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Portland Air Toxics Assessment (PATA)

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National Air Toxics Assessment (NATA)

- EPA Urban Air Toxics Strategy – Phase 2
- 33 urban air toxics
- 1996 emissions inventory
- Default assumptions
- County-level

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NATA Results

- Multnomah, Clackamas, and Washington Counties exceed health benchmark levels for 14 air toxics - acetaldehyde, acrolein, benzene, 1,3 butadiene, carbon tetrachloride, chloroform, chromium, diesel particulate matter, ethylene dibromide, ethylene dichloride, formaldehyde, nickel, perchloroethylene, and polycyclic organic matter (POM)
- 6 of which are greater than 10 times the health benchmark levels - acrolein, benzene, chromium, diesel particulate matter, formaldehyde and polycyclic organic matter

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Portland Air Toxics Assessment (PATA)

- Test geographic approach of air toxics rules
- 12 NATA air toxics - primary formaldehyde, primary acetaldehyde, primary acrolein, benzene, 1,3 butadiene, chloroform, perchloroethylene, chromium, nickel, arsenic, POM (as 16-PAH)
- Did not model carbon tetrachloride, ethylene dibromide, and ethylene dichloride
- Included diesel particulate matter
- 1999 emissions inventory
- Local assumptions
- Census tract-level

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Data Refinements

- Refined emissions inventory
  - Point sources
  - Area sources
  - Mobile sources
    - METRO – Mobile 5a
- Refined meteorological data
- Refined topographical data
- Refined emissions allocation

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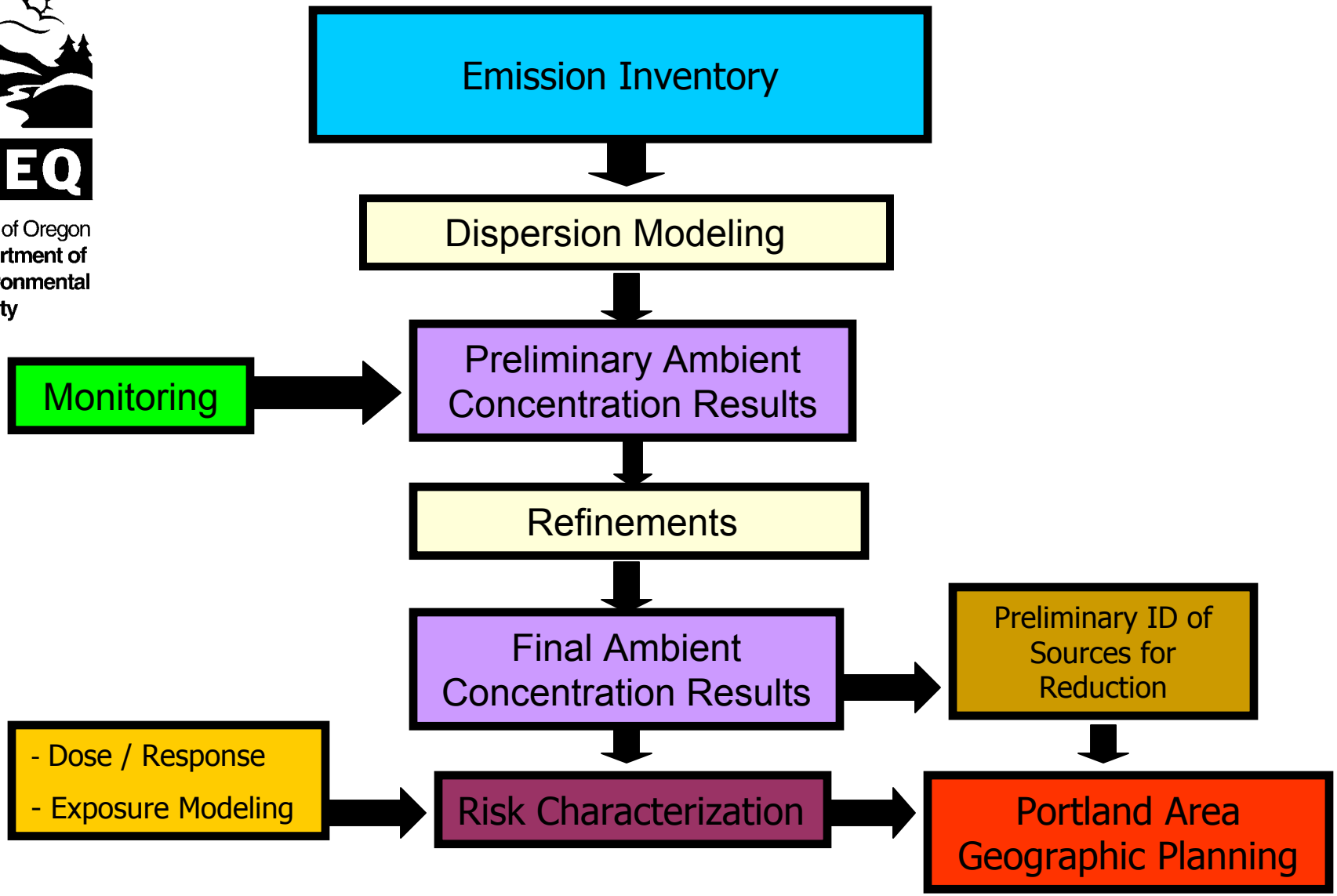

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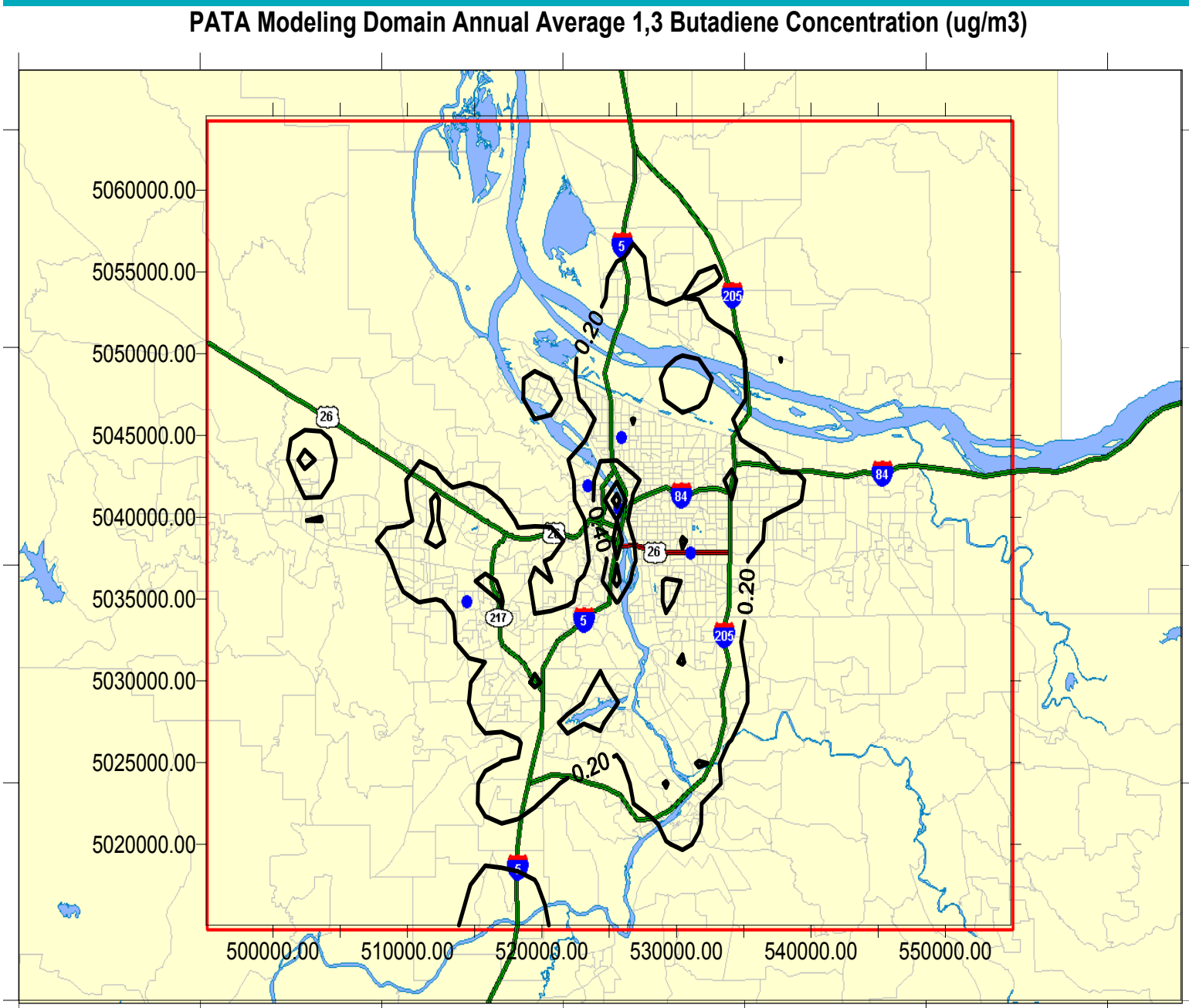

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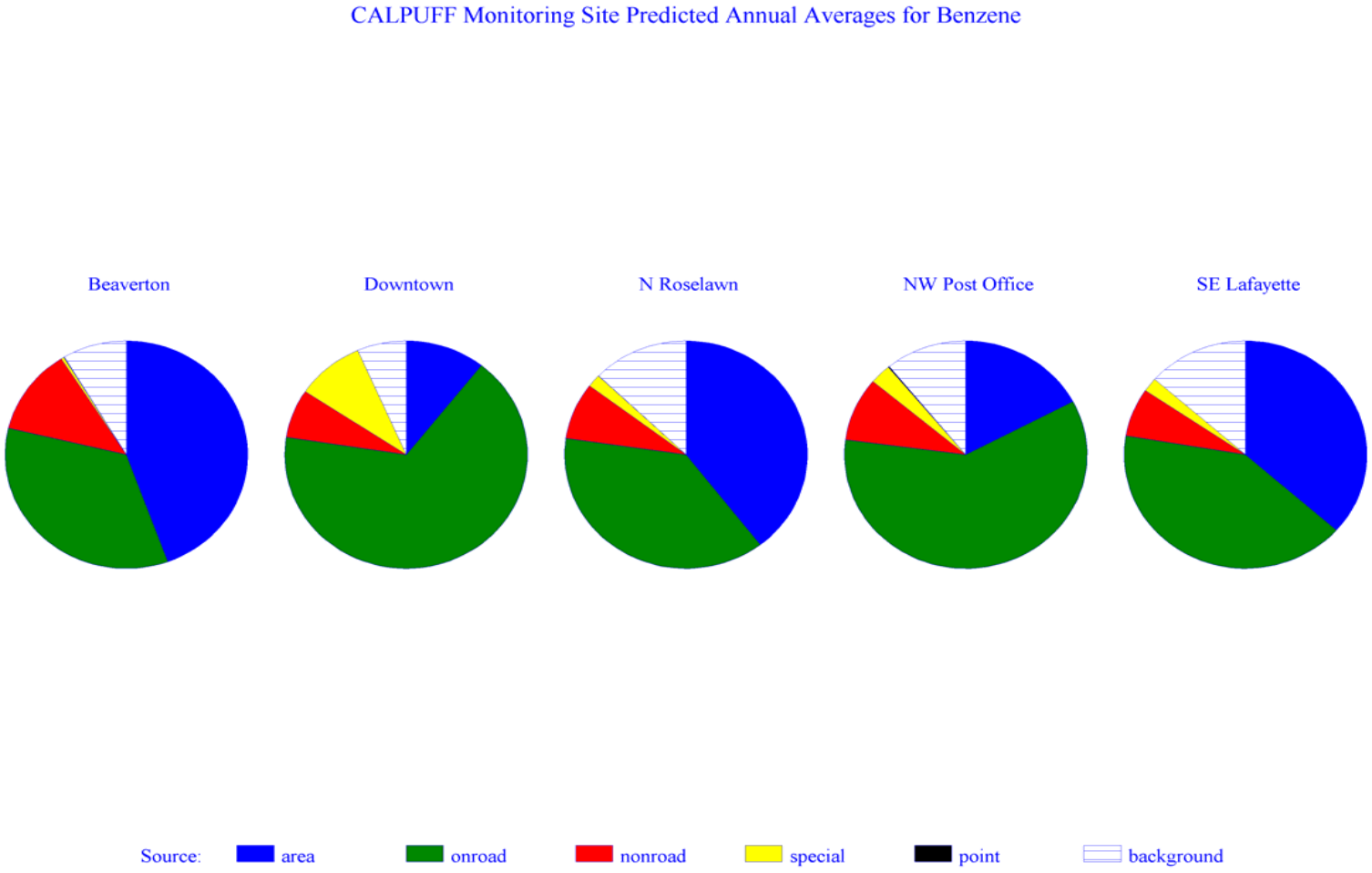
Concentrations: 1,3 Butadiene



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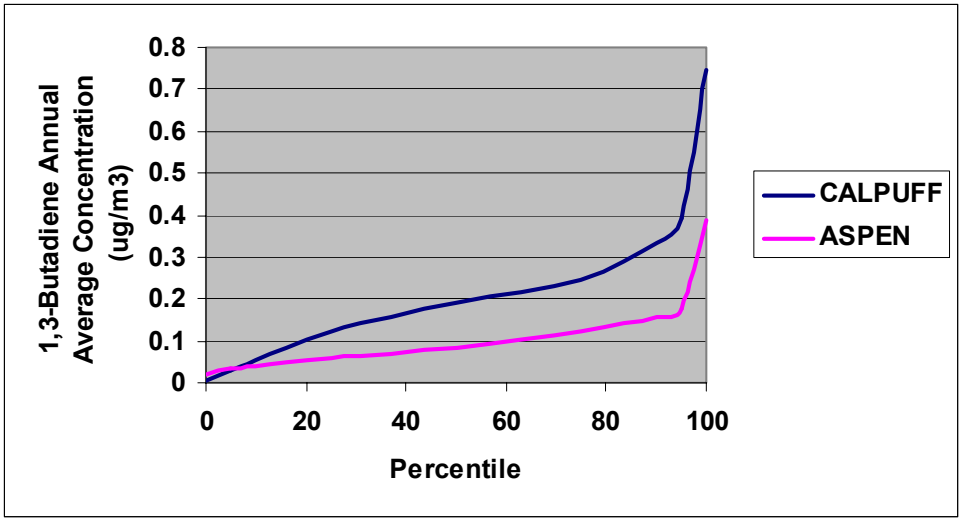
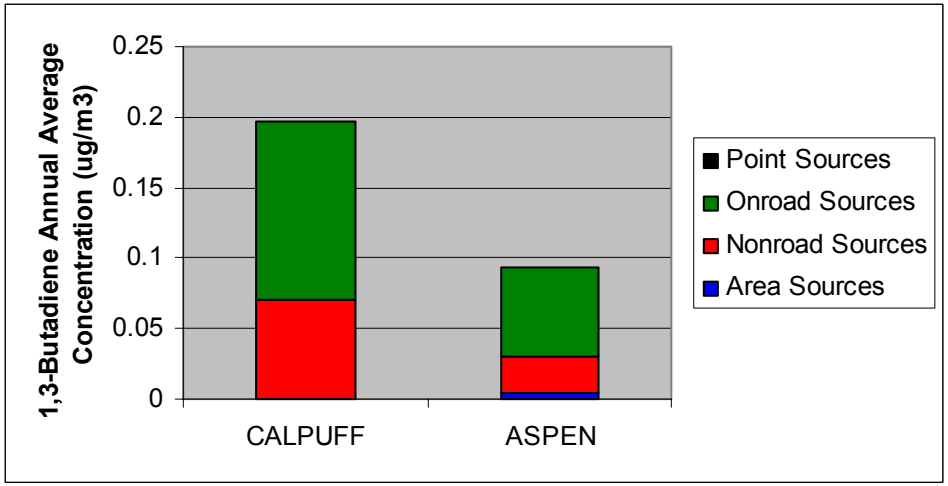
PATA versus NATA: 1,3 Butadiene





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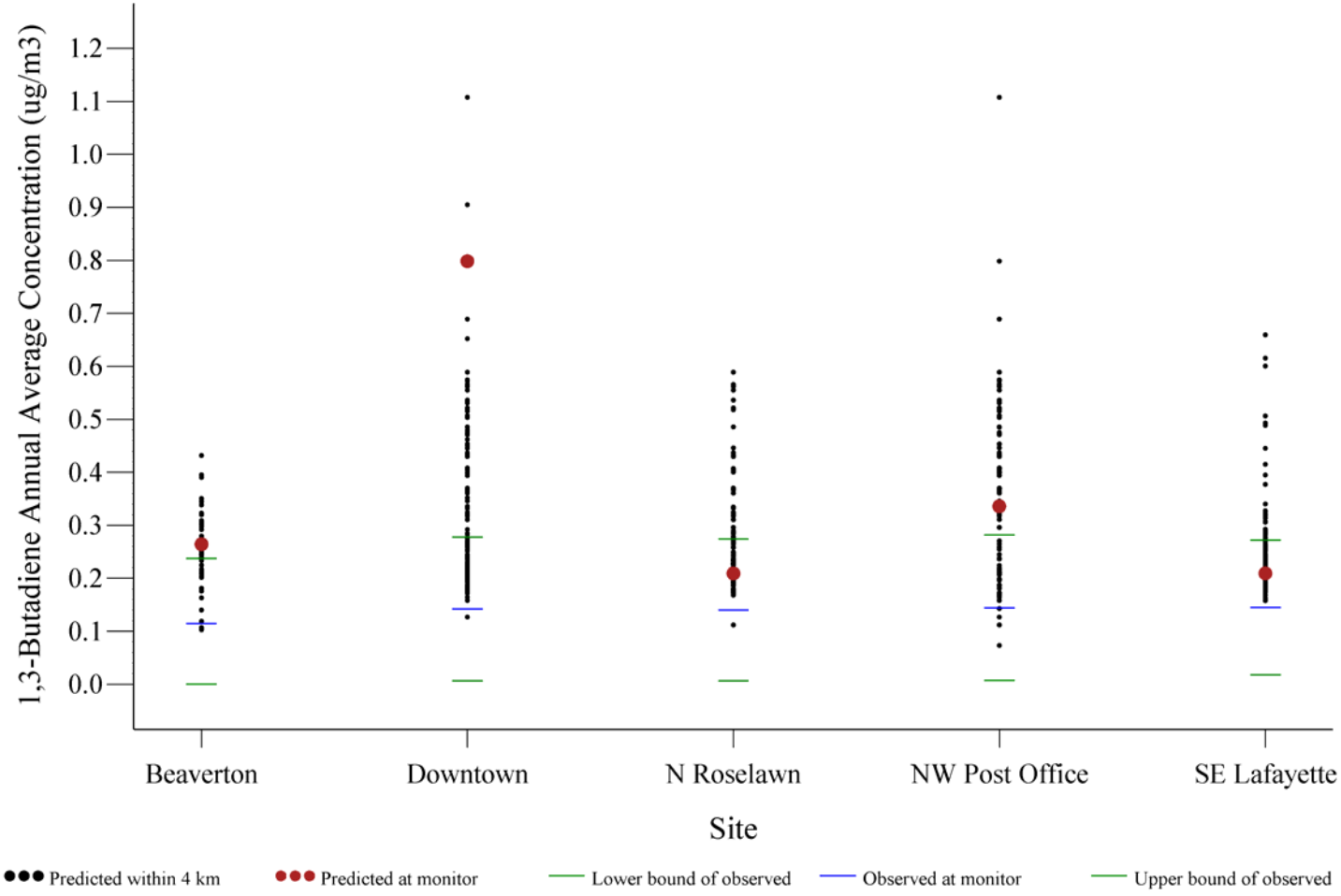
Model-Monitor Comparison: 1,3 Butadiene



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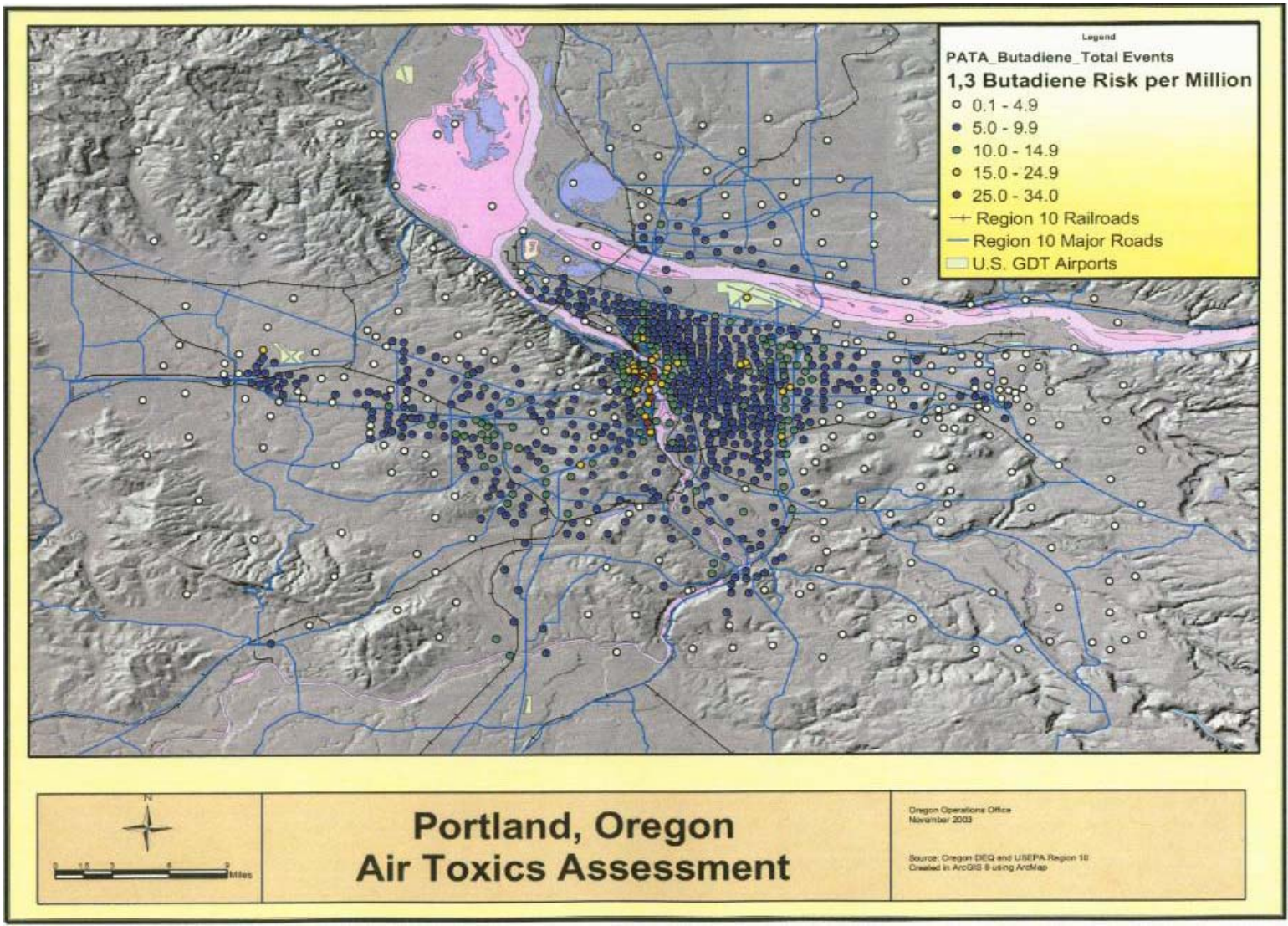
Risk Estimates: 1,3 Butadiene



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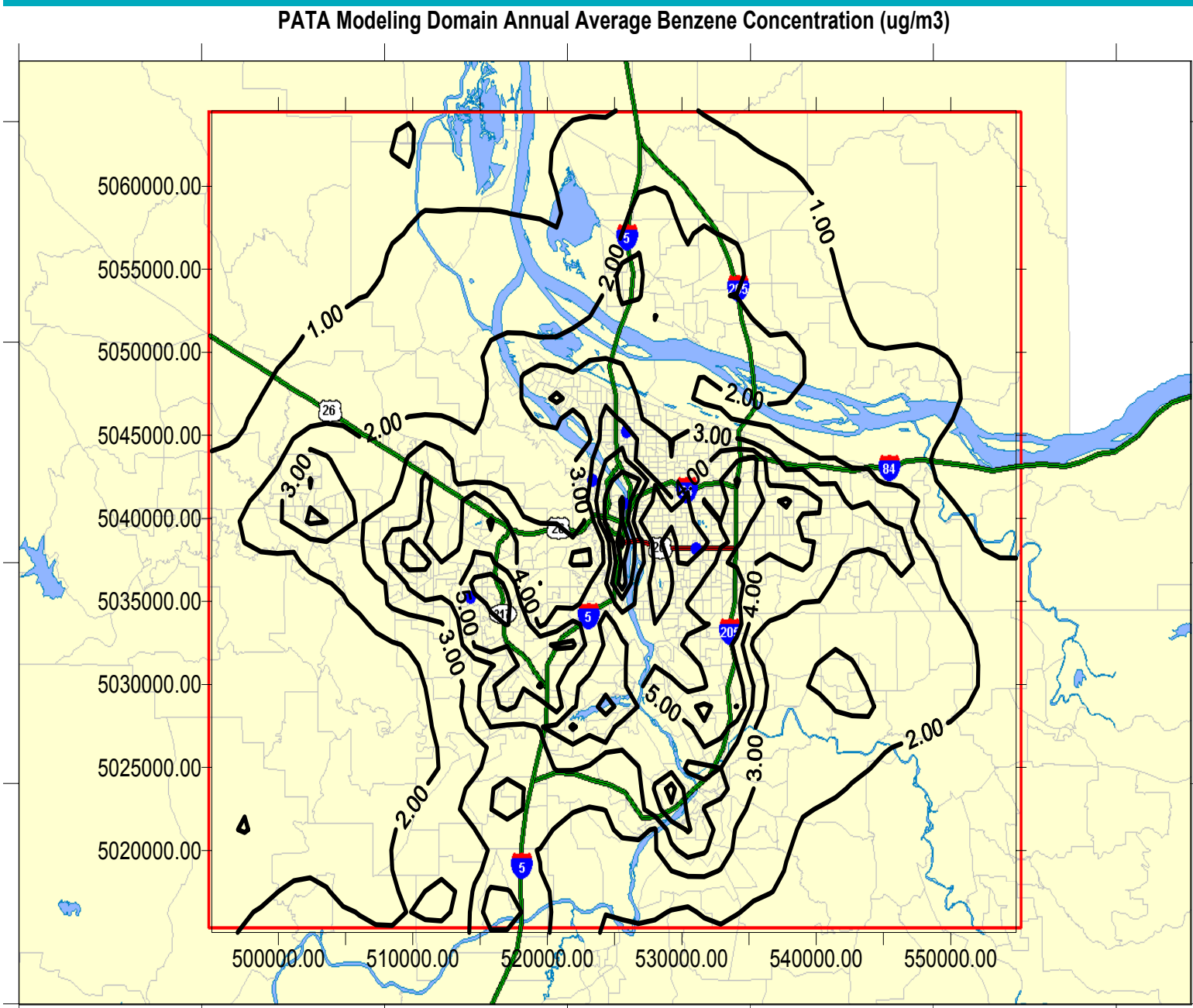

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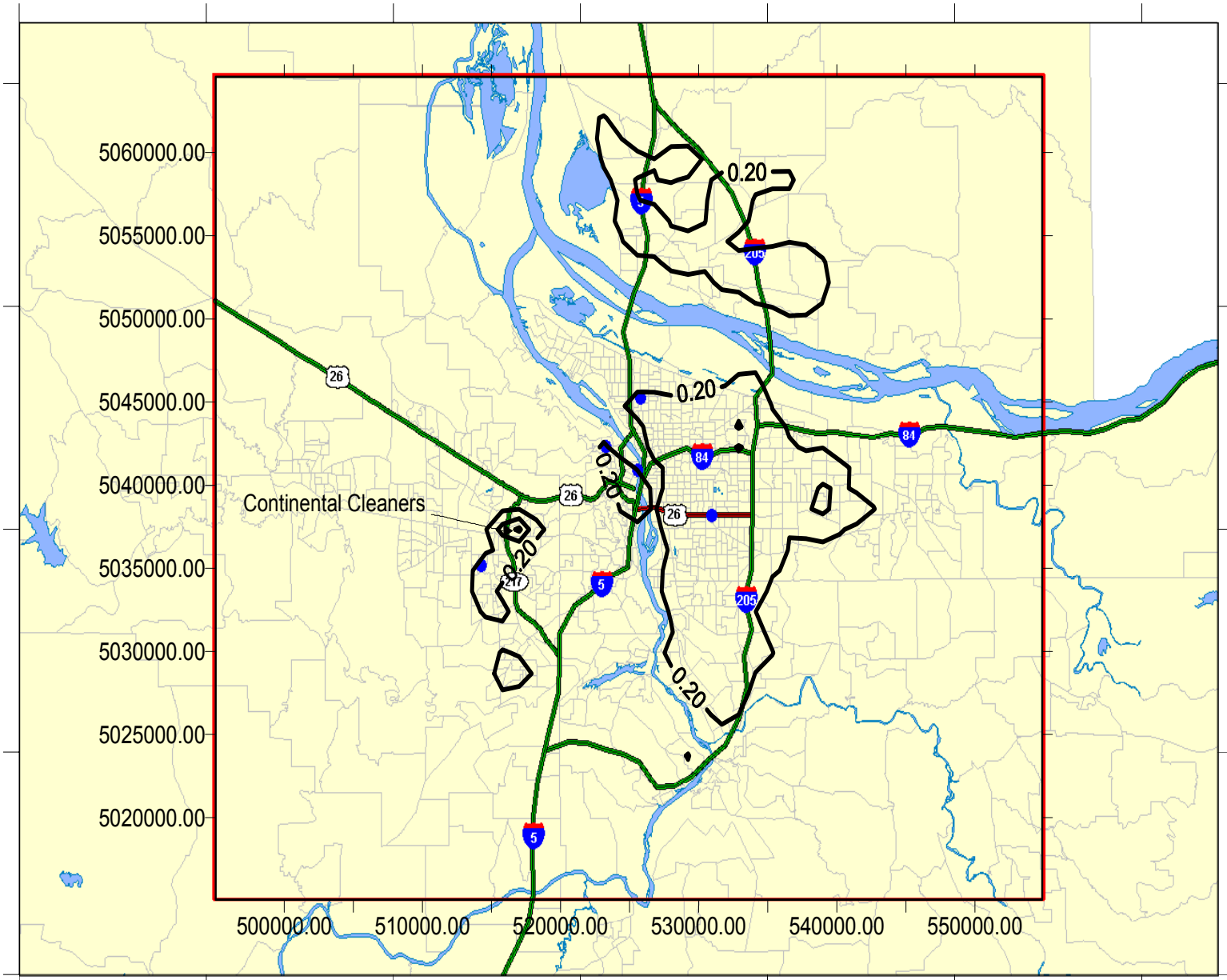
PATA Model Domain Annual Average Tetrachloroethlyene concentration (ug/m3)



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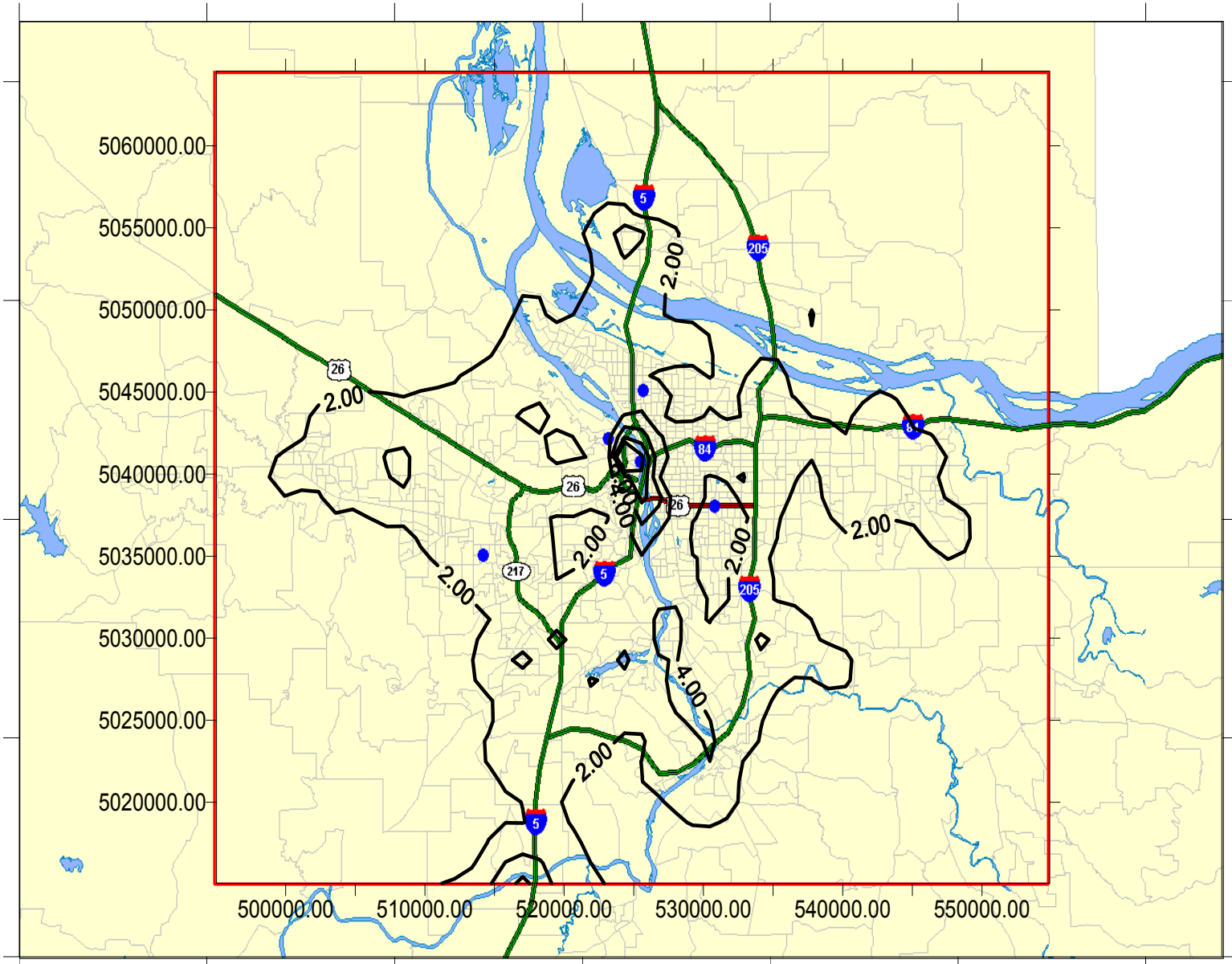
PATA Modeling Domain Annual Average Diesel PM Concentration (ug/m3)



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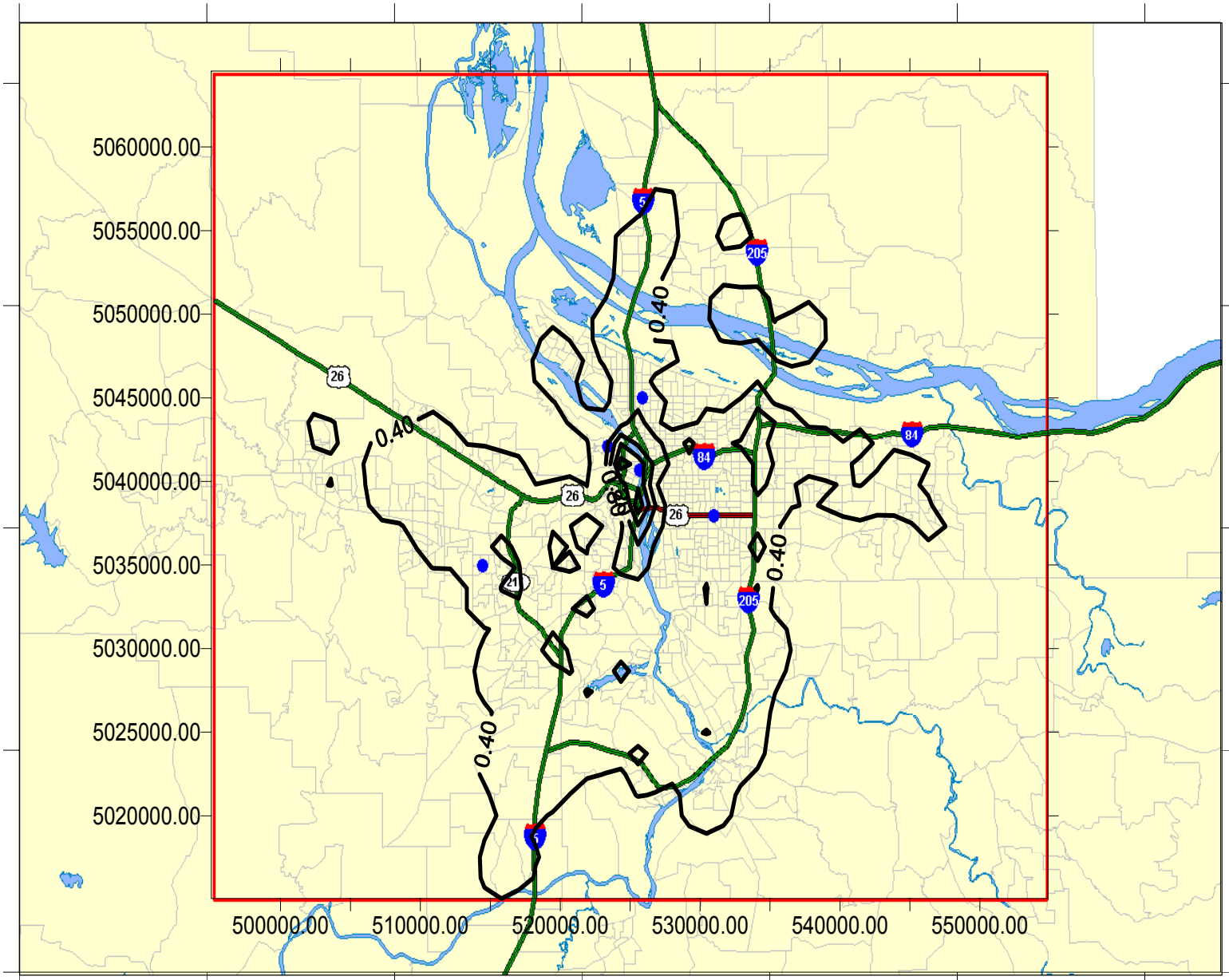
PATA Modeling Domain Annual Average Acetaldehyde Concentration (ug/m3)



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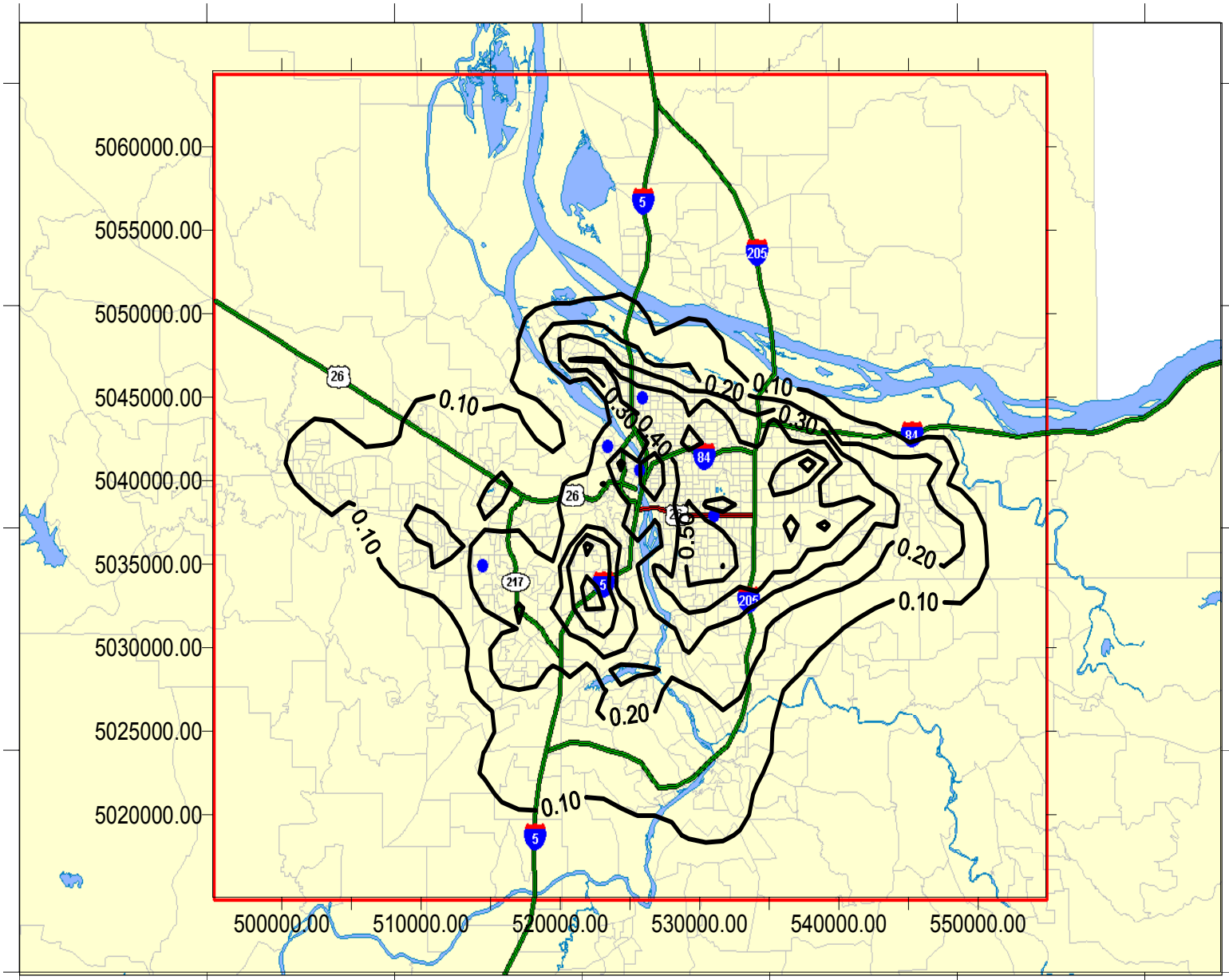
PATA Modeling Domain Annual Average Acrolein Concentration (ug/m3)



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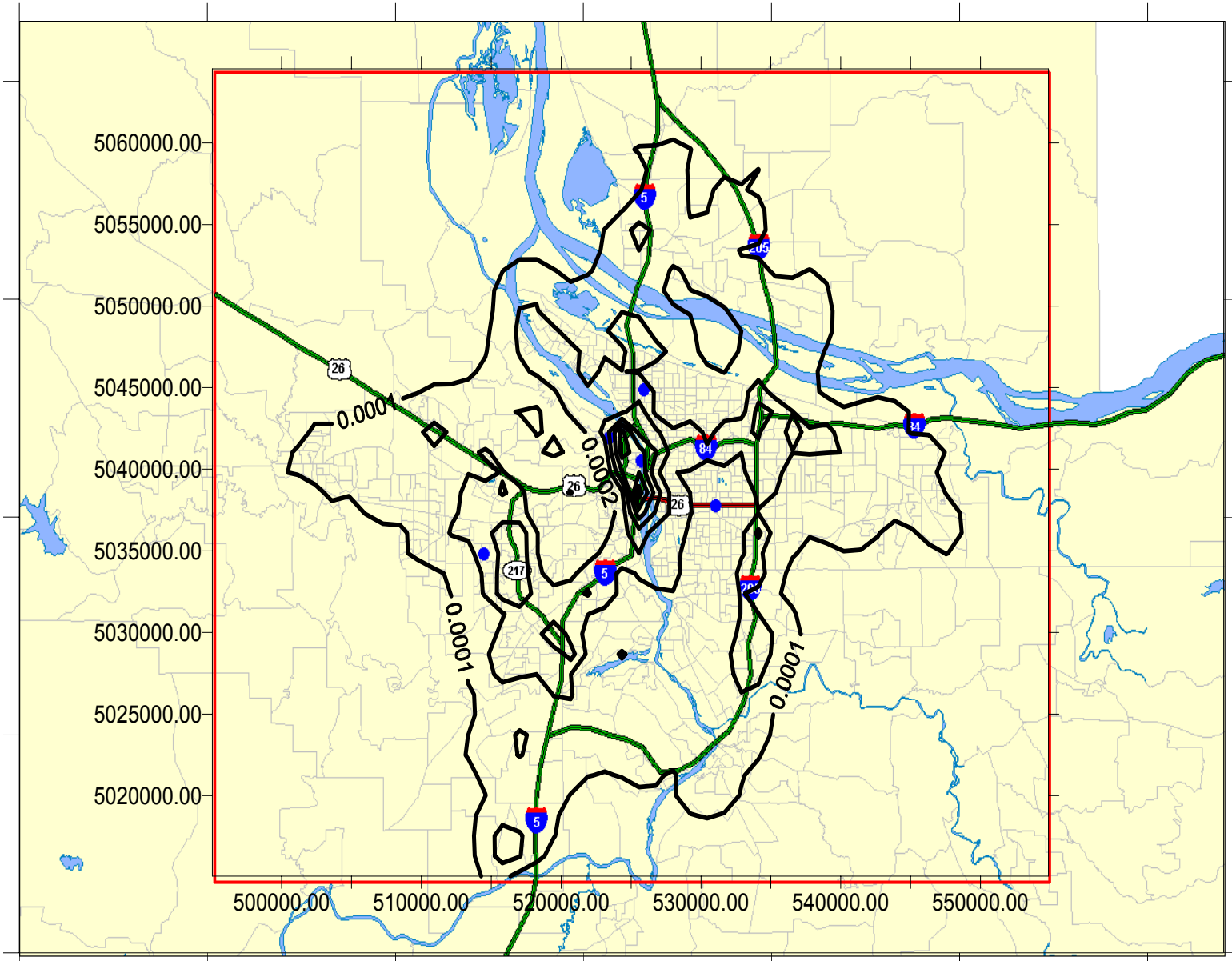
PATA Modeling Domain Annual Average Arsenic Concentration (ug/m3)



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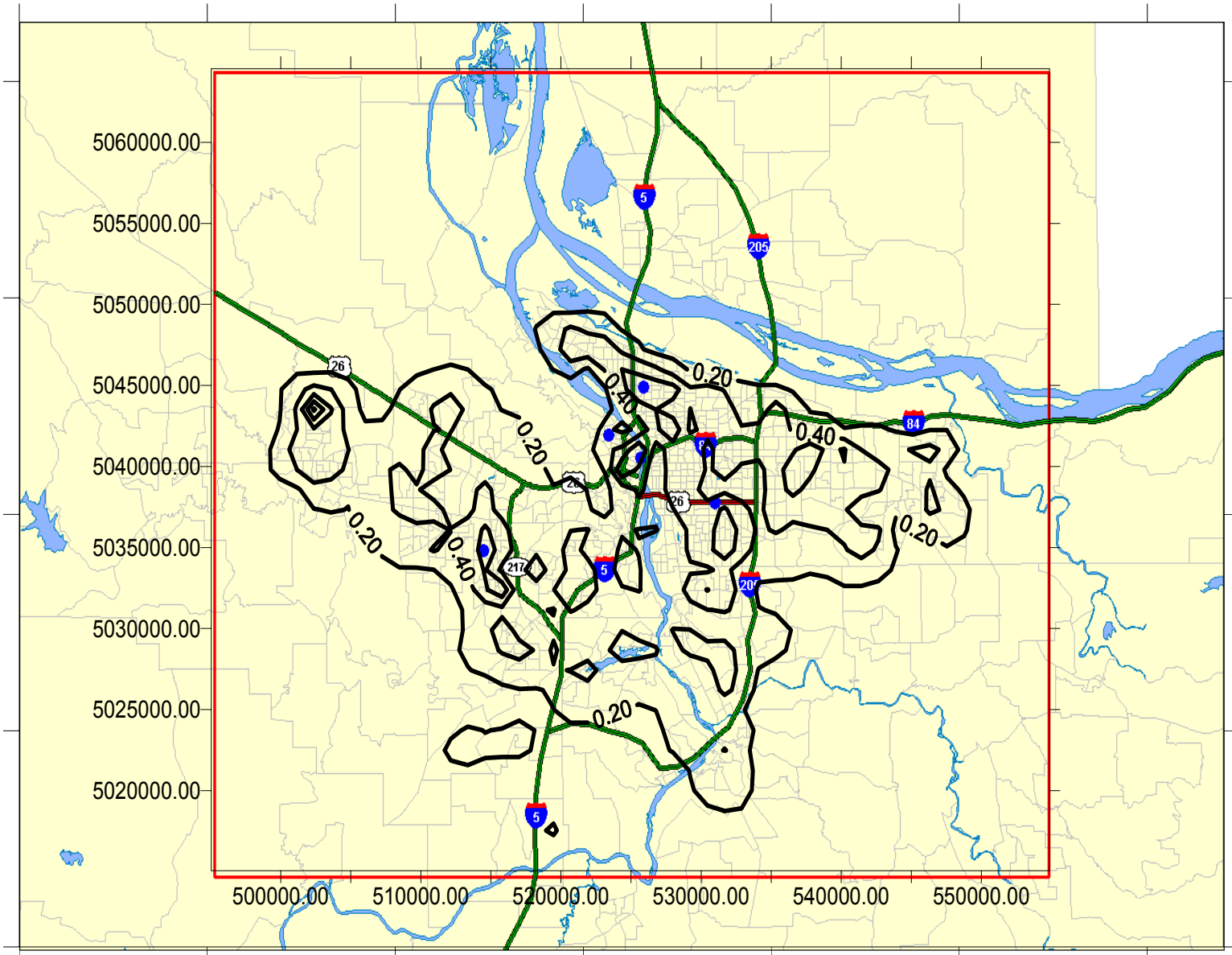
PATA Modeling Domain Annual Average PAH Concentration (ug/m3)



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Technical Next Steps

- Secondary formation estimates
- Exposure modeling
- Risk characterization
- Develop and implement communication strategies
- Work with partners and stakeholders
- Initiate risk reduction strategies

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Voluntary Reduction Strategies

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Communications Plan

- Communicate the results of the Portland Air Toxics Assessment (PATA)
- Build stakeholder understanding of Air Toxics Program development process.
- Provide stakeholders with the information they need to participate in, and make meaningful contributions to the implementation of the Air Toxics program in Portland.

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Regulatory Partners Team

- To form a cooperative organization of state, federal, and government agencies to address current and future air toxics issues; and
- To collaborate on reducing the public's exposure to air toxics
- Potential members include – State and Local Health Departments, American Lung Association, Oregon OSHA, OHSU-CROET, State and Local Transportation, Public Works, or Maintenance Departments, Tri-Met, Port of Portland

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Portland Geographic Planning Coordination

- Coordinate with Air Toxics program development
- Coordinate with Ozone SIP development
- Coordinate with Carbon Monoxide SIP development
- Coordinate with Clean Diesel Initiative
- Coordinate with West Coast Governor's Climate Change Priority Strategies

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Strengths

- Emission inventory is state-of-the-science
- Model predictions are within a factor of 2-3 for most pollutants – meets our quality requirements
- Provides information for prioritizing risk reduction strategies
- Provides information about spatial patterns of pollutant concentrations

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Limitations

- Predicted concentrations do not match observations exactly in all cases
- Some remaining uncertainties in the emission inventory
- Still need to estimate secondary formation
- Still need to complete exposure modeling and risk characterization

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Implementation Challenges