Air Quality Assessment

for Particulate Matter and Ozone

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Presentation Overview

- Background on Canada-wide Standards and CASA Framework
- Air quality assessment results
- Air quality management plan
- Next steps for Alberta Environment

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What is Particulate Matter and Ozone?

- Particulate matter refers to particles in the air that are smaller than 2.5 micrometres.
- A human hair is about 70 micrometres in diameter.
- These particles can be inhaled into the lungs and cause health problems.
- Ozone is a major component of smog during hot summer weather.
- Ozone is the result of vehicle and industrial emissions combined with natural ozone.

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Forest Fire Smoke
Edmonton - July 2006

- Smoke from forest fires is transported to urban centres.
- Poor air quality is caused by high fine particulate levels.

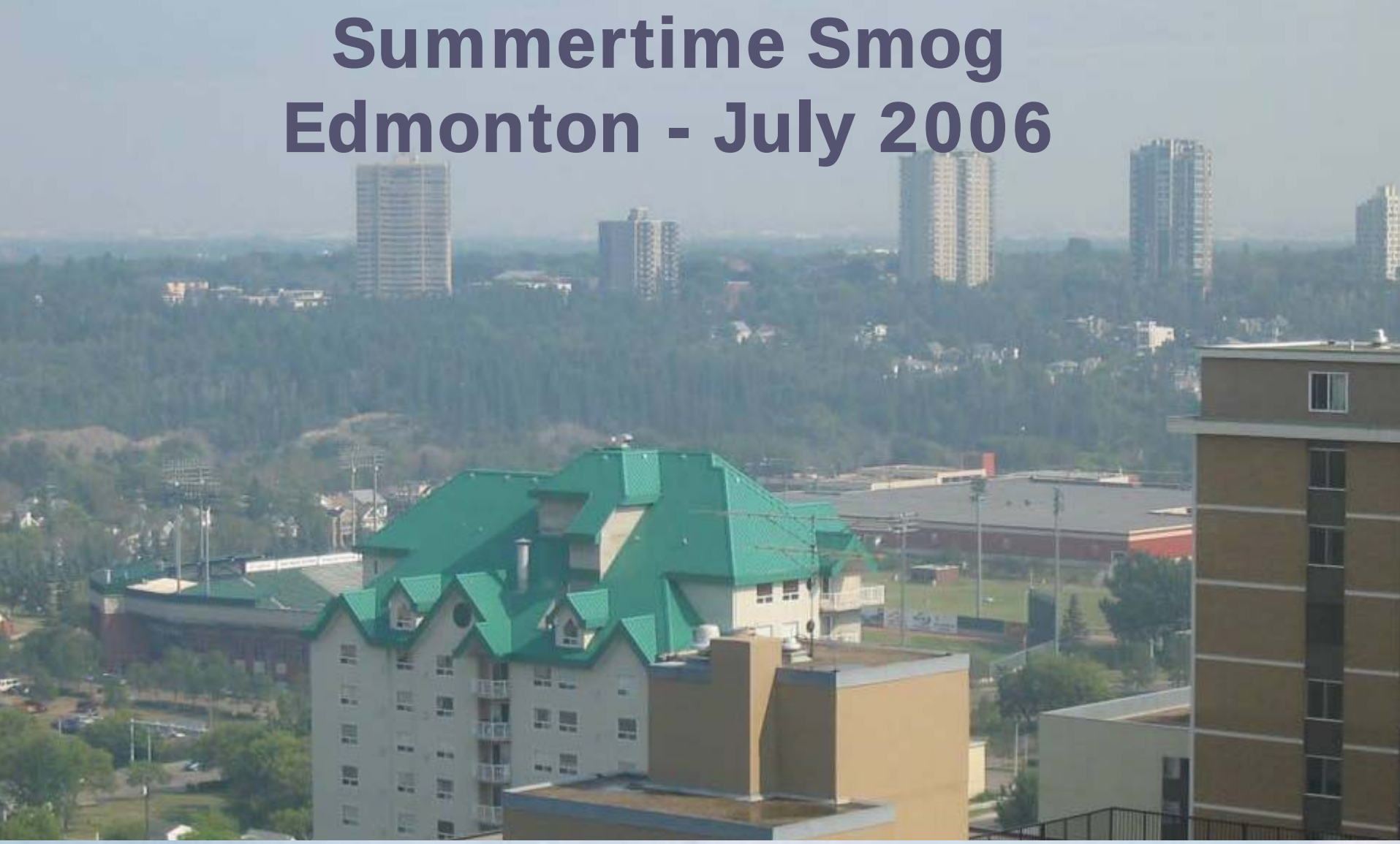
Forest Fire Smoke
Calgary – August 2003

- Caused by smoke from fires in southwestern Alberta and southern B.C.

Wintertime Smog Edmonton

- Strong temperature inversion, stagnant air
- Pollutants are trapped near the ground

Summertime Smog
Edmonton - July 2006



- Occurs during hot, stagnant weather
- Pollution from vehicles, industry and natural sources

What are the Canada-wide Standards (CWS) for Urban Air Pollution?

- National Standards for fine particulate matter and ozone were established in 2000.
- Balance of minimizing risks to human health and the environment and costs of reducing emissions.
- The Standards must be achieved by 2010.

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What is the CASA Particulate Matter and Ozone Management Framework?

- The CASA framework is Alberta's plan for achieving the CWS (endorsed by CASA in 2003).
- Based on the underlying principles of:
  - continuous improvement,
  - pollution prevention, and
  - keeping-clean-areas-clean.
- The CASA framework has three triggers and four corresponding action levels.

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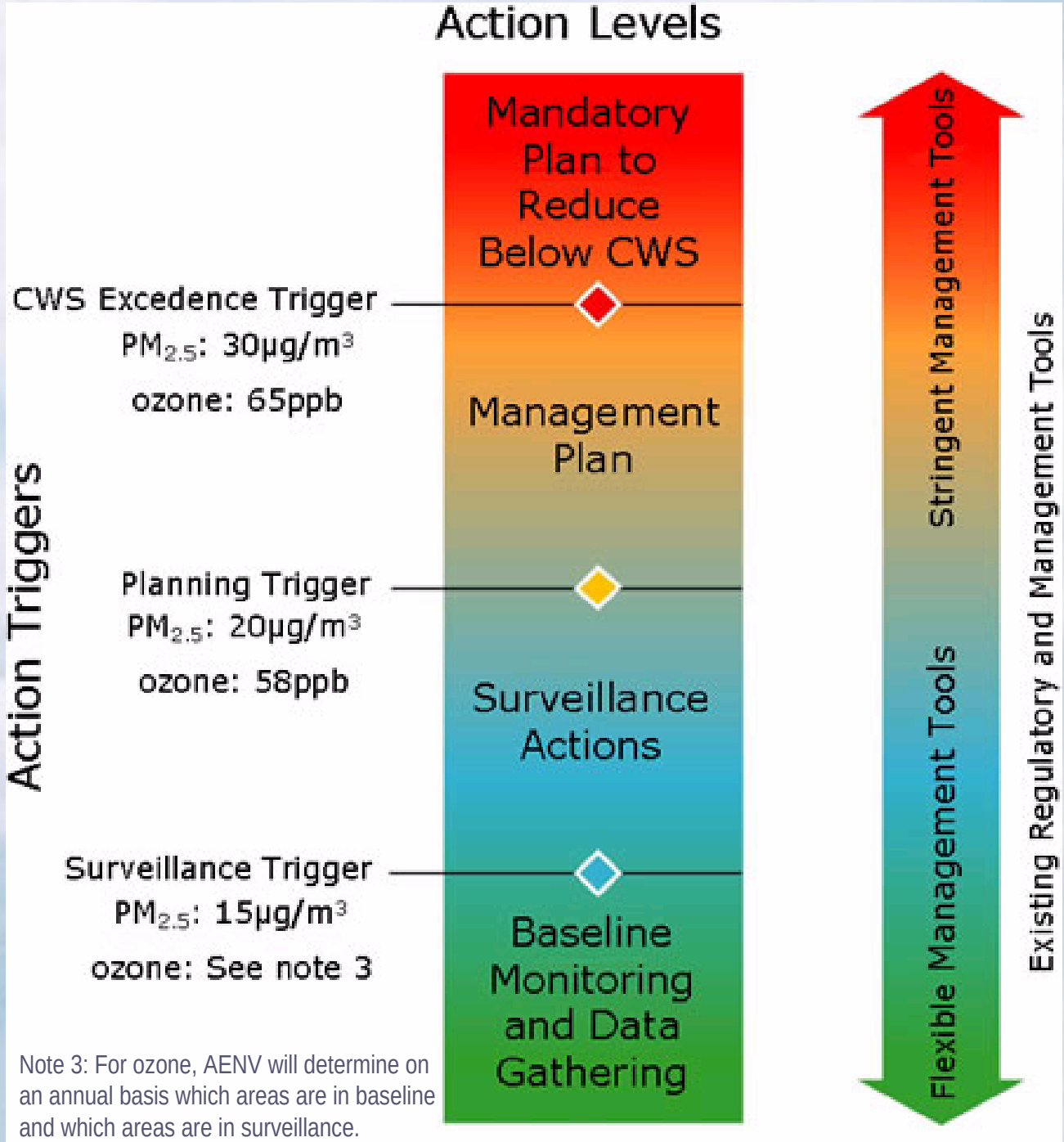


Note 3: For ozone, AENV will determine on an annual basis which areas are in baseline and which areas are in surveillance.

Data Assessment Process

- It is Alberta Environment's responsibility to assess the data against the trigger levels defined by the framework.
- The assessment is completed annually based on data collected over three consecutive years.
- Data assessment involves four steps:
  - Assess QA/QC'd data following the CWS and CASA framework procedure.
  - Remove episodes that were primarily caused by background, transboundary or natural influences.
  - Re-assess the data.
  - Assign trigger levels to all Alberta monitoring stations as well as the Edmonton and Calgary Census Metropolitan Areas (CMAs).

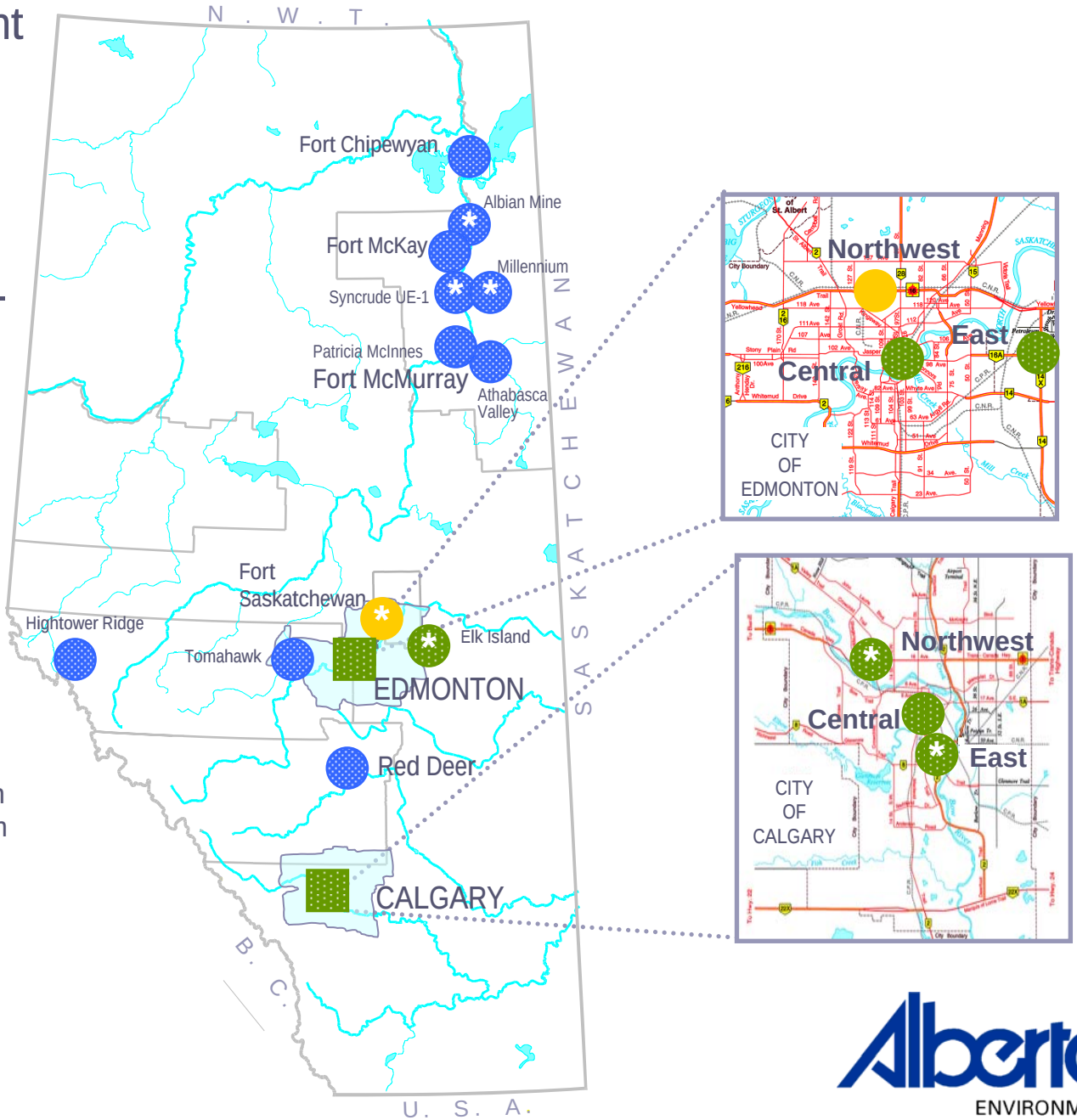
2001-03 Assessment Results for Particulate Matter ($PM_{2.5}$)

(background, trans-boundary and natural influences removed)

- CWS Exceedance Action Level
- Management Plan Action Level
- Surveillance Action Level
- Monitoring Action Level

Squares represent the Edmonton and Calgary Census Metropolitan Areas (CMAs).

Asterisk (*) indicates incomplete data set.



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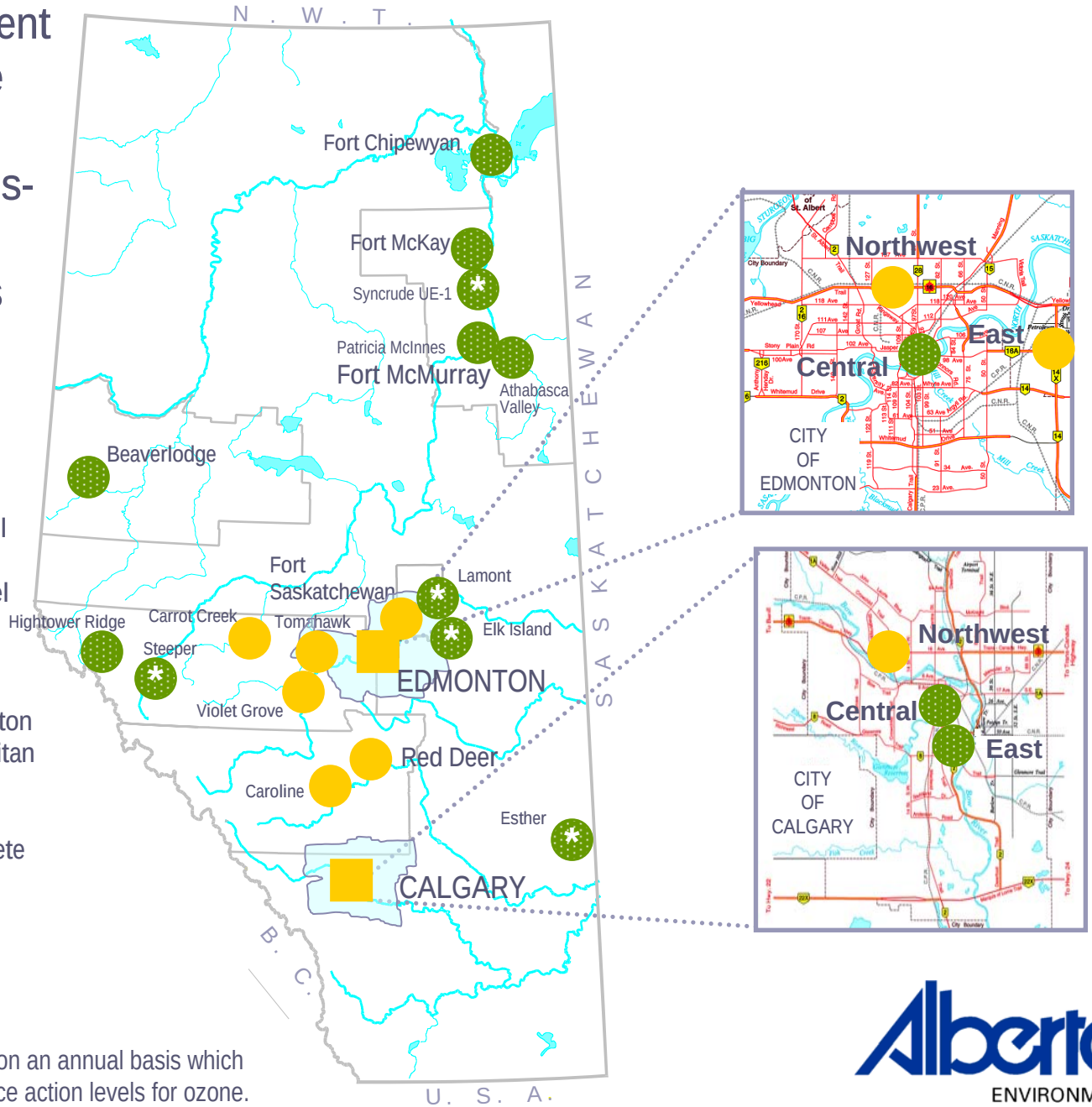

Alberta Environment will determine on an annual basis which areas are in baseline and surveillance action levels for ozone.

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Assessment Results

- No areas of Alberta exceeded the Canada-wide Standards.
- The following areas were assigned to the Management Plan action level for ozone:
  - Edmonton Census Metropolitan Area including monitoring stations in the Fort Saskatchewan and West Central airsheds
  - Calgary Census Metropolitan Area
  - Monitoring stations in the Parkland airshed
- Ozone smog episodes occurred during the summer of 2002 over a large part of the province.

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Management Plan Action Level

- Stakeholders need to develop a management plan aimed at preventing future exceedances of the CWS trigger.
  - The plan will consider factors such as population growth, industrial activity and air quality trends.
  - Alberta Environment may impose a management plan if it is not developed within two years by stakeholders.

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The Air Quality Management Plan

- Use of a wide variety of regulatory and non-regulatory mechanisms including:
  - compulsory actions such as regulations and bylaws
  - voluntary actions such as providing incentives for use of environmentally responsible modes of transportation
- The intent of the CASA Framework is to develop and implement actions through a process that will facilitate multi-stakeholder responsibility for air quality.
- Implemented by a variety of organizations including government (federal, provincial or municipal), the private sector and NGOs.

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Components of a Management Plan

1. Organize stakeholders through existing airshed partnerships
2. Determine the causes of the smog episodes
3. Look at current and future emission scenarios
4. Improve air quality forecast system of public notification of smog events
5. Develop/adopt mandatory and voluntary tools
6. Public education
7. Partner with other jurisdictions
8. Determine if the management strategy is working (performance measures).
9. Improve the plan over time (continuous improvement).

Next Steps for Alberta Environment

- Release final assessment reports and products
- Communicate results to stakeholders
  - Informal communications (meetings, presentations and email)
  - Formal letter to municipalities, industry and NGOs
- Assist stakeholders in initiating management plan meetings
- Continue annual assessments
- Initiate review of the Framework

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