IMAAC

Interagency Modeling and Atmospheric Assessment Center

Real World

Petrochemical Plant Ongoing Fire in Deer Park, TX

19MAR2019 1930Z

RFI – 19 – 0245aU update1

19MAR2019

Requestor: NWS – Houston WFO

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Date: 03/19/2019
Other requests for this document shall be referred to:
Defense Threat Reduction Agency
8725 John J. Kingman Rd, MS 6201
Fort Belvoir, VA 22060-6201

9963241

Request Summary

- **Request Data**
  - Requestor: Kent Prochazka, Meteorologist, National Weather Service Houston, WFO
  - Contact: 1-800-846-1828, sr-hgx.ops@noaa.gov, kent.prochazka@noaa.gov
  - Request: Downwind hazard for a plant fire in Deer Park, TX

- **Solution**
  - Summary: Soot concentration and vertical slice contours are provided.
  - Employment: Real World
  - Reachback: J. Vigorita, S. Runyon, J. Vogel

Deer Park, TX
Latitude: 29.732437° N
Longitude: 95.091517° W

Time: 1100 CDT
Date: 19MAR2019

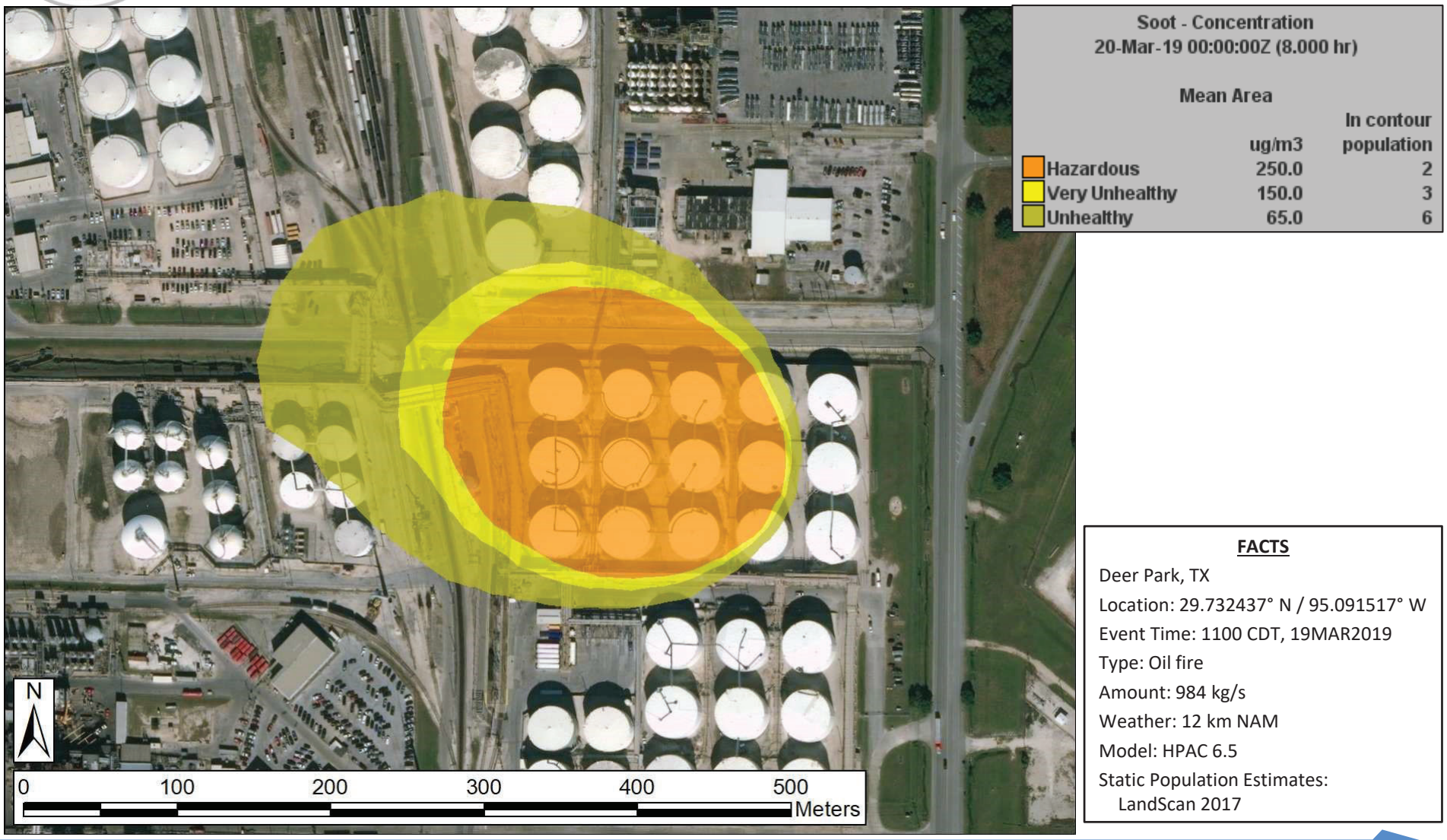
Hazard:
- 8 oil tanks, burning at a rate of 984 kg/s (approximately equivalent to a 35 meter burning pool x 8 tanks)

Weather:
- High Resolution Numerical Weather Prediction: 12 km NAM from NCEP (CONUS)
- Initialized: 12Z 19MAR2019

Modeling Summary

- Known Information: Eight tanks, assumed each tank has 1 million kilograms of crude oil burning.
- Modeling Assumptions: Assumed a continuous burn of oil-based liquid hydrocarbon with a pool radius of 35 meters per tank.
- Caveats: This analysis does not reflect firefighting or changes in releases over time.

Soot Conc. @ Ground Level; 1500 CDT



FACTS

Deer Park, TX

Location: 29.732437° N / 95.091517° W

Event Time: 1100 CDT, 19MAR2019

Type: Oil fire

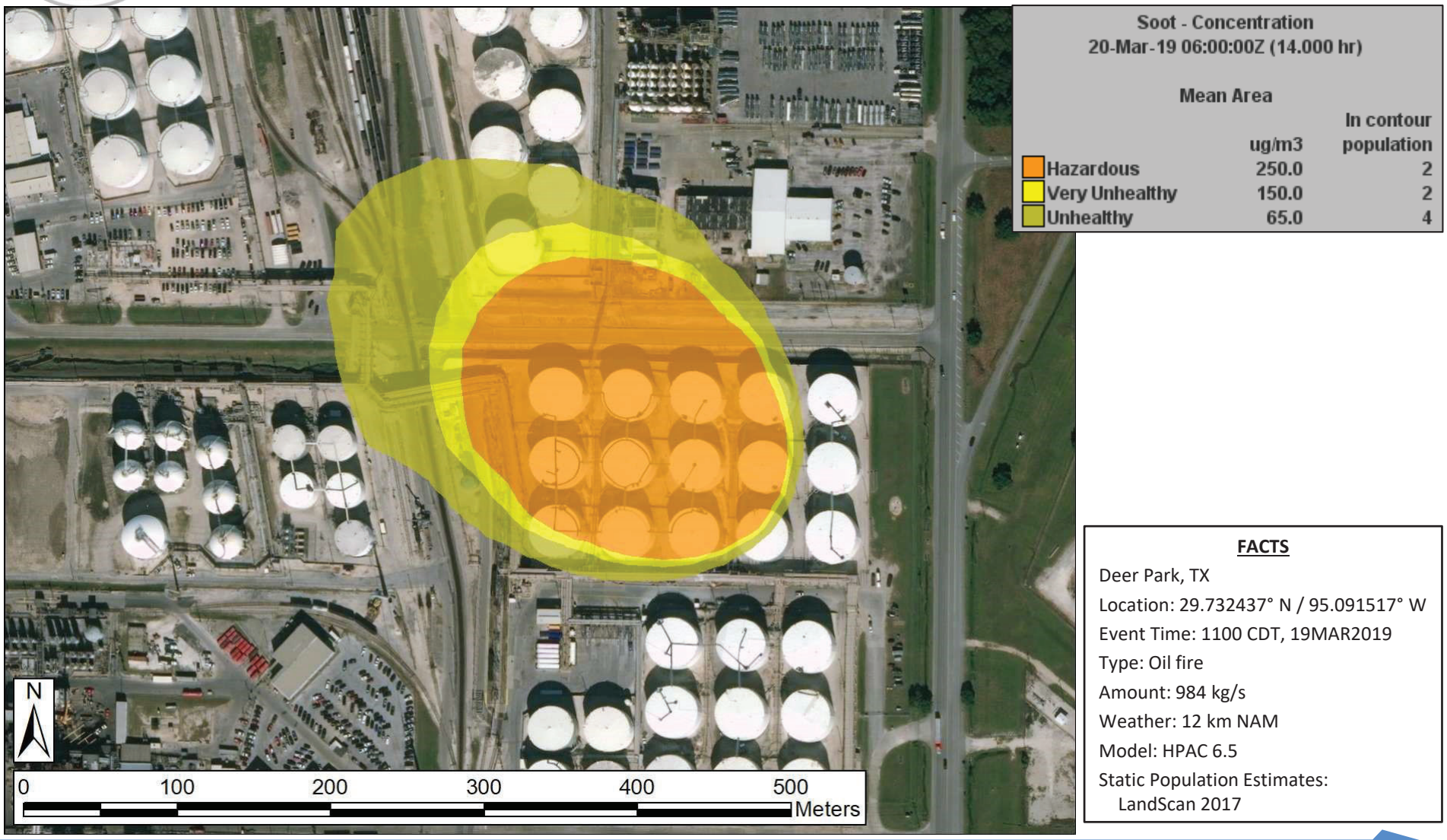
Amount: 984 kg/s

Weather: 12 km NAM

Model: HPAC 6.5

Static Population Estimates:
LandScan 2017

Soot Conc. @ Ground Level; 1700 CDT



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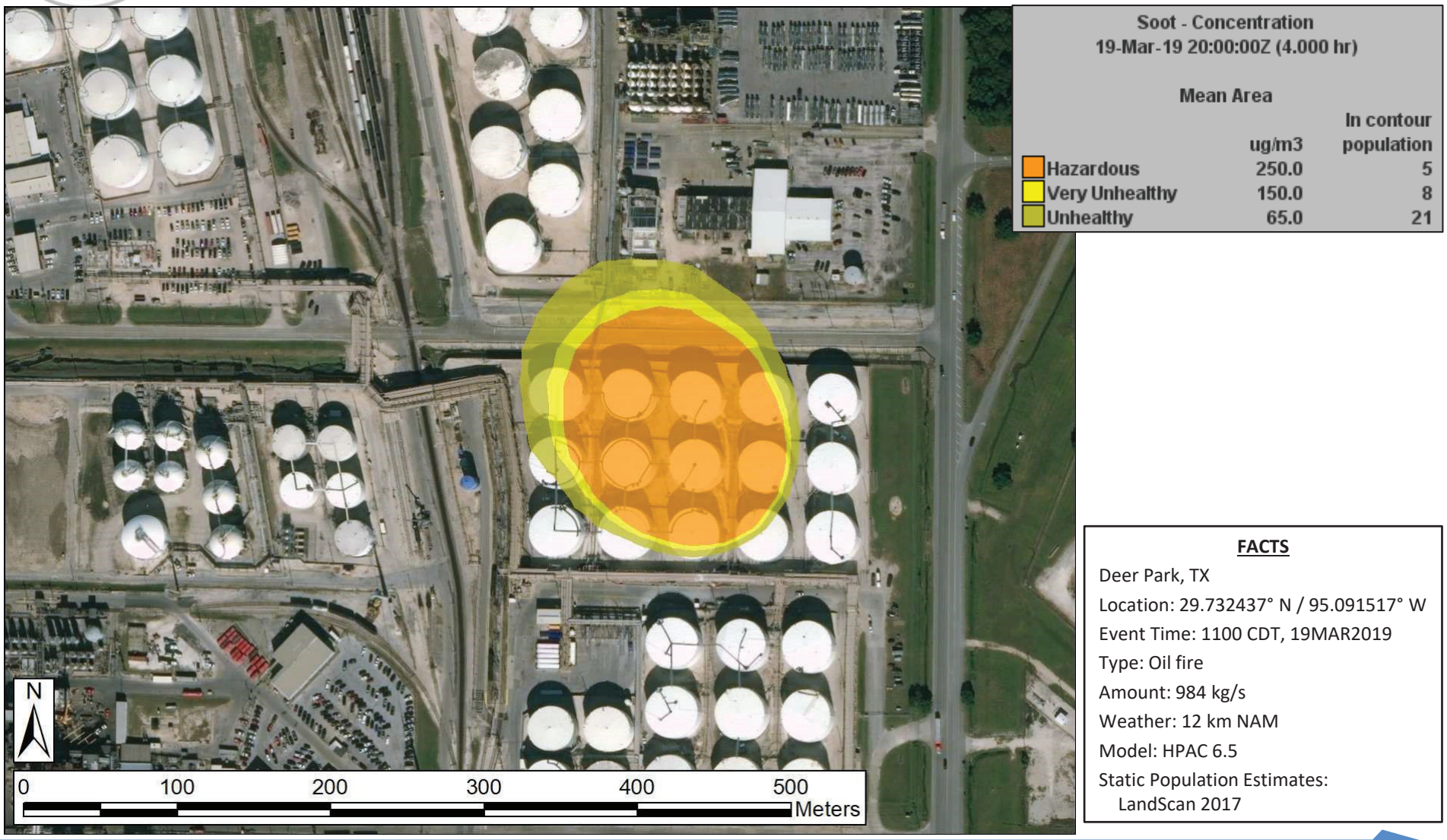
Soot Conc. @ Ground Level; 1900 CDT



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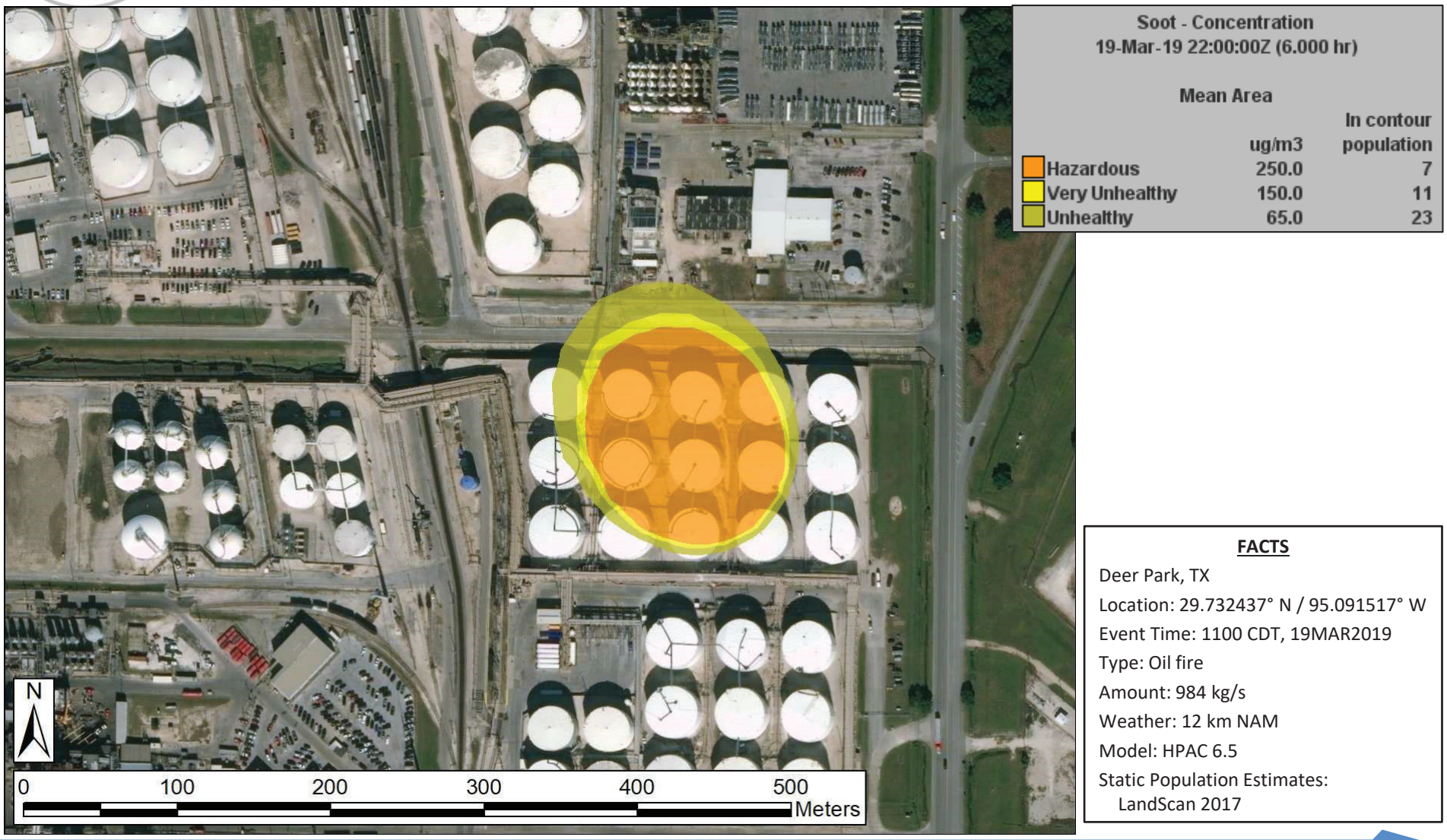
Soot Conc. @ Ground Level; 0100 CDT



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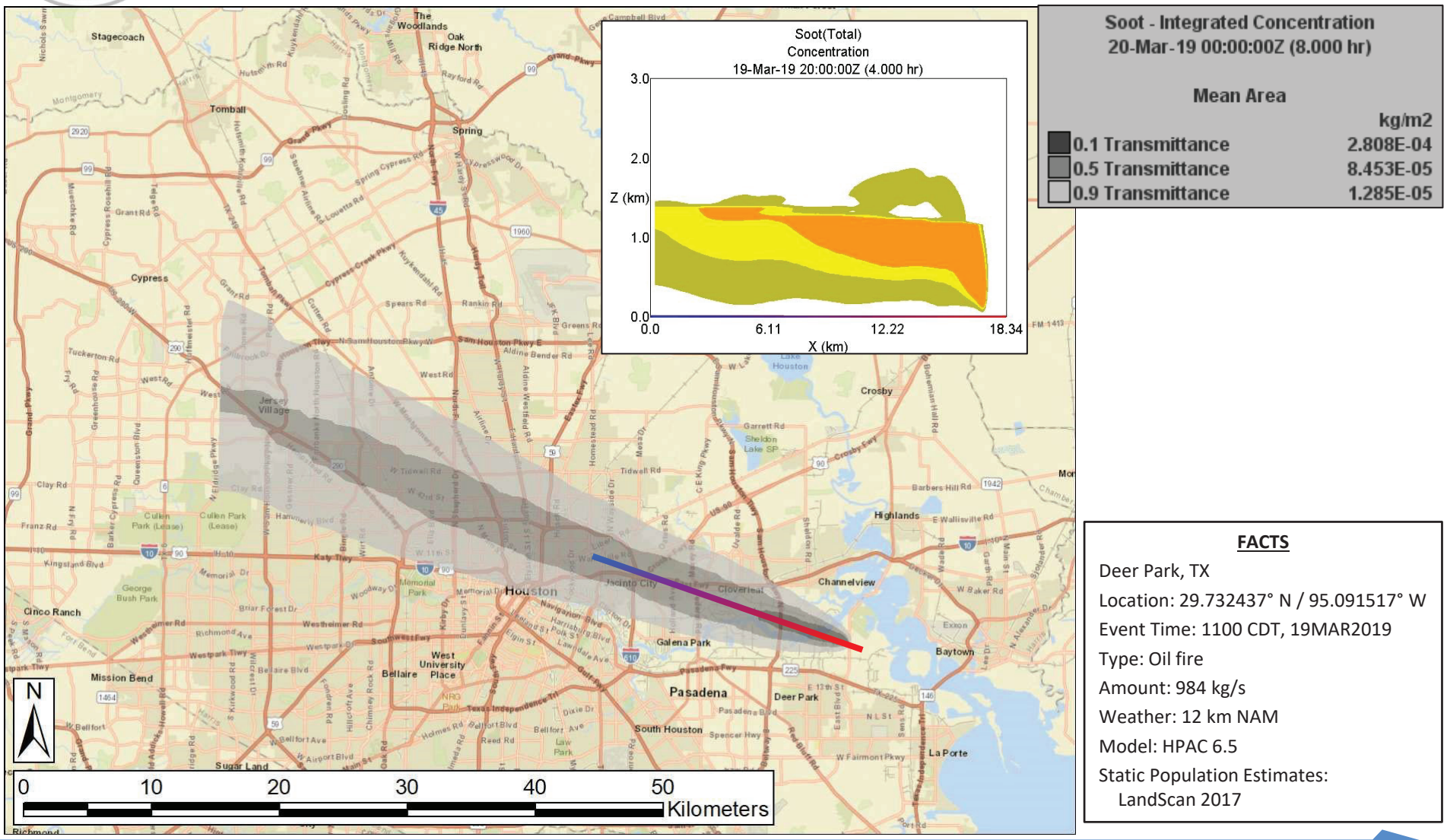
Soot Conc. X-Section; 1500 CDT



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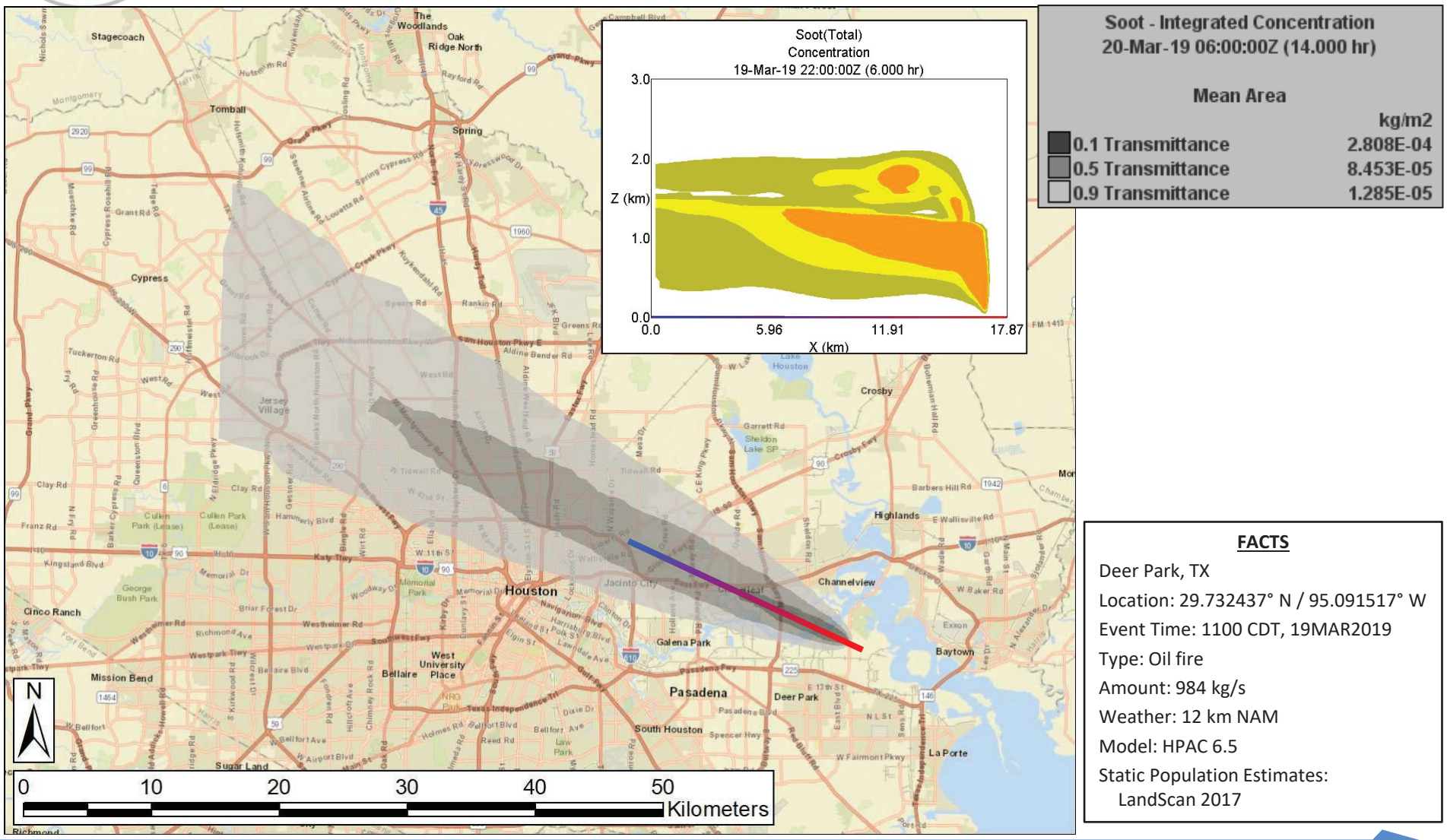
Soot Conc. X-Section; 1700 CDT



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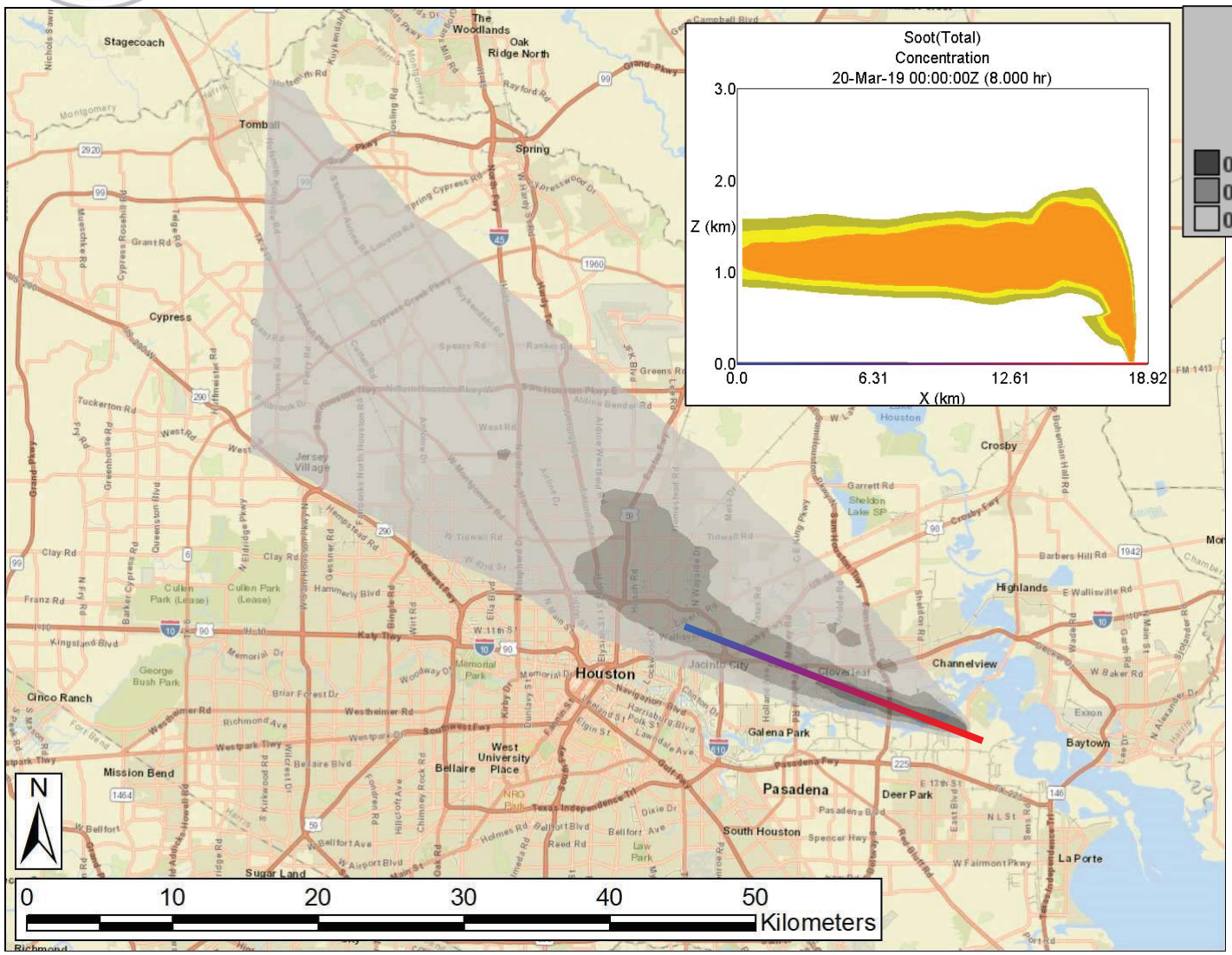
Soot Conc. X-Section; 1900 CDT



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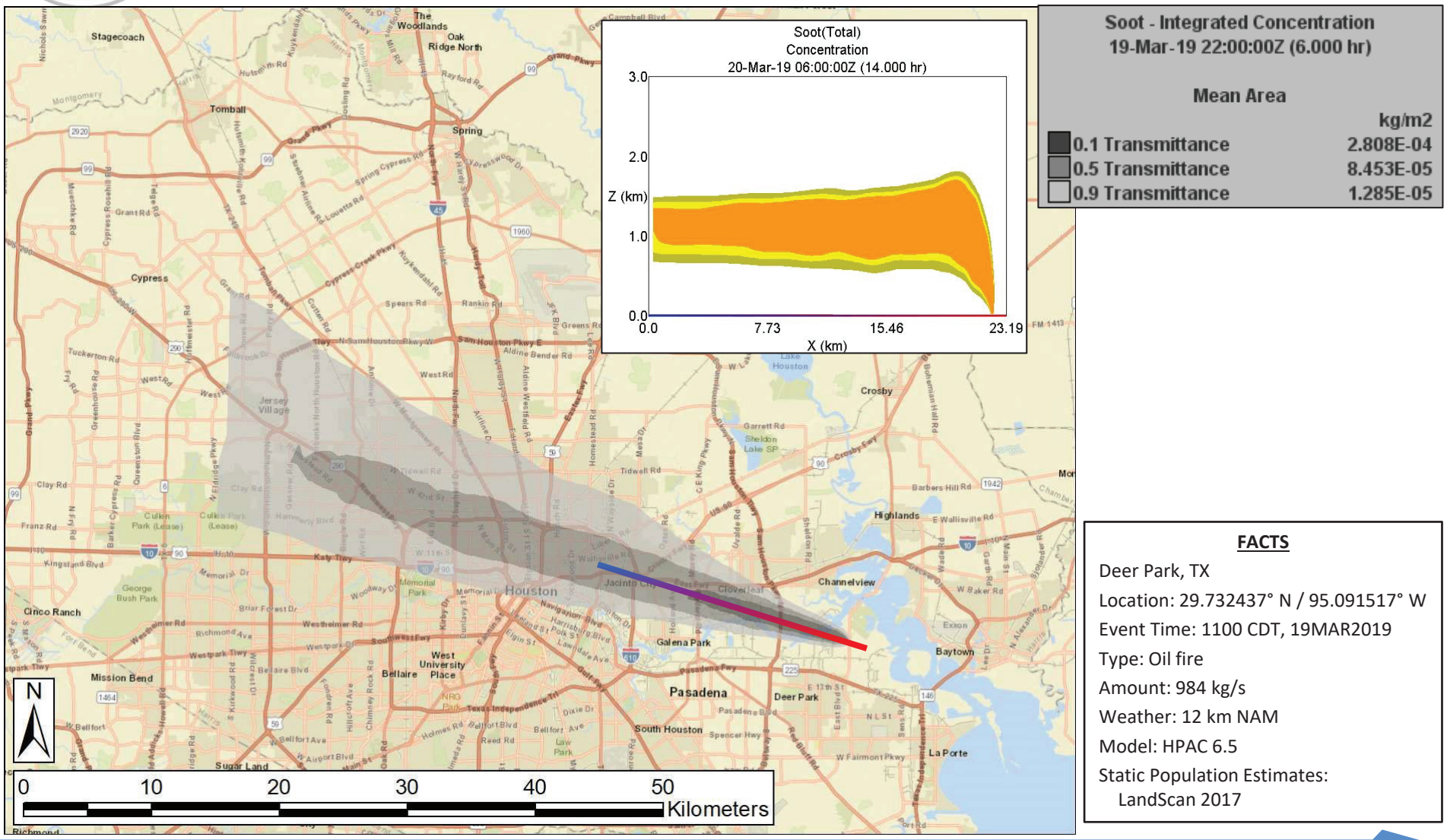

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Soot – Concentration

Value	Description
Hazardous	Serious risk of (1) respiratory symptoms in children/adults, (2) aggravation of heart or lung disease, and (3) premature mortality in persons with cardiopulmonary disease and the elderly.
Very Unhealthy	Significant increase of (1) respiratory symptoms in children/adults, (2) aggravation of heart or lung disease, and (3) premature mortality in persons with cardiopulmonary disease and the elderly.
Unhealthy	Increased (1) respiratory symptoms in children/adults, (2) aggravation of heart or lung disease, and (3) premature mortality in persons with cardiopulmonary disease and the elderly.

Cumulative dosage values based on exposure to 2.5um particulate matter. Concentration values and descriptions taken from Pollutant-Specific Sub-indices and Health Effects Statements and Cautionary Statements for Guidance on the Air Quality Index tables, in *Guidelines for Reporting of Daily Air Quality – Air Quality Index (AQI)*, USEPA, EPA-454/B-06-001, May 2006.