Proposed Federal Ozone Standards and Ground Level Ozone Pollution in San Juan County

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Clean Air Act

- The Clean Air Act requires the United States Environmental Protection Agency (US EPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment.

- National standards exist for six pollutants: ozone, particulate matter, nitrogen oxides, carbon monoxide, sulfur dioxide, and lead.

- For each of these pollutants, the Clean Air Act requires EPA to set
  - Primary standard to protect public health
  - Secondary standard to protect public welfare and the environment

Proposed Revisions to Ozone Standards

- The act requires US EPA to review the scientific information and the standards for each pollutant every five years, and to obtain advice from the Clean Air Scientific Advisory Committee (CASAC) on each review.

- EPA last reviewed and revised the ozone standards in 2008 and set both the primary and secondary standards at a level of 0.075 ppm.
  - 2008 standard was higher than the range recommended by CASAC

- On Sept. 16, 2009, EPA announced it would reconsider this decision.

US EPA - Setting Standards

Different considerations apply to setting NAAQS than to achieving them

- Setting NAAQS: health and environmental effects.
- Achieving NAAQS: account for cost, technical feasibility, time needed to attain.

Why is US EPA Reconsidering now?

- The ozone standards set in 2008 were not as protective as recommended by EPA's panel of science advisors, CASAC.

Schedule for Reconsideration

- January 6, 2010: US EPA proposed revisions to the National Ambient Air Quality Standards (NAAQS) for ground-level ozone.

- Public comment period for 60 days after proposal is published in Federal Register. The Deadline for comments is March 22, 2010.

- Final Rule will be signed by August 31, 2010.

Proposed Revisions to Ozone Standards

The proposed revisions affect both types of ozone standards:

- Primary standard to protect public health
- Secondary standard to protect public welfare and the environment

Proposed Revisions to Primary Ozone Standard

- US EPA has proposed a range of 0.060 – 0.070 ppm for the primary 8-hour standard.

- Consideration of children's health plays a central role in US EPA's decision.
  - Children are at increased risk from exposure to ozone because their lungs are still developing
  - and they are more likely to be active outdoors, which increases their exposure.

Proposed Revisions to Primary Ozone Standard

- The decision also places additional weight on key pieces of scientific evidence (see US EPA Fact Sheet)
  - evidence from clinical studies showing effects in healthy adults at 0.060 ppm, including decreased lung function and respiratory symptoms;
  - evidence from clinical and epidemiological studies indicating that people with asthma are likely to experience larger and more serious effects than healthy people;
  - epidemiological evidence indicating associations for a wide range of serious health effects, including respiratory-related emergency department visits and hospital admissions and premature mortality, that extend below the current standard level of 0.075 ppm; and
  - estimates from the risk and exposure assessment indicating that important improvements in public health could be achieved by a standard more stringent than 0.075 ppm.

Primary Ozone Standard

- The primary standard is measured in parts per million (ppm).

- Compliance with the standard is based on
  - 3-year average of the annual fourth-highest daily maximum 8-hour average ozone concentrations
  - This is also know as the Design Value

Proposed Revisions to Secondary Ozone Standard

- US EPA has proposed a separate cumulative secondary standard within a range of 7-15 ppm-hours.

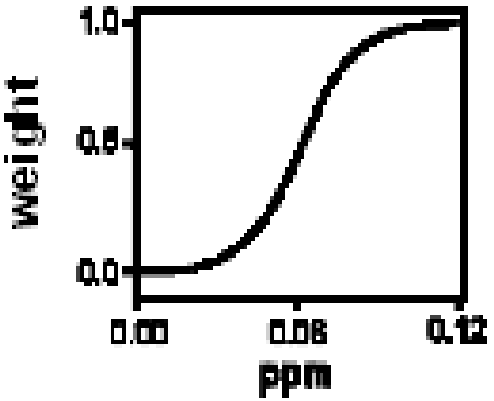
- The new secondary standard, also called W126, is designed to account for the cumulative effects of repeated ozone exposures on sensitive vegetation during the three months of the year when ozone concentrations are highest.

Understanding the W126 Form (from Erika Sasser)

*Slide from US EPA

Steps in calculating W126 value for a particular site:

1. Measure hourly O_3 value
2. Weight hourly O_3 value based on concentration: lower concentrations receive less weight than higher concentrations
3. Add the weighted hourly O_3 values for each hour of a 12-hour daylight period (8 am – 8 pm) to calculate daily value for each day
4. Sum daily values over consecutive 3-month period with highest ozone levels
5. W126 = Sum of all weighted daily O_3 values over highest consecutive 3-month period, in ppm-hrs



Example of weighting over 5-hour period:

Hourly O_3 (ppm)	Weight	W126 (ppm-hrs)
0.03	0.01	0.00
0.05	0.11	0.01
0.06	0.30	0.02
0.08	0.84	0.07
0.10	1.0	0.10
	SUM:	0.20

Daily value = sum of values over 12 daylight hours

Commenting on Proposed Rule

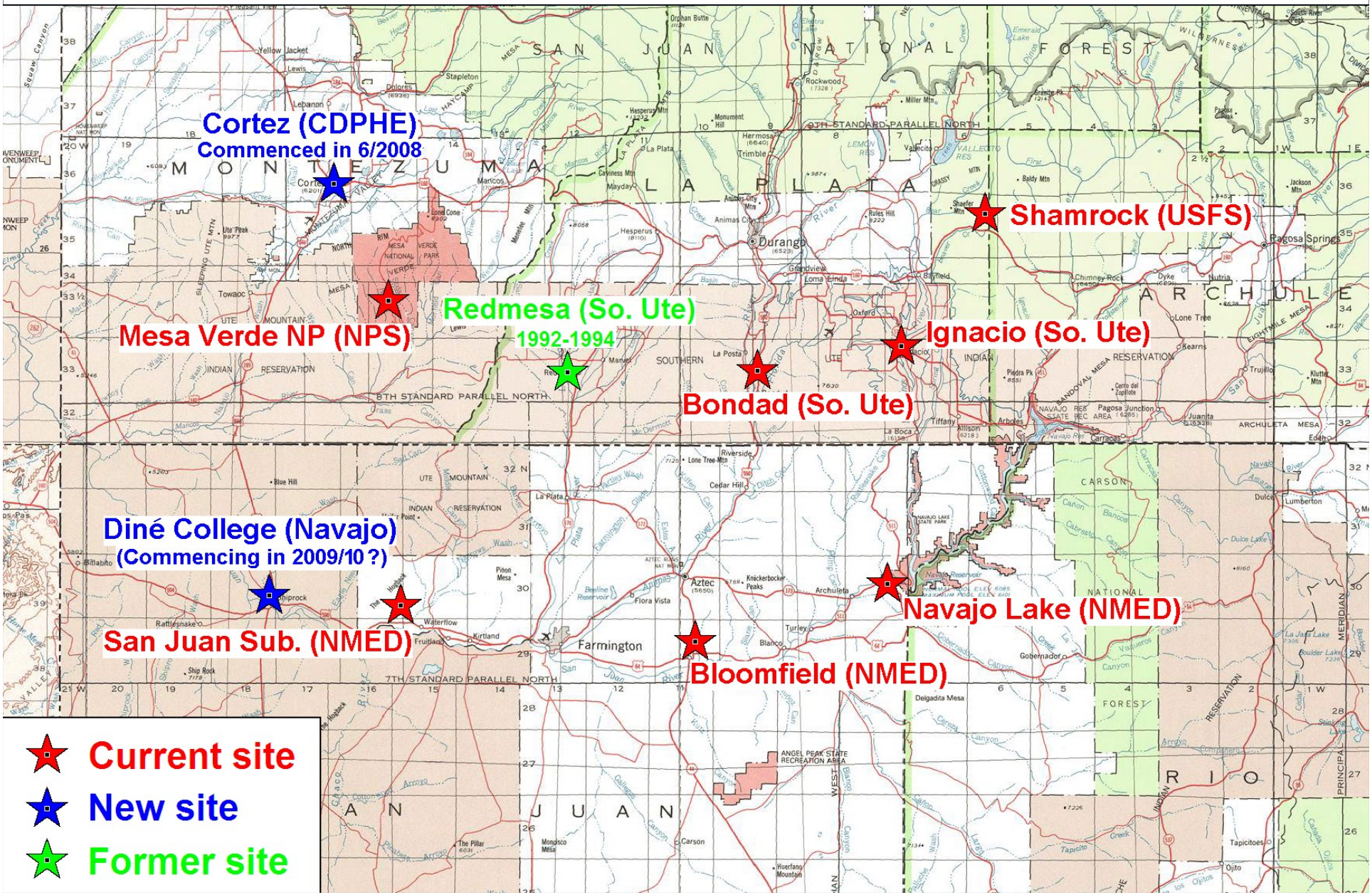
- US EPA will accept comments until March 22, 2010.

- To download the Federal Register notice about the proposed revisions to the ozone standards, visit www.epa.gov/ozonepollution.

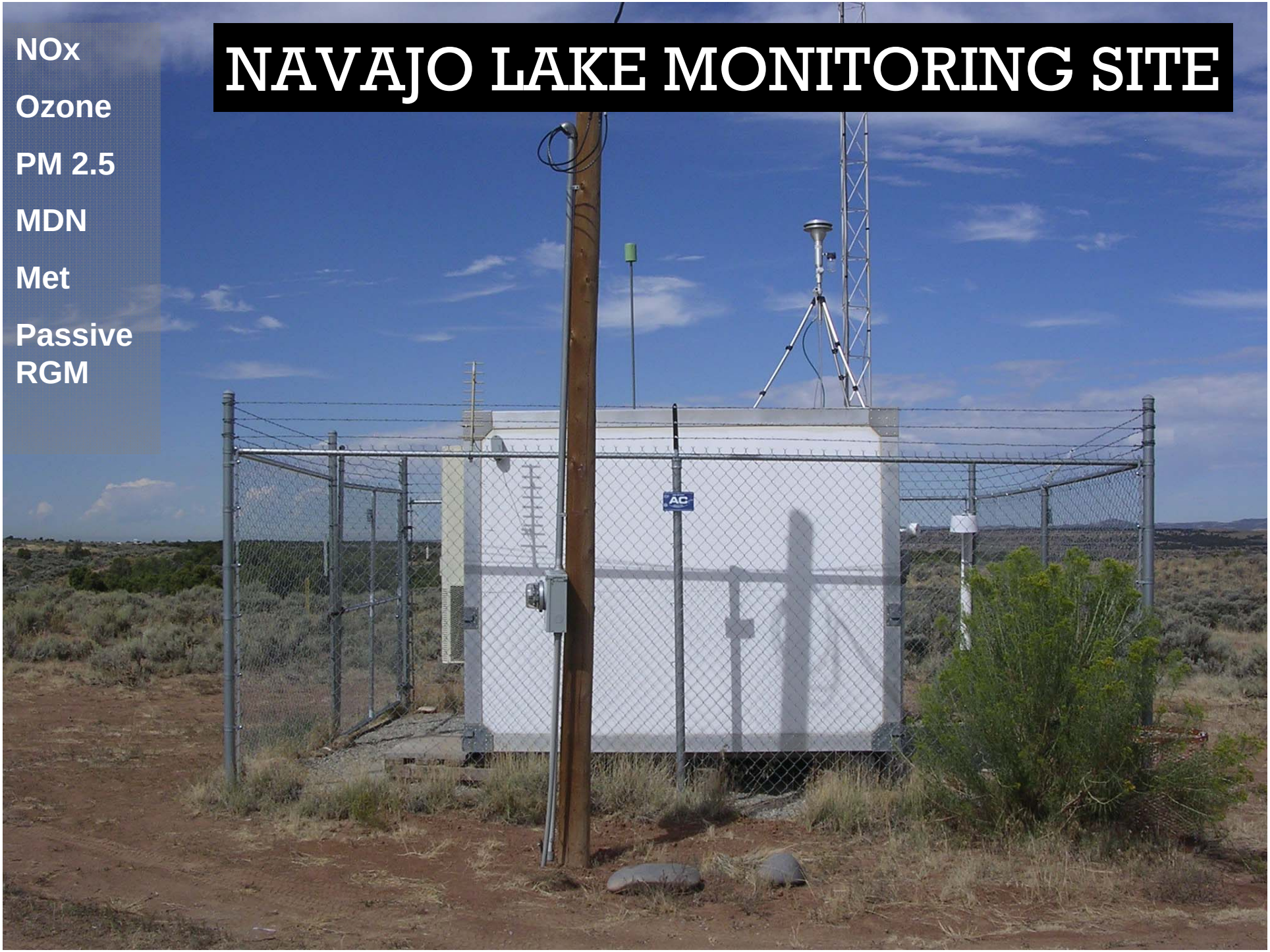
Commenting on Proposed Rule

- Comments should be identified by Docket ID No. EPA-HQ-OAR-2005 -0172 and submitted by one of the following methods:
  - Federal eRulemaking Portal (http://www.regulations.gov),
  - e-mail (a-and-r-docket@epa.gov),
  - Mail (EPA Docket Center, Environmental Protection Agency, Mail code 6102T, 1200 Pennsylvania Avenue, NW, Washington, DC 20460), or
  - Hand delivery (EPA Docket Center, Environmental Protection Agency, Room 3334, 1301 Constitution Avenue, NW, Washington, DC).

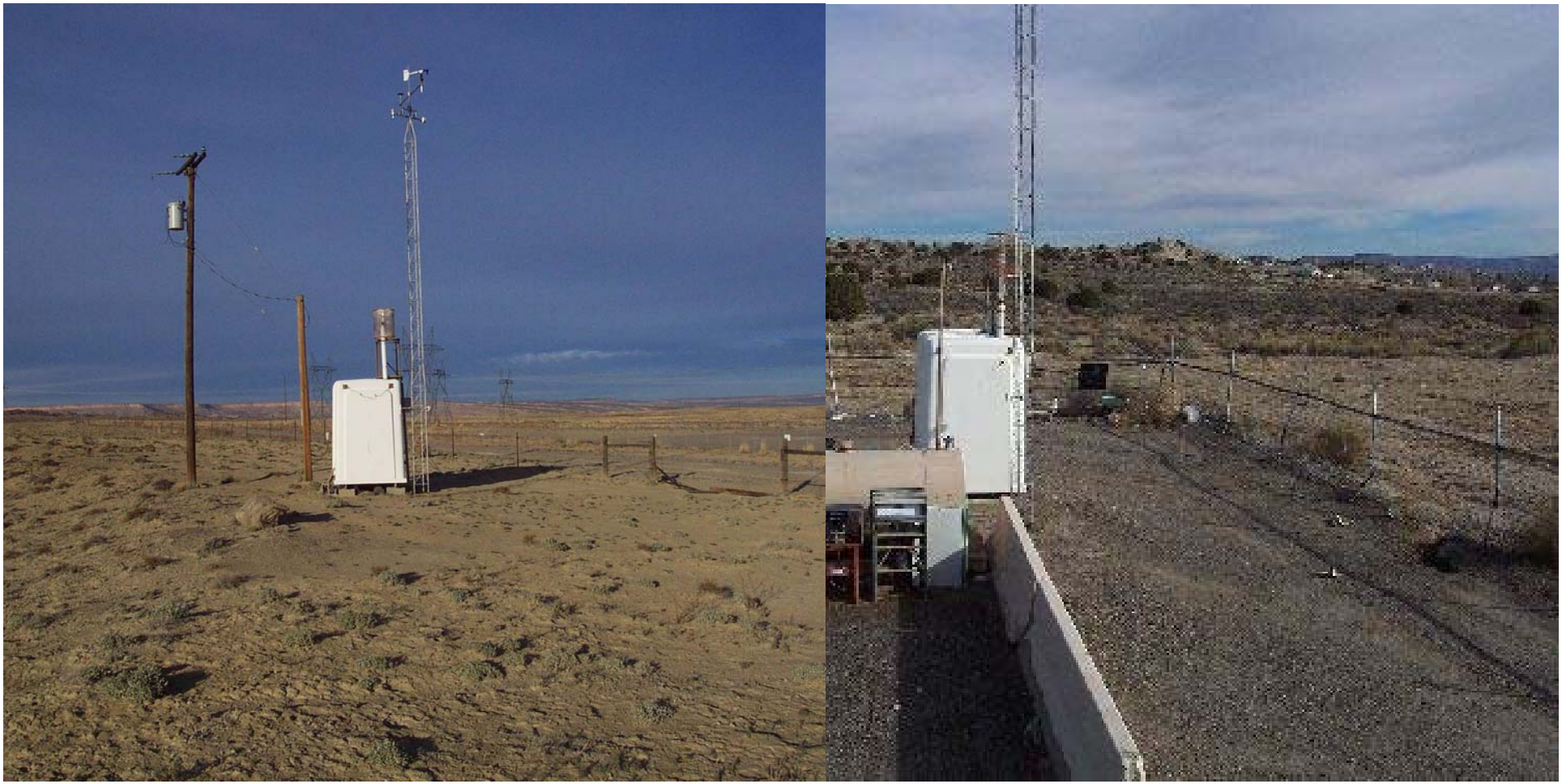
Ozone Monitoring Sites in Four Corners Area



NAVAJO LAKE MONITORING SITE



NMED Monitors
Substation(left), Bloomfield(Right)

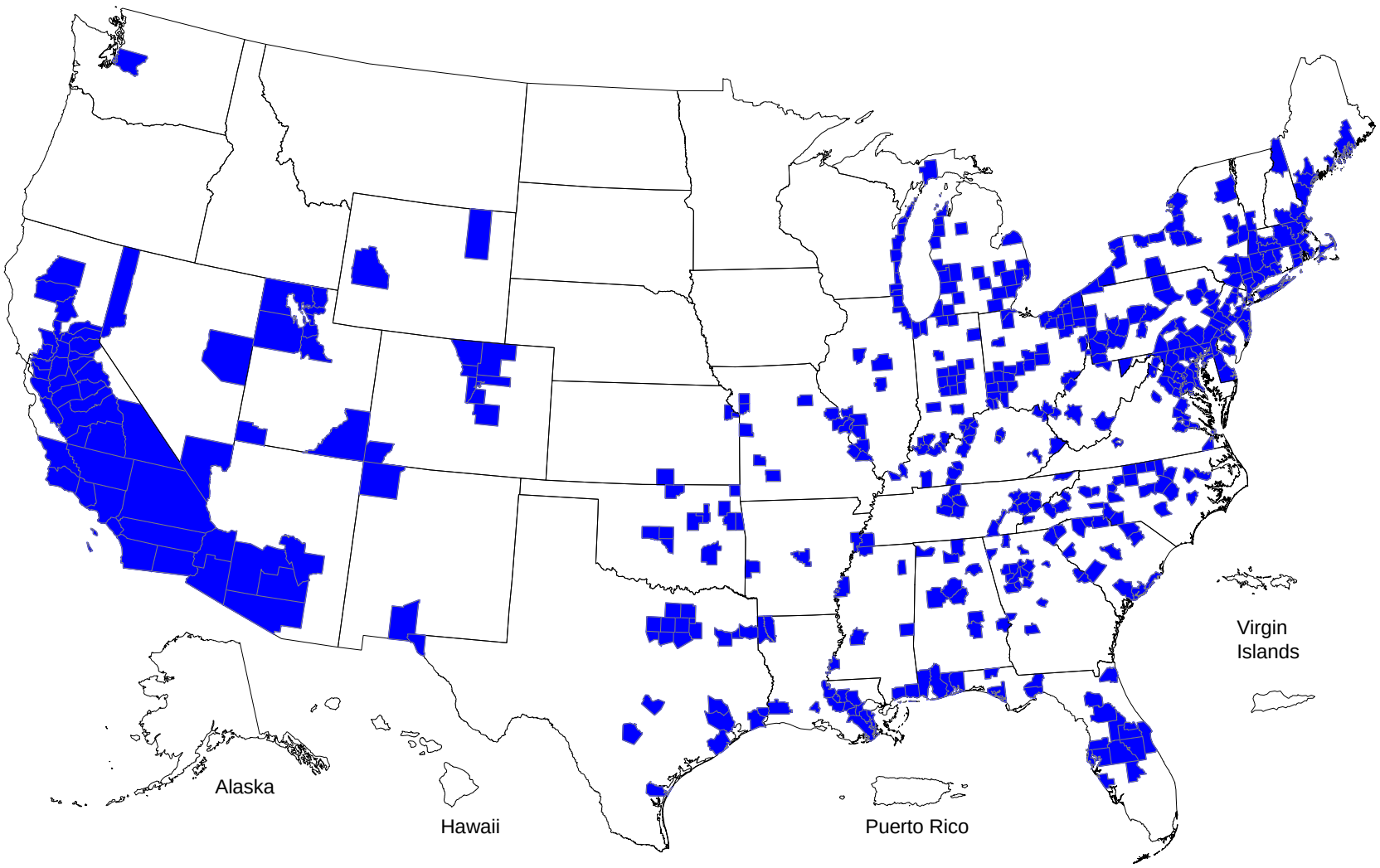


Ozone levels in San Juan County for Comparison with Proposed Ozone Standards

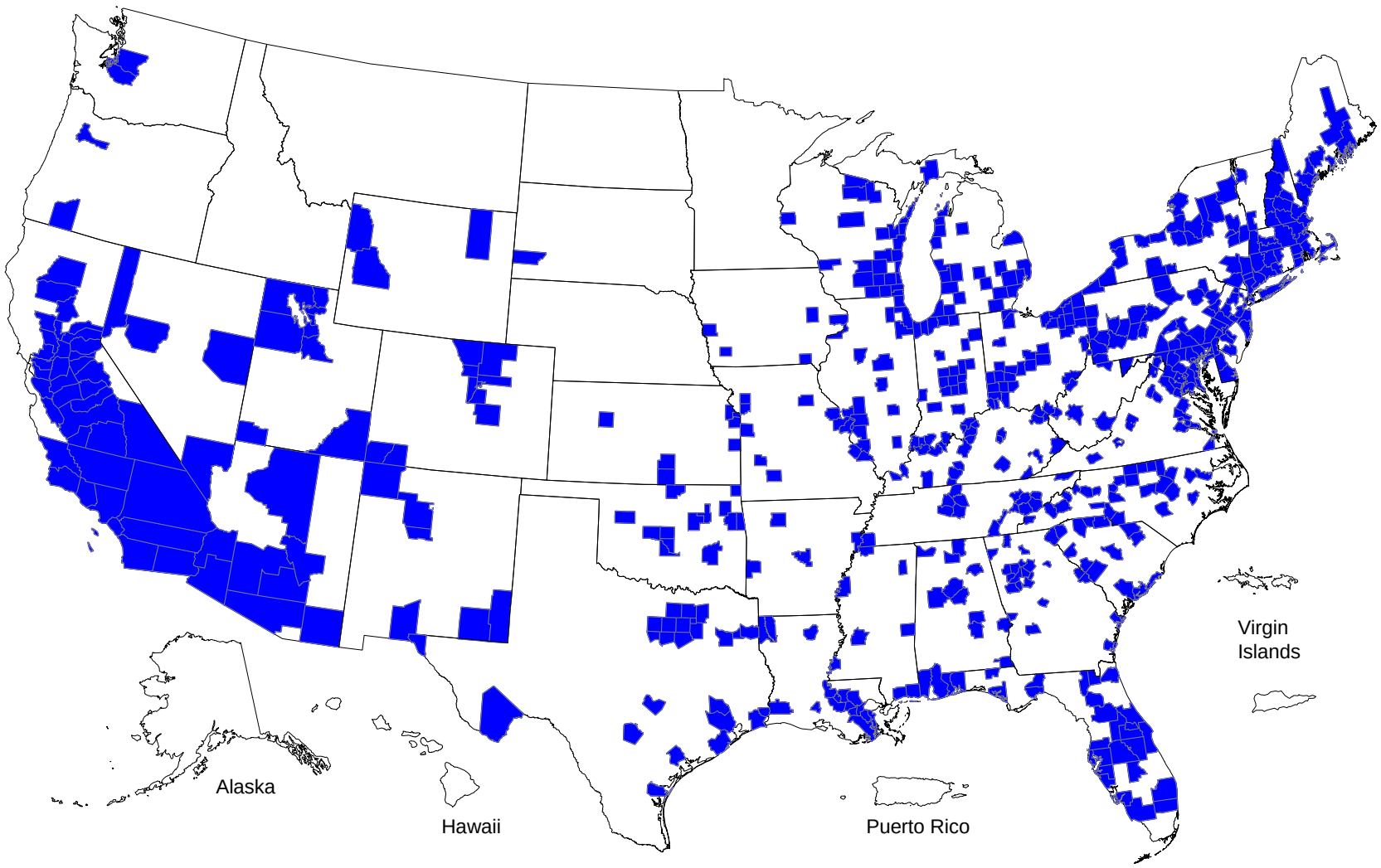
- 3 Year Averages (2006-2008)
  - Primary Standard:
    - San Juan County: 0.076 ppm
  - Secondary Standard:
    - San Juan County: 24 ppm-hrs

- US EPA may use 2008-2010 data to determine attainment/nonattainment.

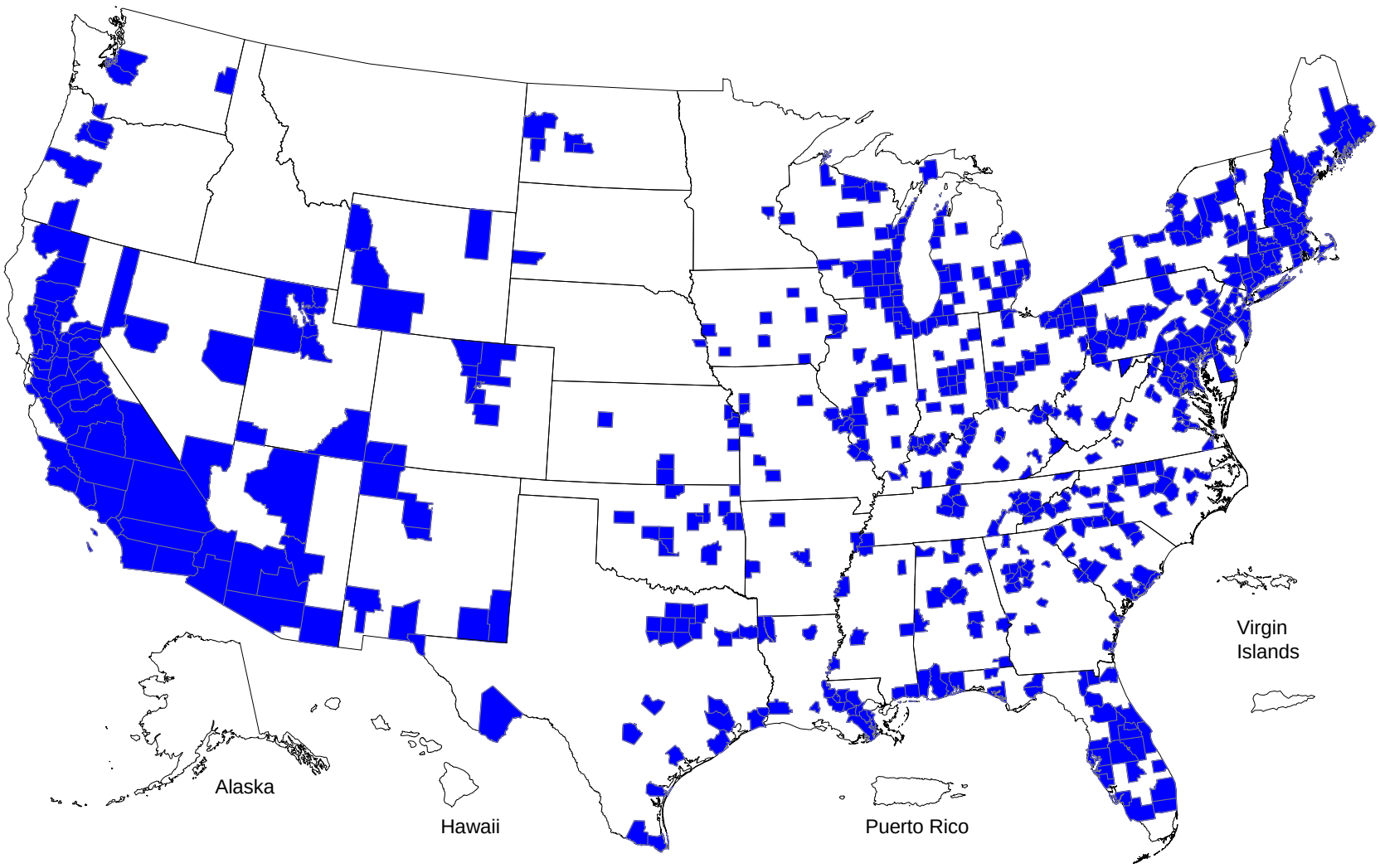
Unofficial Counties with 2006-2008 8-hour Design Value Above 0.070 ppm



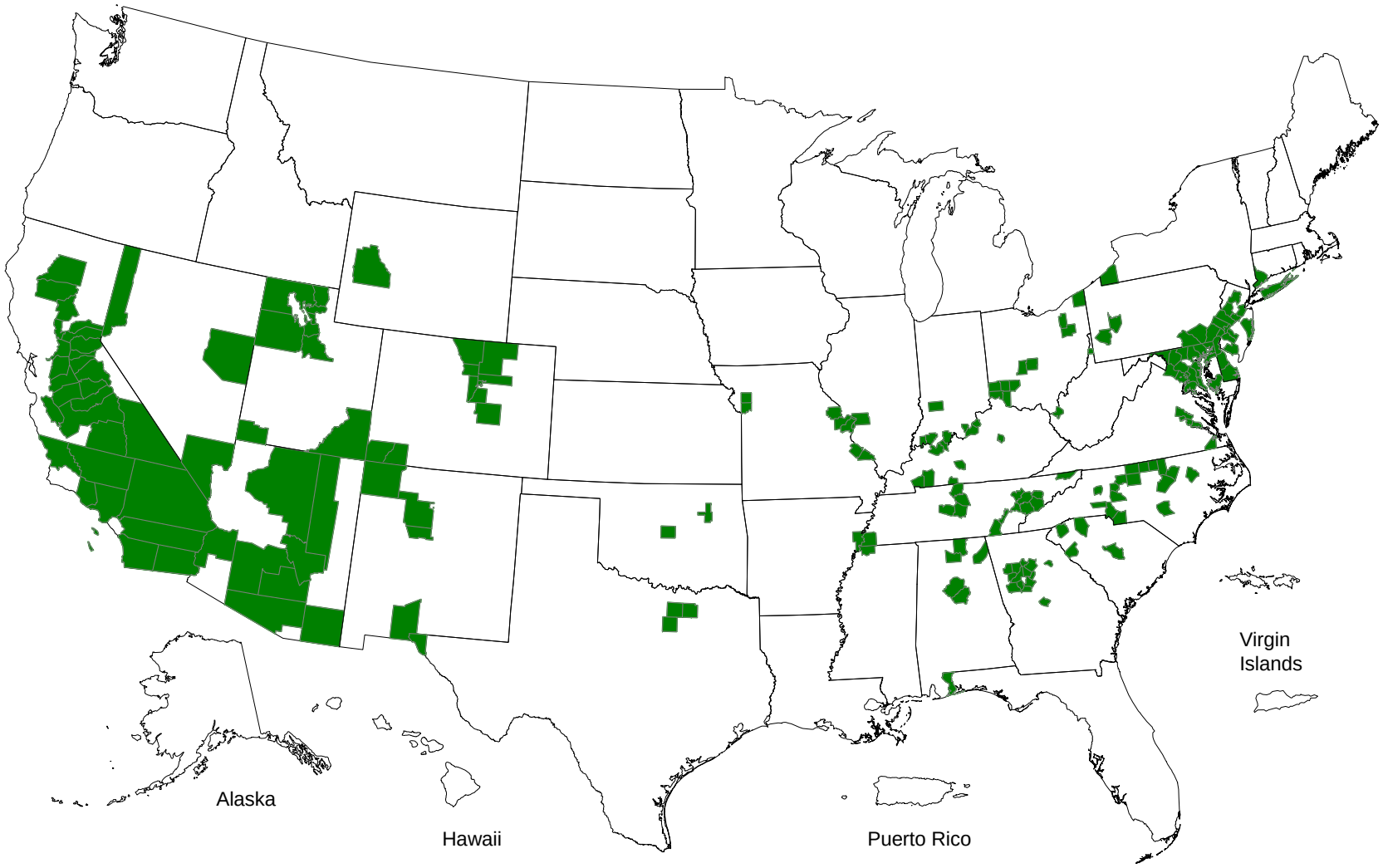
Unofficial Counties with 2006-2008 8-hour Design Value Above 0.065 ppm



Unofficial Counties with 2006-2008 8-hour Design Value Above 0.060 ppm



Unofficial Counties with 2006-2008 W126 Value Above 15 ppm-hours



What is Ground Level Ozone?

- Ozone (O3) is a gas composed of three oxygen atoms.
- Ozone is not usually emitted directly into the air, but at ground-level is created by a chemical reaction between oxides of nitrogen (NOx) and volatile organic compounds (VOC) in the presence of sunlight.
- Unstable, can be consumed by fresh NOx emissions.
  - O3 levels can increase at the location where NOx emissions are reduced (NOx scavenging/disbenefit)

Good Up High, Bad Near By

- "Good" ozone occurs naturally in the stratosphere approximately 6 to 30 miles above the earth's surface and forms a layer that protects life on earth from the sun's harmful rays.

Good Up High, Bad Near By

- In the earth's lower atmosphere, ground-level ozone adversely affects public health, flora and fauna.
- Emissions from industrial facilities and electric utilities, motor vehicle exhaust, gasoline vapors, and chemical solvents are the major man-made sources of NOx and VOCs.
- Sunlight and hot weather cause ground-level ozone to form in harmful concentrations in the air.

Ozone and Public Health

Exposures to ozone can:

- Reduce lung function, making it more difficult for people to breathe as deeply and vigorously as normal,
- Irritate the airways, causing coughing, sore or scratchy throat, pain when taking a deep breath and shortness of breath,
- Inflame and damage the airways,
- Increase frequency of asthma attacks,
- Increase susceptibility to respiratory infection, and
- Aggravate chronic lung diseases such as asthma, emphysema and bronchitis.

Ozone and Public Health

- In some people, these effects can lead to:
  - Increased medication use among asthmatics,
  - More frequent doctors visits,
  - School absences,
  - Increased emergency room visits and hospital admissions, and
  - Increased risk of premature death in people with heart and lung disease.

- Groups that are at greater risk from ozone include:
  - People with lung disease, especially children with asthma.
  - Children and older adults.
  - People who are active outside, especially children and people who work outdoors.

Ozone and the Environment

- Ozone can cause damage to plants and crops.
- When sufficient ozone enters leaves of a plant it can:
  - Interfere with ability of sensitive plants to produce and store food
  - Visibly damage leaves of trees and other plants

Photos from
US EPA

So, How Do These Ozone Levels Affect San Juan County?

Revisions to Federal Air Standards

- The Clean Air Act requires states and tribes to determine areas of attainment and nonattainment whenever the federal air standards are revised.

- State Designation Recommendations are due to US EPA by January 2011.

New Mexico Statute 1978 § 74-2-5.3

- **“REGULATION OF SOURCES OF OZONE FORMING EMISSIONS”**
- If 03 concentrations > 95% of NAAQS, EIB shall:
  - adopt a plan, including regulations, to control emissions on NOx and VOC to provide for attainment and maintenance of the standard.
  - Regulations shall be limited to sources of emissions within the area of the state where the ozone concentrations exceed ninety-five percent of the national ambient air quality standard.
- Allows the state to be more proactive for those areas that are violating or in jeopardy of violating a federal air quality standard.

What is the Next Step?

NMED Technical Work Group

- NMED-AQB would like to create a Technical Work Group of 10-15 participants on San Juan County ozone action.

- The technical work group will provide input to a plan of action in case the area exceeds the new standards or exceeds 95% of the new standards.

- The entire air quality group will be kept informed on a regular basis of the progress of the technical work group.

NMED Technical Work Group

- Participation on the technical work group will require:
  - Monthly conference call meetings
  - A commitment to improving air quality in the Four Corners

US EPA Implementation

- EPA is planning to propose an implementation rule in spring 2010.

Questions?

More info

Contact NMED-AQB
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http://www.nmenv.state.nm.us/aqb/Ozone.html
E-mail or call if interested in the technical work group

For more info on the US EPA Proposal or to make comments on it, please see http://www.epa.gov/ozonepollution