and forwarded to EPA.

Public Comment Period

Wednesday, Nov. 15, 2023 - Friday, Dec. 15, 2023

Figure 13. Notification of Public Participation for the High-Wind Dust Exceptional Event demonstrations posted on the Clark County DES website on November 15, 2023.

Public Comment Period

Wednesday, Nov. 15, 2023 - Friday, Dec. 15, 2023

Event Date(s)	Event Type
September 8, 2020 Demonstration Appendices (see below)	High Wind Dust
October 25, 2020 Demonstration Appendices (see below)	High Wind Dust
February 21, 2022 Demonstration Appendices (see below)	High Wind Dust
April 11, 2022 Demonstration Appendices (see below)	High Wind Dust
May 8, 2022 Demonstration Appendices (see below)	High Wind Dust
May 28-29, 2022 Demonstration Appendices (see below)	High Wind Dust
September 8-9, 2022 Demonstration Appendices (see below)	High Wind Dust
October 22, 2022 Demonstration Appendices (see below)	High Wind Dust

Figure 14. High-Wind Dust Exceptional Event demonstrations and associated appendices posted during the Public Comment Period on the Clark County DES website.

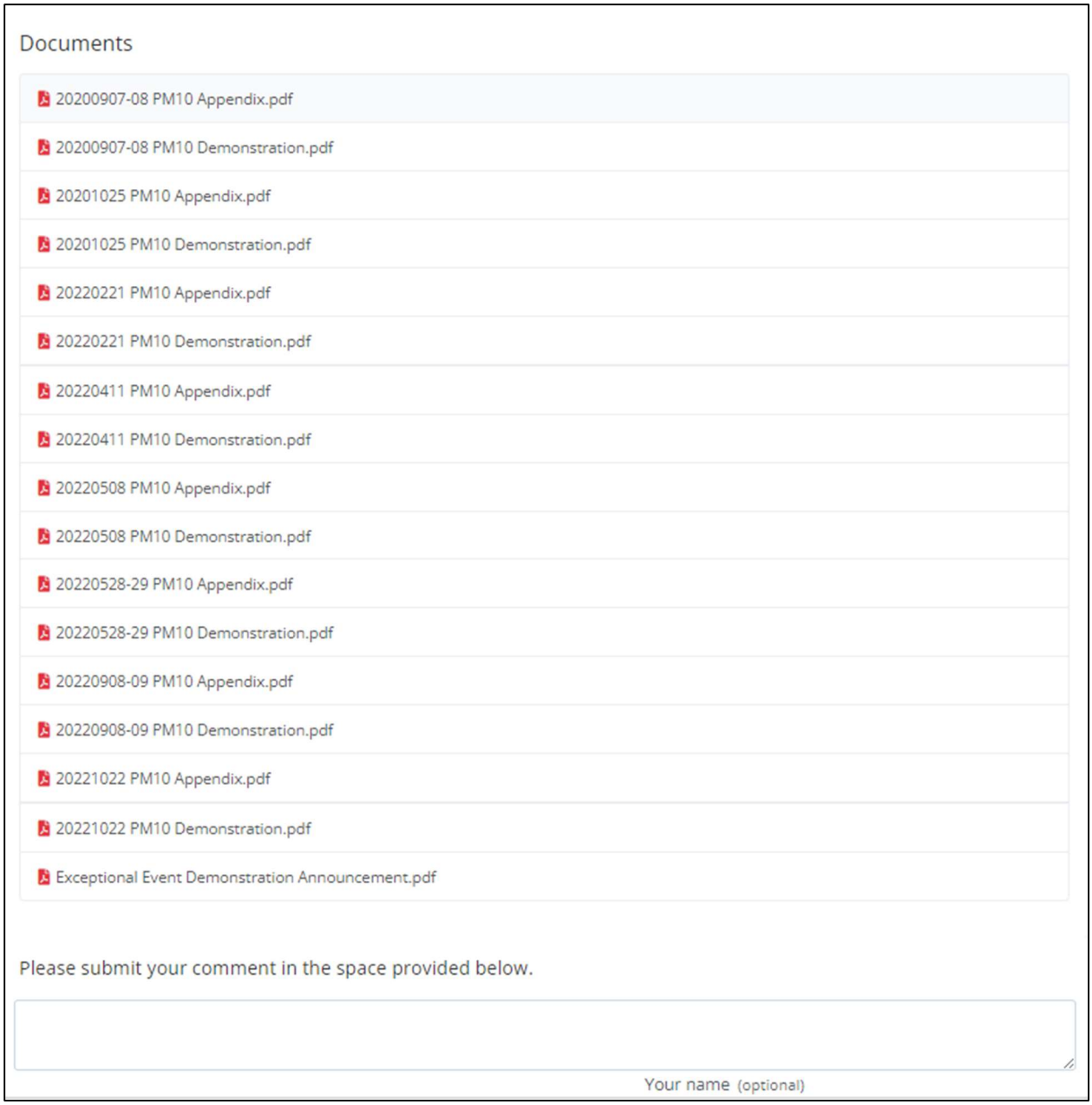


Figure 15. A screenshot of the Clark County DES website showing all High-Wind Dust Exceptional Event demonstrations and associated appendices in PDF format during the Public Comment Period with the comment space shown at the bottom of the page.

DES Facebook Posting

Figure 16. Public Comment Period notification posted on Facebook on November 15, 2023.

DES X Posting

Figure 17. Public Comment Period notification posted on X (formerly Twitter) on November 16, 2023.

E-Notice (Public Input)

Araceli Pruett

From: Clark County Division of Air Quality <daqplanningnotice@publicinput.com>
Sent: Wednesday, November 15, 2023 4:19 PM
To: Araceli Pruett
Subject: Air Quality Public Participation Notice

#

NOTIFICATION OF PUBLIC PARTICIPATION
FOR
EXCEPTIONAL EVENT DEMONSTRATION

The Clark County Department of Environment and Sustainability – Air Quality Division is notifying you that a public participation process has been initiated for an exceptional event demonstration. You can view all materials actively subject to the public participation process and leave comments directly on our website. Contact information and instructions for submitting comments are included on the site.

Please direct any further questions about this notice to AQPlanning@ClarkCountyNV.gov or 702-455-5942.

Sent on behalf of Clark County, NV by PublicInput
2409 Crabtree Blvd, Suite 107, Raleigh, NC 27604

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View this email in a browser | Translate

Figure 18. Email notice for Public Comment Participation sent on November 15, 2023.

E-Notice Distribution List

PLANNING E-NOTICE DISTRIBUTION LIST	
Organization	**Contact**
Air & Waste Management Association	Paul Fransioli
American Lung Association Nevada	James Martinez
Bureau of Land Management	Lisa Christianson
City of Boulder City	Michael Mays
City of Henderson	Sean Robertson
City of Las Vegas	Marco Velotta
City of Las Vegas	Milagros (Miles) Escuin
City of North Las Vegas	Alfredo Melesio
City of North Las Vegas	Johanna Murphy
Clark County	Mario Bermudez
Clark County School District	Chris Dingell
Clark County School District	Dimitrios Karapanagiotis
Clark County Department of Aviation	Jim Chrisley
Las Vegas Valley Water District	Brian Bowler
Nellis Air Force Base	Shimi Mathew
Nevada Department of Environmental Protection	Sheryl Fontaine
Nevada Department of Environmental Protection	Andrew Tucker
Nevada Resort Association	Sabrina Santiago
Nevada Resort Association	Virginia Valentine
Regional Flood Control	Steve Parrish
Regional Transportation Commission	Beth Xie
Regional Transportation Commission	Andrew Kjellman
Sierra Club Toiyabe Chapter	Brian Beffort
Southern Nevada Health District	Nicole Bungum
Southern Nevada Off Road Enthusiasts	Ken Thatcher
Southern Nevada Water Authority	Ayoub Ayoub
Southern Nevada Water Authority	Keiba Crear
Southern Nevada Water Authority	Thomas Maher
Southern Nevada Home Builders	Amanda Moss
Southern Nevada Home Builders	Nat Hodgson
The Nature Conservancy	Jaina Moan
University of Nevada Las Vegas	Dave James, PhD.
Washoe County Health District	Francisco Vega
Washoe County Health District	Craig Petersen

Figure 19. Email distribution list for the email notice of Public Participation.

Public Comment Report

Public Notice:	DES Website: November 15 through December 15, 2023
Public Comment Period	November 15 through December 15, 2023
Formal Comments Received:	None
DES Responses:	None

Appendix G: Response to EPA Comments

Clark County submitted draft High-Wind Exceptional Events Demonstrations for the 2020-2022 design value period to EPA Region 9 on September 8, 2023. EPA Region 9 provided feedback on the main narrative of the October 25, 2020, May 28-29, 2022, and September 8-9, 2022 draft demonstrations on January 19, 2024, and feedback on the Not Reasonably Controllable or Preventable (nRCP) section on March 4, 2024. While EPA only provided feedback on three of the exceptional event dates, the requested changes were populated through all exceptional event demonstrations. In this Appendix, we provide the comments from EPA Region 9 and the edits that were implemented in all exceptional event demonstrations including October 25, 2020.

Main Narrative Feedback

The main narrative feedback provided by EPA addressed **Sections 1-3 and 5-6** in the main demonstration document. EPA reviewed the October 25, 2020, May 28-29, 2022, and September 8-9, 2022 draft demonstrations and the feedback was applied to all exceptional event demonstrations in the 2020-2022 and 2021-2023 design value periods. The EPA comments are provided below in black text with associated edits performed in blue text:

1. General comments

    a. Besides providing graphs of WS and PM10, please include the data in tabular form (perhaps in an appendix). Tabular data may be obtained from sites such as NOAA's: https://www.ncdc.noaa.gov/cdo-web/datatools/lcd

        i. Hourly and daily PM_{10}, meteorology, and PM speciation data for Clark County and all surrounding counties and weather stations are included with this demonstration in tabular format as a zipped folder.

    b. In describing the weight of evidence (WOE), discuss spatial and temporal progression, starting with the source region (location, met conditions, progression along the transport path (monitoring sites, airport data), and finally at Clark County (monitoring sites and airport data). For example, in the 10/25/2020 draft demo; figure 3.2-7 showed temporal progression of WS from Lovelock to Bishop, to KDRA, to KLAS, and figure 3.2-8 – showing temporal progression of PM10 from Reno to Inyo to LVV were helpful. The NDEP monitors (e.g. Manse Elem) were showing high PM10 as well.

i. Reordered and simplified Section 3.2.2 to focus on PM_{10} and wind progression from the source region to Clark County using AQS and meteorological sites along the transport path.

c. When there are large spatial and/or temporal differences between the monitors during an event, please discuss why this may be so (e.g. 10/25/2020 event – between Jerome Mack and Sunrise Acres, and as compared to the Clark monitors).

i. Expanded the narrative in Section 3.2.2 to discuss the temporal and/or spatial difference between monitors during an event using the topographical maps with wind speed and PM_{10} concentration overlaid. Typically, the difference between monitors is their location either at low elevation versus high elevation in the Las Vegas Valley (i.e., settling and accumulation at lower elevations). Additionally, the main mountain passes located at the northwest, southwest, southeast corners of the valley cause funneling of PM_{10} into the valley with the closest monitors registering high concentrations first.

d. Have not had a chance to discuss draft demo NRCP controls measures sections with R9 controls group.

i. See the next section, "nRCP Feedback," for that feedback from EPA Region 9.

2. 10/25/2020 event

a. Narrative Conceptual Model: refers to 2019-2021 DV period, This needs to be updated to refer to the 2020-2022 DV period.

i. The design value period has been updated in the final version of the demonstration.

b. Provide discussion/analysis as to why there is a large spatial PM10 variation among the Clark monitors (Jerome Mack/Sunrise Acres compared to the other sites), but comparable WS. Discuss what might be causing the differences, and even between Jerome Mack and Sunrise Acres (2.5 miles apart): peak PM10 at Jerome Mack of 656.95 at 15:00 and at Sunrise Acres of 514.50 at 15:00. Could look at HYSPLIT back trajectories (or other wind direction markers) as well as localized areas of higher wind speeds (above threshold) closer to the monitors with much higher PM10. Or if there are different wind patterns due to the topography with the mountain range.

i. Expanded the narrative in Section 3.2.2 (as discussed in comment response #1c) to discuss topography and settling as well as the timeline of transport during the dust event.

c. In the CCR section, the source area is identified as Great Basin/Mojave Desert, but sustained wind speed information is from Las Vegas. This section should describe the connection of sustained wind speeds from the source area(s).

    i. Updated the Clear Causal Relationship section to focus on the timeline and transport of dust from the source region to Clark County. Additionally, updated to focus specifically on the sustained wind speed in the source region and how high sustained wind speeds can loft, entrain, and transport dust from a desert area.

d. Tonopah Airport and Indian Springs appear to be in the back trajectories and indicate high wind speeds corresponding with the temporal and spatial progression of high winds. Suggest incorporating those (https://www.ncdc.noaa.gov/cdo-web/datasets/LCD/stations/WBAN:23153/detail).

    i. While the HYSPLIT trajectories do pass over Tonopah Airport and Indian Springs, they also pass over Lovelock, Bishop Airport, and Desert Rock, which are along the transport path, located in the source region, and included in the figures and narrative. We opt not to include additional sites because it does not add further evidence beyond what is already presented and proven in the demonstration to keep the narrative concise and efficient.

3. 5/28-29/2022 event

a. the demo on page 33 states that strong winds in the Mojave Desert were greater than 50 mph. the WS data from KBYS showed wind gusts approaching 50 mph (47) but not greater. Please provide other WS data from the Mojave Desert being relied upon for the demo.

    i. This has been updated to say that sustained winds were > 30 mph with a peak wind gust of 47 mph.

b. Page 34 – refers to KVEF – Las Vegas Airport – unclear if this is the same as KVGT (North Las Vegas Airport), KLAS (Harry Reid Intl Airport), or some other airport in Las Vegas.

    i. Provided clarification that KVEF is the upper-air meteorological site in Las Vegas.

c. Source area is identified as the Mojave Desert in SE CA, but also, it looks like sustained wind speeds at the Las Vegas airport (KHND) also had observations at 25mph on 5/28/2022 (5:56, 6:56, 10:56) (and perhaps others, didn't look), may also be a local component? In CCR section, include wind speed information from all source areas.

i. Updated Section 3 to provide more source region wind speed information as well as transport progression. Updated Section 3 and 4 to discuss the relative contribution of local versus regional PM_{10} during the high-wind dust event.

d. Sect 3.2.2 refers to UP167 station – unclear where this is located.

i. Updated Section 3.2.2 to correctly label, map, and identify weather stations UP167.

4. 9/8/2022 event

a. Page 39, "Numerous weather stations across the Las Vegas metropolitan area reported 20-35 mph wind gusts as the boundary passed by." It would be helpful to identify the weather stations, along with pertinent data to show the progression of the boundary. See item 1.b. above.

i. Added a figure in Section 3.1 to show data from the weather stations that are referred to in this comment.

b. Figure 3.2-1 – who operates PFYA3 (is this the Pierce Ferry) station? Please provide the location and WS data for this station.

i. Added ownership and location information on the Pierce Ferry station to the text referencing Figure 3.2-1.

c. On page 40, it states: "by 16:00 – 17:00 PST, a cluster of thunderstorms was present in northwestern Arizona, moving toward southern Nevada. Doppler radar detected the presence of an outflow boundary from the thunderstorm complex approaching Boulder City by 19:00 PST (see Figure 3.1-3), with the outflow reaching the Las Vegas metropolitan area between 20:00 and 21;00 PST." Pointing out that Garrett Jr HS (AQS 32-003-0602) in Boulder City) registered a sharp increase in PM10 at 19:00 PST, with the other sites following suit at 20:00 and 21:00 PST bolsters the WOE. Figures 3.2-3 to 3.2-10 don't show this site.

i. Expanded the spatial extent of Figures 3.2-3 through 3.2-10 to show Boulder City and the Garrett Jr. High monitoring site to bolster the weight of evidence in Section 3.

nRCP Feedback

The nRCP feedback provided by EPA addressed **Sections 4** in the main demonstration document. EPA reviewed the May 28-29, 2022 and September 8-9, 2022 draft demonstrations and feedback was

applied to all exceptional event demonstrations in the 2020-2022 and 2021-2023 design value periods. The EPA comments are provided below in black text with associated edits performed in blue text:

Comments relevant to both September 8-9, 2022, and May 28-29, 2022, Demonstrations:

General comments:

- The Guidance recommends including a conclusion statement at the end of the nRCP section to demonstrate why the high wind dust event was nRCP. Example Guidance language (p 23): "The documentation and analysis presented in [section x] demonstrates that all identified sources that caused or contributed to the exceedance [or violation] were reasonably controlled, effectively implemented, and enforced at the time of the event, therefore emissions associated with the high wind dust event were not reasonably controllable or preventable."
    - This conclusion statement was added to the end of the nRCP section.

(SEPT AND MAY) Clark Language (p 93 for Sept, 107-108 for May): "The 2001 PM10 SIP details emission sources and BACM have been coded into the Clark County Air Quality Regulation (AQR). These include (1) stabilization of open areas and vacant lands (Section 90); (2) stabilization of unpaved roads and paving of unpaved roads when traffic volume is equal to or greater than 150 vehicles per day (Section 91); (3) stabilization of unpaved parking areas, including material handling and storage yards, and generally prohibits the construction of new unpaved parking lots in the nonattainment area (Section 92); (4) requirements for paved roads, street sweeping equipment, and other dust-mitigating devices (Section 93); and (5) permitting and dust control requirements for construction activities (Section 94)."

EPA comments:

- More description of AQR Sections 90-94 would be helpful along with implementation status, such as:
    - Adoption date, SIP approval date, any subsequent revisions
        - Adoption dates, SIP approval dates, and any subsequent revisions have been added to Section 4.2.
- AQR sections 90-94 appear to be the primary controls. Clark County should analyze the reasonableness of these and any other controls. A presumption of reasonableness only applies to controls approved in a SIP within 5 years. For those controls that have not been approved in a SIP within 5 years, the EE.

- Guidance (p 18-19) Table 2 provides example factors that the air agency and EPA may consider when assessing the reasonableness of controls as part of the nRCP criterion:

    1. Control requirements based on area attainment status
    2. Frequency and severity of past exceedances
    3. Use of measures that are in widespread use
    4. Jurisdiction

        - Reasonableness of Control Measures has been added to Section 4.3 with sub-sections for each of the four nRCP criteria requirements listed above.

(SEPT AND MAY) Clark Language (p 92 for Sept, 108 for May): "During high-wind dust periods, Clark County compliance officers inspect construction and stationary source sites to ensure BACM are being implemented, where any observed violation may receive a Notice of Non-Compliance or a Notice of Violation."

EPA comments:

- Did inspectors find any violations during inspections of source sites during these high-wind dust periods? Please provide some sample information that is representative of what inspectors might produce to document their efforts when responding to a Construction Notice or other Advisory issued because of this (or another) exceptional event.

    - For each date, we provide all regularly scheduled and exceptional event-related inspections as well as any Notices of Non-Compliance or Violation that might have been issued. We also provide images, videos, and proof of inspections at all construction and stationary source sites. This documentation is available in the "Dust Alerts Issues and Compliance Information" Appendix in each demonstration.

(SEPT AND MAY) Clark Language (p 11 for both Sept and May): "Following the EPA's exceptional event guidance, we performed Tier 2 and Tier 3 analyses to show the "clear causal relationship" between the high-wind dust event and the PM10 exceedance event in Clark County, NV, on September 8-9, 2022." (and May 28-29, 2022 respectively)

EPA comments:

- In the nRCP section, please include a reference to the information in section 3 titled "Clear Causal Relationship". Such as, but not limited to:

    - Trajectories of source area (Section 3.2)

- Meteorological and chemical transport modeling (Section 3.1.1)
- PM filter chemical speciation analysis where filter-based monitors are used (Section 3.3.4)
    - We provide information in the nRCP section from Section 3 discussing the high-wind event source region, timeline, transport, and exceedance sites as well as references to information in the main body of the demonstration providing further details.

Comments on September 8-9, 2022, Demonstration:

(SEPT) Clark Language (p 37): "On September 8, 2022, a hurricane-initiated thunderstorm created an outflow boundary with associated high winds speeds. The outflow boundary passage through the Mojave Desert region of northwestern Arizona and southern Nevada drove a windblown dust event that increased PM10 concentrations in Clark County, NV, on September 8-9, 2022. Strong winds in the Mojave Desert source region were well above 25 mph from the outflow boundary passage which lofted, entrained, and transported dust from the source region to Clark County starting between 19:00 and 20:00 PST on September 8 and lasting through 10:00 PST on September 9, 2022. The severe drought conditions affecting the Mojave Desert, as shown in Section 2.2, created an ample source of dust from friable soils. Although wind speeds in Clark County were less than the 25-mph threshold, enhanced wind speeds at upwind meteorological sites in the Mojave Desert rapidly increased to 30-40 mph immediately prior to the enhanced PM10 concentrations experienced in Clark County. Transport from the Mojave Desert to Clark County is clearly evident via meteorological analyses and radar images."

EPA comments:

- Similar to the previous comment. The summary of the origin of the high-wind event is found in Section 3.1. It would be useful to reference Section 3 in Section 4 (the nRCP section) to explain how emissions occurred despite controls and provide a description and contribution of natural sources within the area.
    - The requested summaries have been added to the beginning and end of the nRCP section as well as the Section 4.3.4 discussing jurisdiction.

(SEPT) Clark Language (p 92): "With the implementation of the PM10 SIP control measures, evidence shows a decreasing trend in PM10 design values, especially after BACM implementation (Figure 4.2-1)."

EPA comments:

- Figure 4.2-1 is mislabeled, should be figure 4.3-1

- This has been corrected.

(SEPT) Clark Language (p 92): "The decrease in wind erosion from vacant lands has driven the decreasing trend of PM10 emissions as construction within the Las Vegas Valley overtakes vacant lands. This confirms that PM10 emissions have decreased over the past 20 years since the implementation of BACM from anthropogenic sources."

EPA comments:

- Are the emissions before the timeframe in this figure trending downwards as well?
    - In Section 4.3, we have included additional information on the downward trend of PM_{10} from the successful implementation of BACM from the 1990s and onward.

Comments on May 28-29, 2022, Demonstration:

(MAY) Clark Language (p 33): "During the period between May 28-29, 2022, dust from the Mojave Desert impacted the Las Vegas region and led to 24-hour average PM10 concentrations of 158 µg/m3 at Jerome Mack, 169 µg/m3 at Liberty High School, and 155 µg/m3 at Walnut Community Center on May 28, 2022, and concentrations of 175 µg/m3 at Jerome Mack, 204 µg/m3 at Liberty High School, and 183 µg/m3 at Green Valley on May 29. Strong winds in the Mojave Desert region of southeastern California produced dense blowing dust that was transported to the Las Vegas metropolitan area, increasing PM10 concentrations starting at 16:00-18:00 PST and peaking at 20:00 PST on May 28, 2022. Enhanced PM10 concentrations lasted through 08:00-11:00 PST on May 29, 2022. One other site (Jean) also experienced PM10 concentrations greater than the 24-hour PM10 NAAQS, however the site is outside the nonattainment area and not considered regulatorily significant. All other sites within the Las Vegas Valley experienced enhanced PM10 concentrations concurrently with the exceeding sites. Several large-scale meteorological factors led to favorable conditions for blowing dust on this day. To account for these meteorological factors, observation data were analyzed leading up to and during the dust event. The following narrative will discuss the meteorological factors that led to this blowing dust event. "

EPA comments:

- Summary of the origin of the high-wind event origin found in Section 3.1. Would be useful to reference Section 3 in Section 4 to explain how emissions occurred despite controls and provide a description and contribution of natural sources within the area.
    - An explanation of the high-wind event origin and explanation of how emissions occurred outside of the Clark County jurisdiction, and therefore, despite controls has been included in Section 4.3.4.

(MAY) Clark Language (p 111-112): "Dust Advisories are issued for forecasts of sustained wind speeds of 25 mph or more, or wind gusts of 40 mph or more. Construction Notices are issued for

forecasts of sustained wind speeds of 20 mph or more, or wind gusts of 30-35 mph or more. Upon issuance of either a Construction Notice or an Advisory, DAQ directs stationary sources to inspect their site(s), cease blasting operations, and employ BACM to stabilize all disturbed soils and reduce blowing dust (see Appendix D). This measure indicates the implementation of BACM and enforcement procedures by Clark County. Recipients of a Construction Notice are informed that DAQ officials will inspect sites to ensure BACM is being implemented. On May 27, 2022, a Construction Notice was issued for Friday, May 27 through Saturday, May 28. On Sunday, May 29, a Dust Alert was issued by Clark County due to blowing dust via southwesterly winds from the Mojave Desert."

EPA comments:

- We would be interested in seeing a sample or representative record from these efforts.
    - For dates with a Dust Advisory or Construction Notice issued, we include all inspection, compliance, and enforcement materials in the "Dust Alerts and Compliance Information" Appendix. For dates that did not have a Dust Advisory or Construction Notice issued, we provide an example of the typical inspection, compliance, and enforcement materials if an alert had been issued. Regularly scheduled inspections and associated compliance/enforcement information are included for all dates.