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Ms. Dana Allen
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ENVIRONMENTAL PLANNING
AND PERMITTING

Date:
July 12, 2011

Phone:
303-471-3438

Email:
jerry.koblitz@arcadis-us.com

Re: Uncontrolled SO_2 Emission Modeling

Dear Ms. Allen,

An air dispersion modeling analysis of uncontrolled sulfur dioxide (SO_2) emissions from the MHA Clean Fuels Refinery has been prepared at the request of the U.S. Environmental Protection Agency (EPA), Region 8.

In the dispersion modeling update dated June 2011, SO_2 emissions from the flare were modeled as intermittent emissions following EPA guidance for 1-hour NO_2 emissions. This was justified by the fact that a redundant sulfur recovery unit (SRU) system will be used at the MHA refinery. Therefore, there would be a very low probability that the SRU system would be bypassed sending high concentrations of sulfur to the flare.

This current analysis assumes that the SRU system will be bypassed continuously for a period of five-years. This operating scenario is the equivalent of operating continuously at full capacity over this period with 560 lb/hr of SO_2 being emitted from the flare. In addition, the model results assume that the worst-case meteorological conditions and historically high background concentrations would be paired with these low-probability elevated SO_2 emissions from the flare.

Two National Ambient Air Quality Standards (NAAQS) were evaluated; 1-hour SO_2 and 24-hour SO_2. This modeling used the same source and receptor configurations that were used in the June 2011 modeling analysis.

The 24-hour SO_2 modeling showed that the corresponding NAAQS would not be exceeded.

The 1-hour SO_2 modeling resulted in a high-fourth-high (H4H) five-year average of 155 µg/m³. With a conservative background SO_2 concentration of 96 µg/m³ (measured about five miles northwest of the Antelope Valley Station coal-fired power plant and the Great Plains Synfuels Plant) the combined ambient concentration was 251 µg/m³. This value is 128 percent of the NAAQS which is 196 µg/m³. Given the extreme amount of conservatism in this analysis this value is still relatively close to the NAAQS.

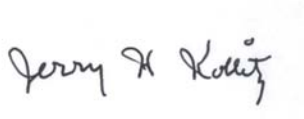
The attachment to this letter shows the geographical scope of estimated ambient concentrations resulting from continuous uncontrolled SO_2 emissions. Each figure represents the fourth-high impacts for each year of meteorological data without the addition of background SO_2. The 100 µg/m³ contour represents the NAAQS (196 µg/m³) minus background (96 µg/m³).

These contours demonstrate that, even with the extremely conservative assumptions used in this analysis, concentrations that may exceed the NAAQS (depending on background concentrations) occur over a limited area surrounding the MHA Refinery.

Electronic copies of the modeling files can be made available upon request.

Should you have questions on this analysis, please let me know.

Sincerely,

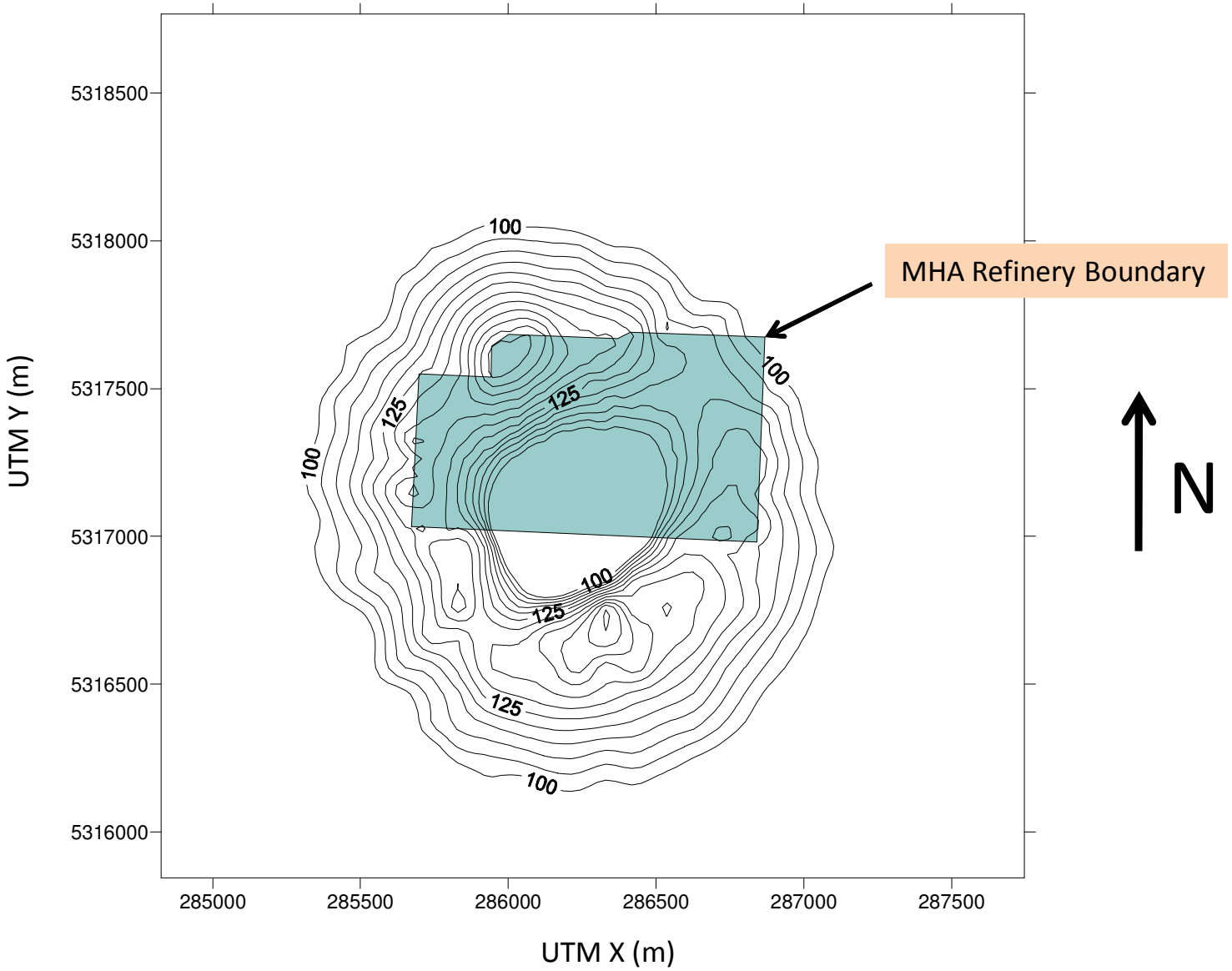


Jerry Koblitz,
Environmental Planning and Permitting
Business Practice Director

Attachments

Cc: Gail Tonnesen
Gordon Frisbie
Robert Woolley
Richard Mayer

2005 Meteorological Data
1-Hr 4th High SO_2 Impacts Greater than 100 µg/m³
Uncontrolled SO_2 Emissions - No Sulfur Recovery



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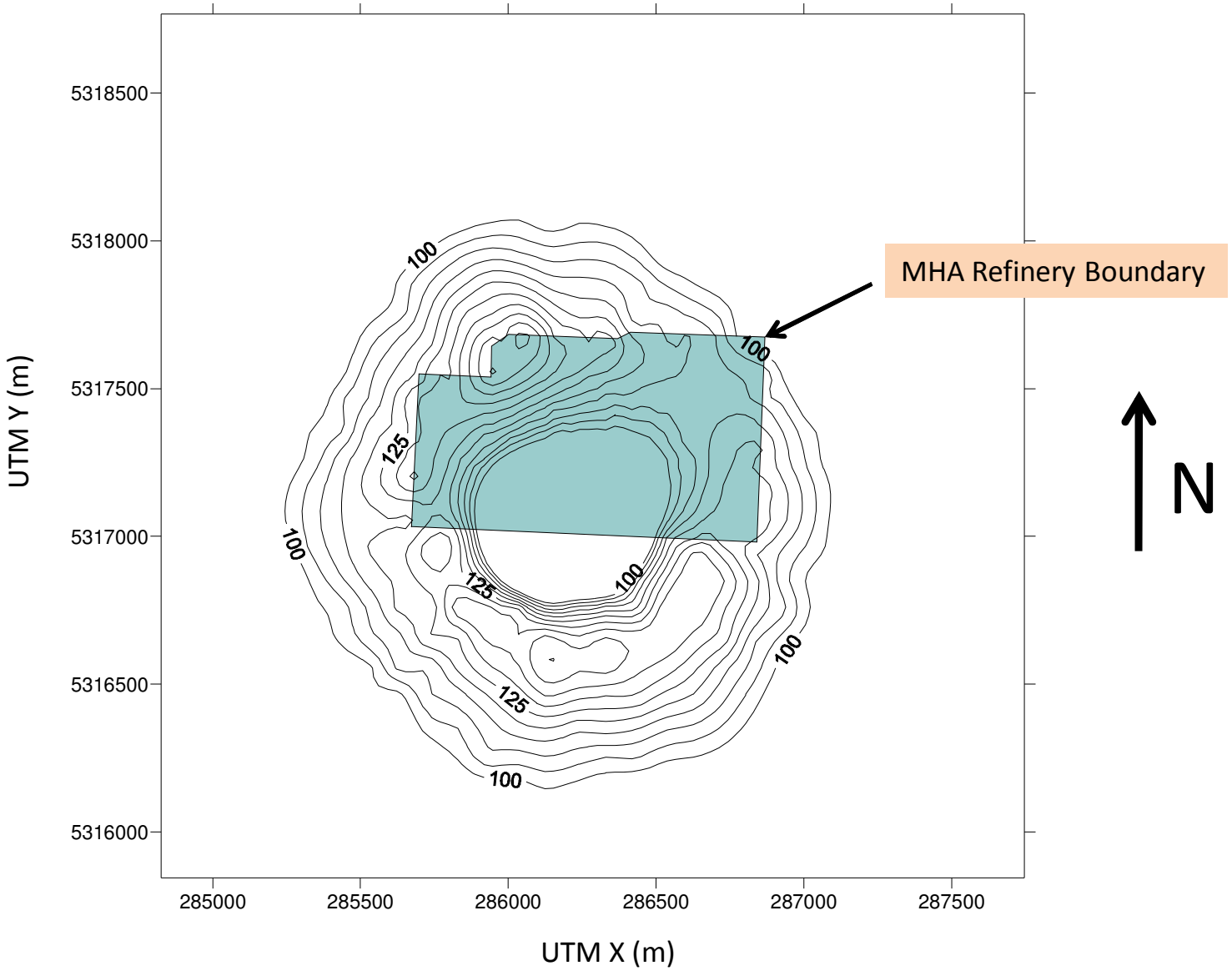
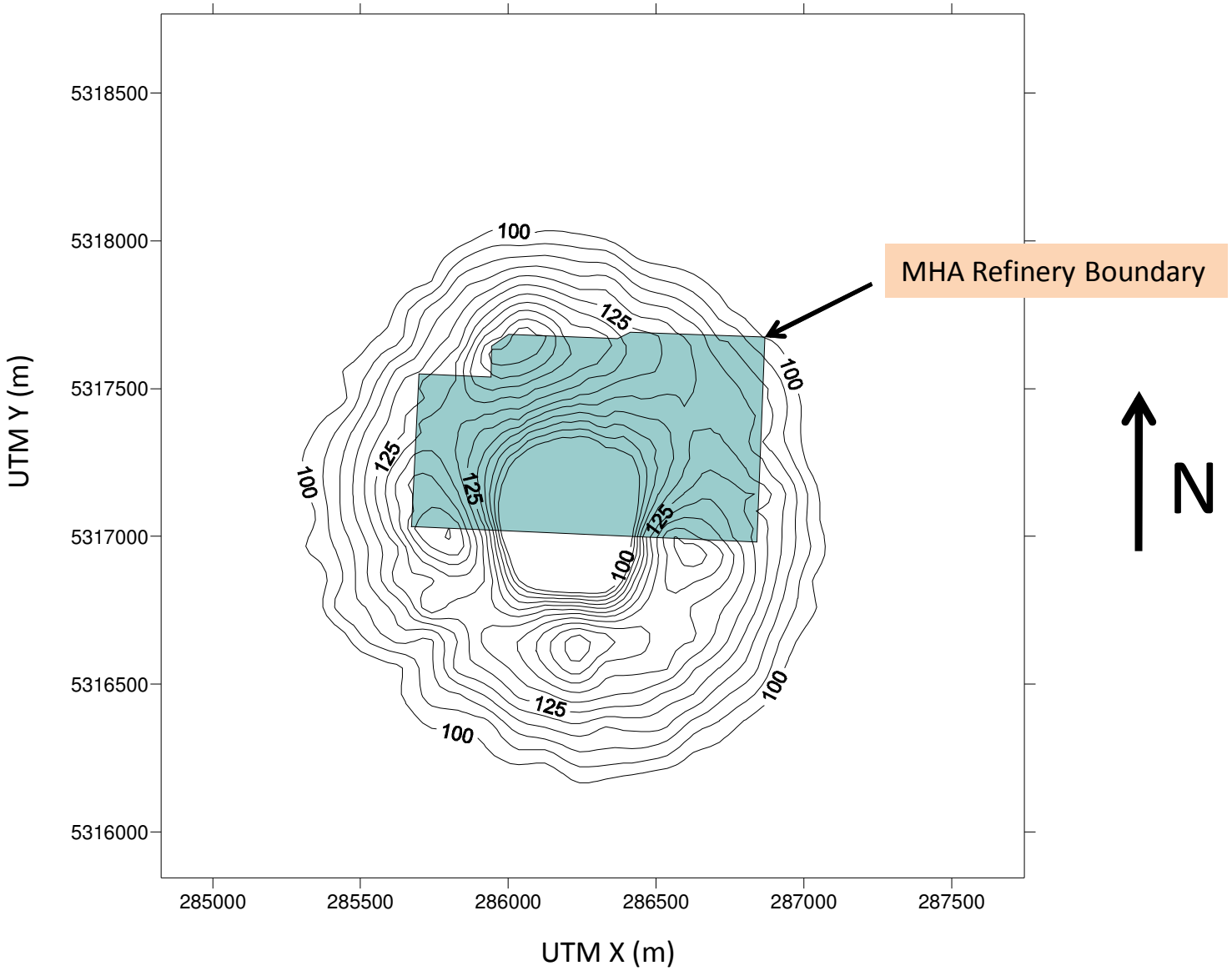
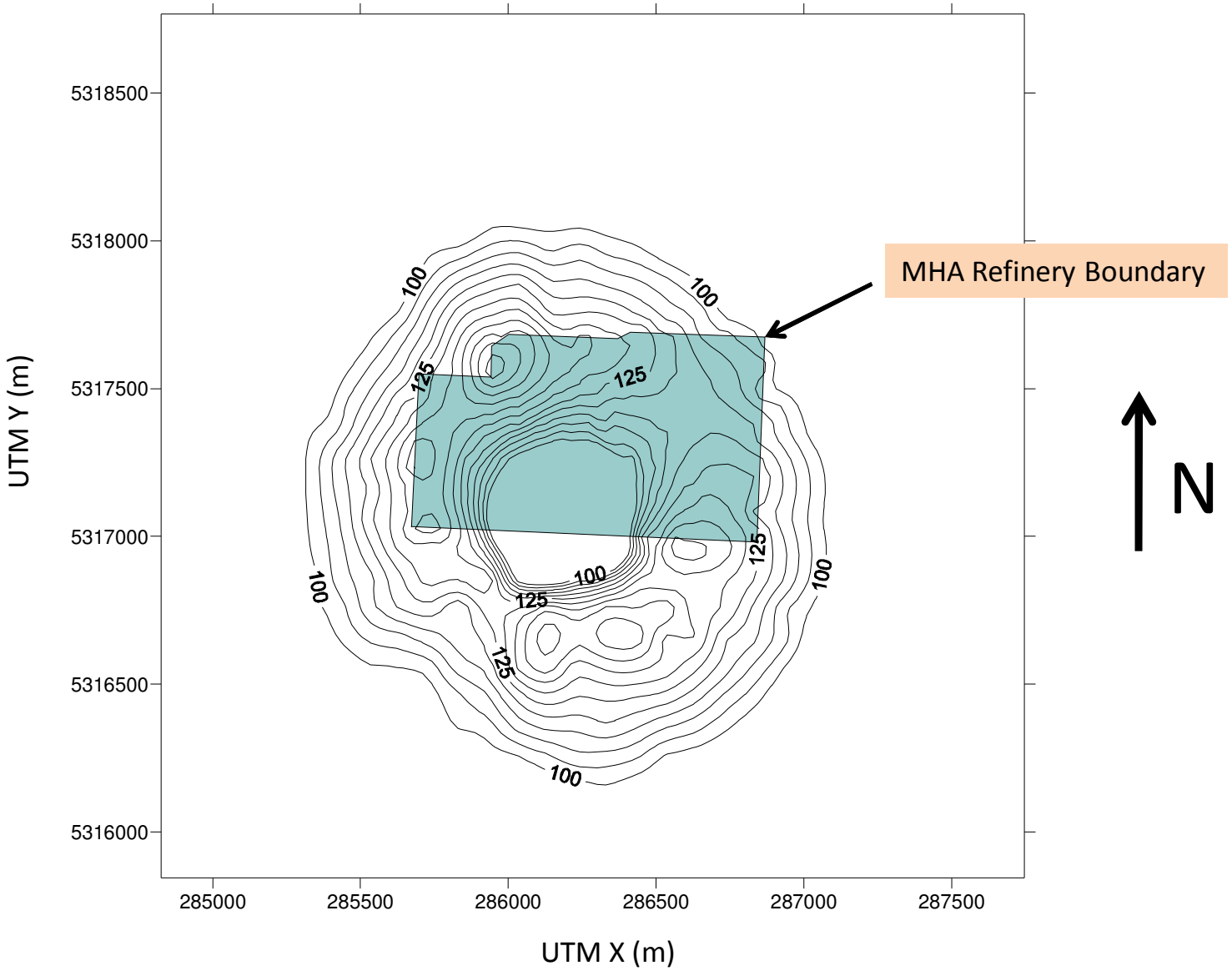


2007 Meteorological Data
1-Hr 4th High SO_2 Impacts Greater than 100 µg/m³
Uncontrolled SO_2 Emissions - No Sulfur Recovery



2008 Meteorological Data
1-Hr 4th High SO_2 Impacts Greater than 100 µg/m³
Uncontrolled SO_2 Emissions - No Sulfur Recovery



2009 Meteorological Data
1-Hr 4th High SO_2 Impacts Greater than 100 µg/m³
Uncontrolled SO_2 Emissions - No Sulfur Recovery