



Air Quality Management in Prince George

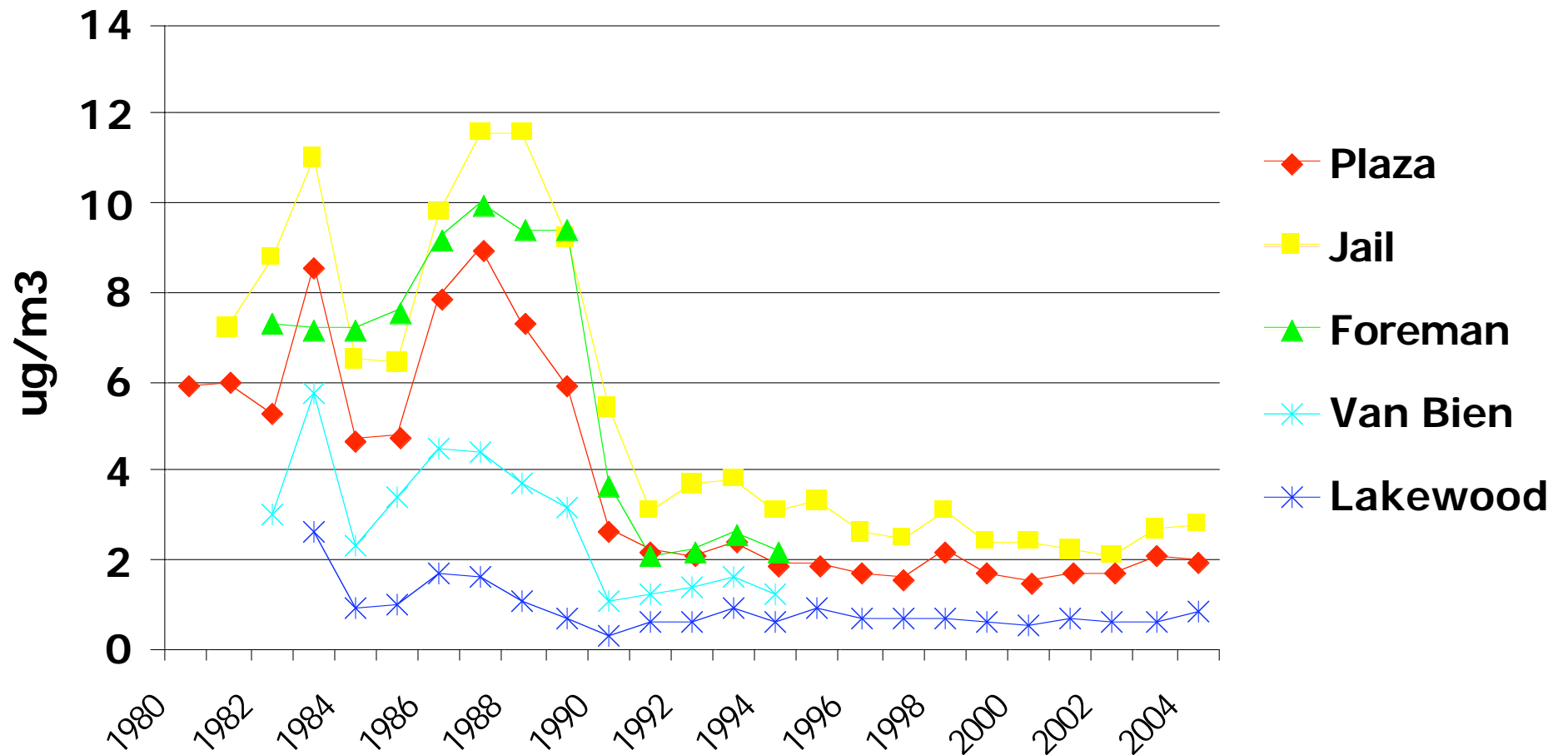


November 21, 2006

The '80s - Total Reduced Sulfur (TRS)

- TRS was the main Air Quality concern in the 1980s
- \$23 million spent on odorous gas incineration and boiler upgrades – no results
- ISC model run by PGAATC in 1988/89
- Unidentified low level source was found
- Condensate strippers installed at pulpmills
- Northwood, Intercon, PG Pulp total cost \$12.4 million
- Results . . .

Annual Average Ambient TRS



The '90s Air Quality Focus on Particulate

- Beehive burners
- Precipitators, low odour boiler, etc.
- Chip handling systems
- Road dust and winter sand

- The topographic map of pg showing location of beehive burners is too large to send via email. Will try to send separately. Glenda

1990s - Prince George Burners Shut Down

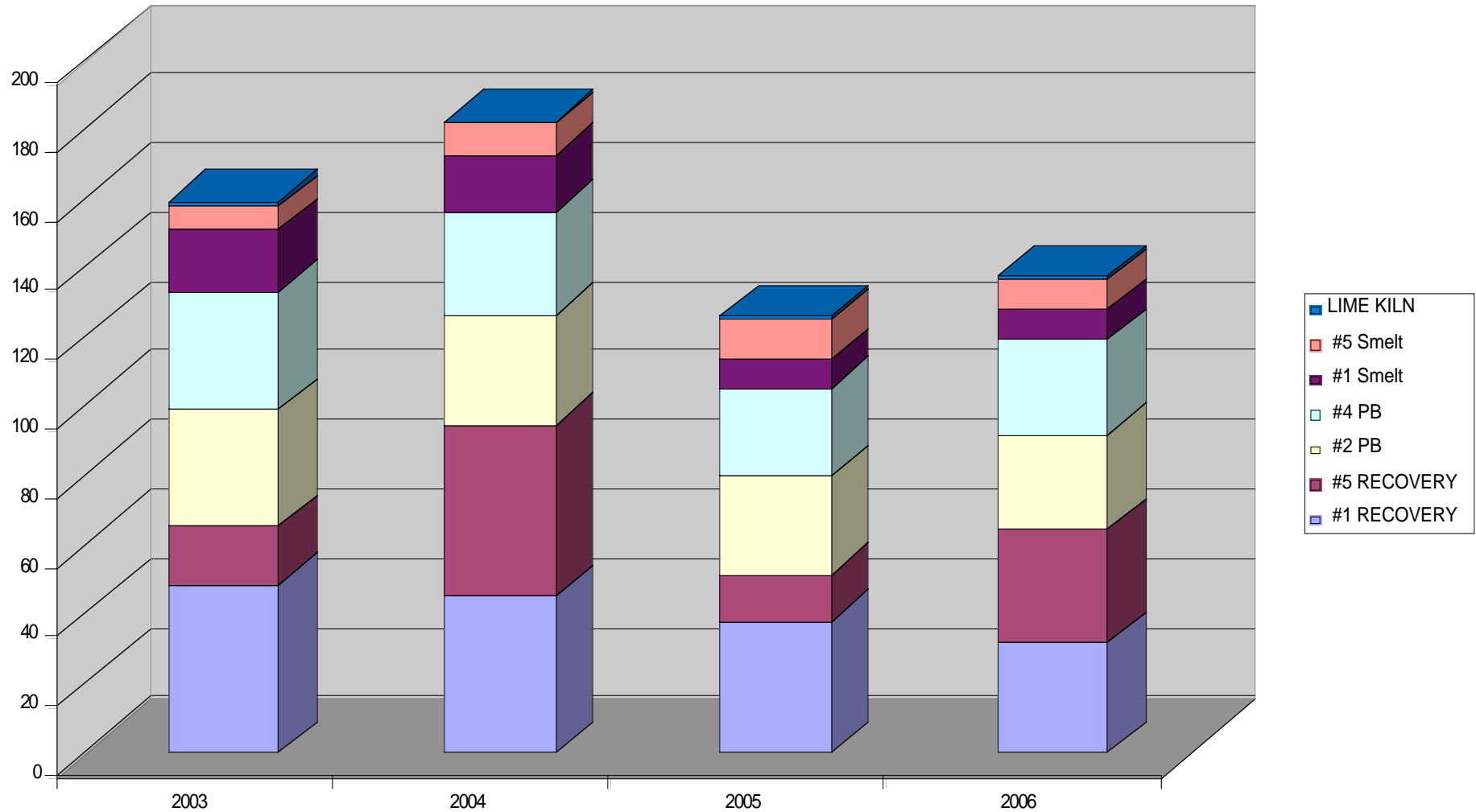
- May 1992 - North Central Plywoods
- November 1993 - Dollar Saver Lumber and Lakeland Mills
- March 1995 - The Pas
- June 1995 - Westhill Lumber
- November 1996 - PG Wood and Carrier Planer
- December 1996 - Stella Jones
- March 1999 - Netherlands Overseas Mill
- October 1999 - Carrier Sawmill Burner
- December 2000 - Rustad

1990s - Other Emissions Reductions - Canfor PG

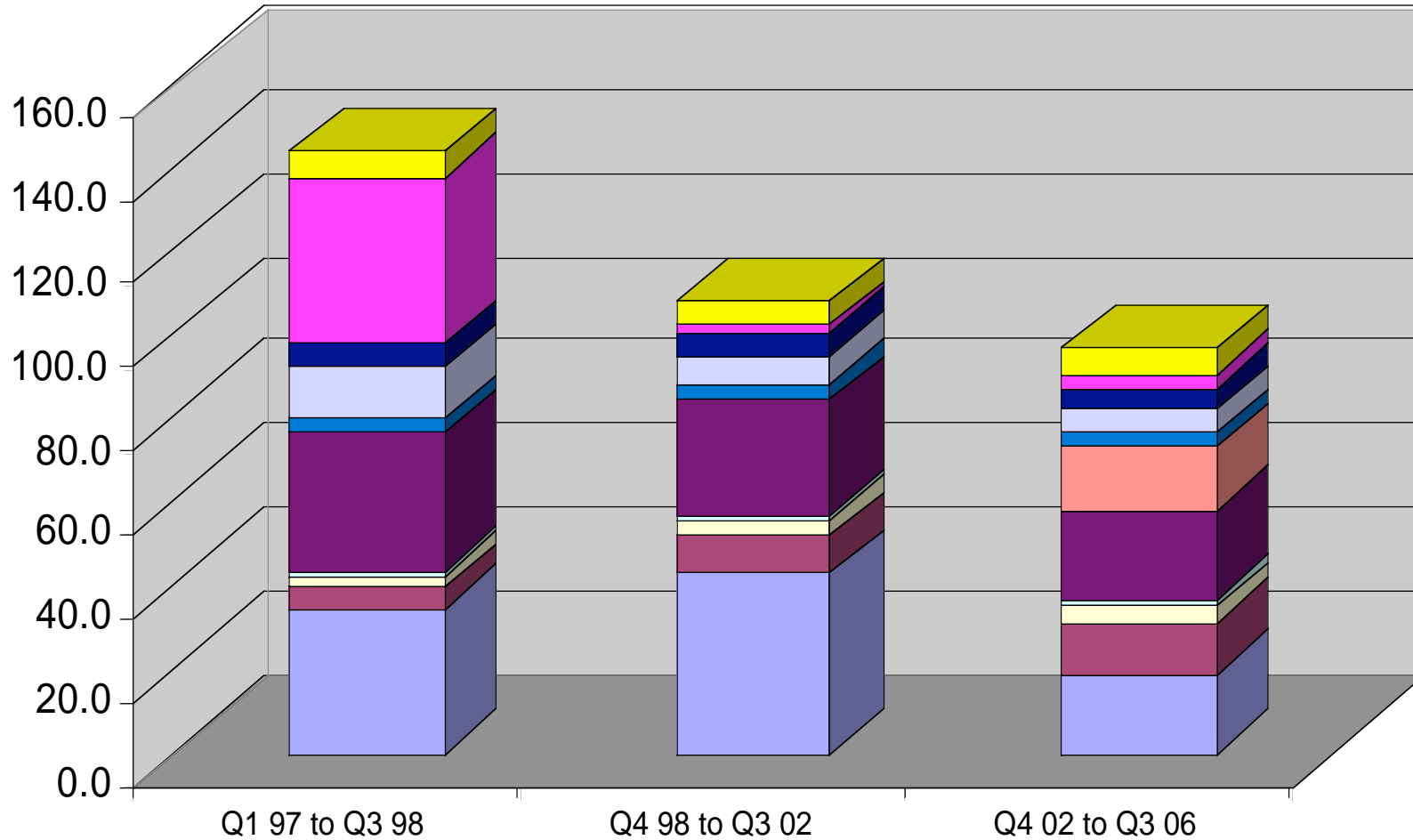
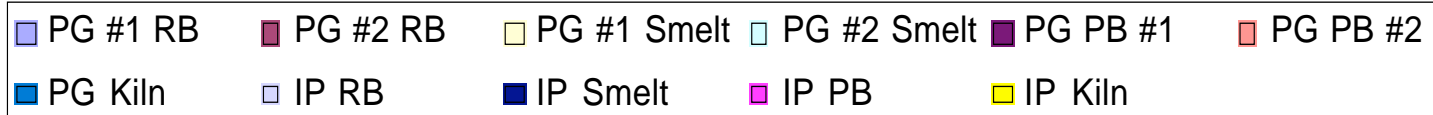
- 1993 Low odor recovery boiler at Intercon with new precipitator
\$50 million *
- 1994 Third precipitator chamber on Northwood #1 recovery boiler
\$10.3 million
- 1996 North Central Plywoods precipitator
\$1.8 million
- 1998 New precipitator on Intercon power boiler
\$7 million
- 2000 Cogeneration at Intercon
\$7.5 million *

** These projects had benefits other than reduced emissions*

Particulate from Northwood



Total PM from PG Pulp & Paper and Intercon Pulp



1990s - Chip Handling Systems

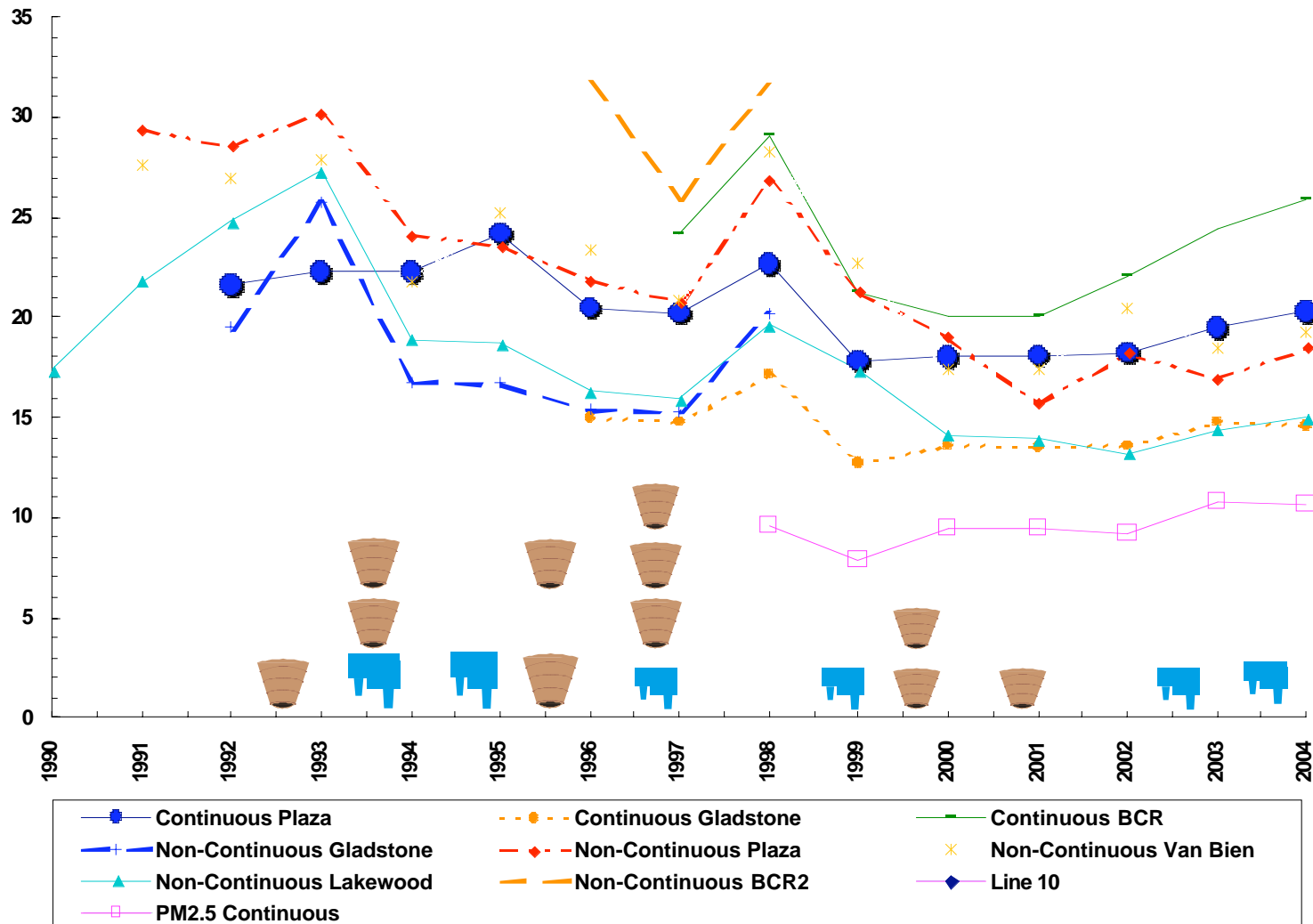
- 1999 PG Sawmill chip and hog conversion from blowpipe to conveyor
- 1999 New truck dumper and chip conveying system at Intercon
- 2000 New rail car dumper and chip conveying system at PG Pulp

Road Dust and Winter Sand

- Work done by City . . .
 - Large aggregate for traction
 - Improved street sweeping
 - Clean Air Bylaw
- Need to identify the next best options for taming this unwieldy source



Trends in Annual Average PM in Prince George



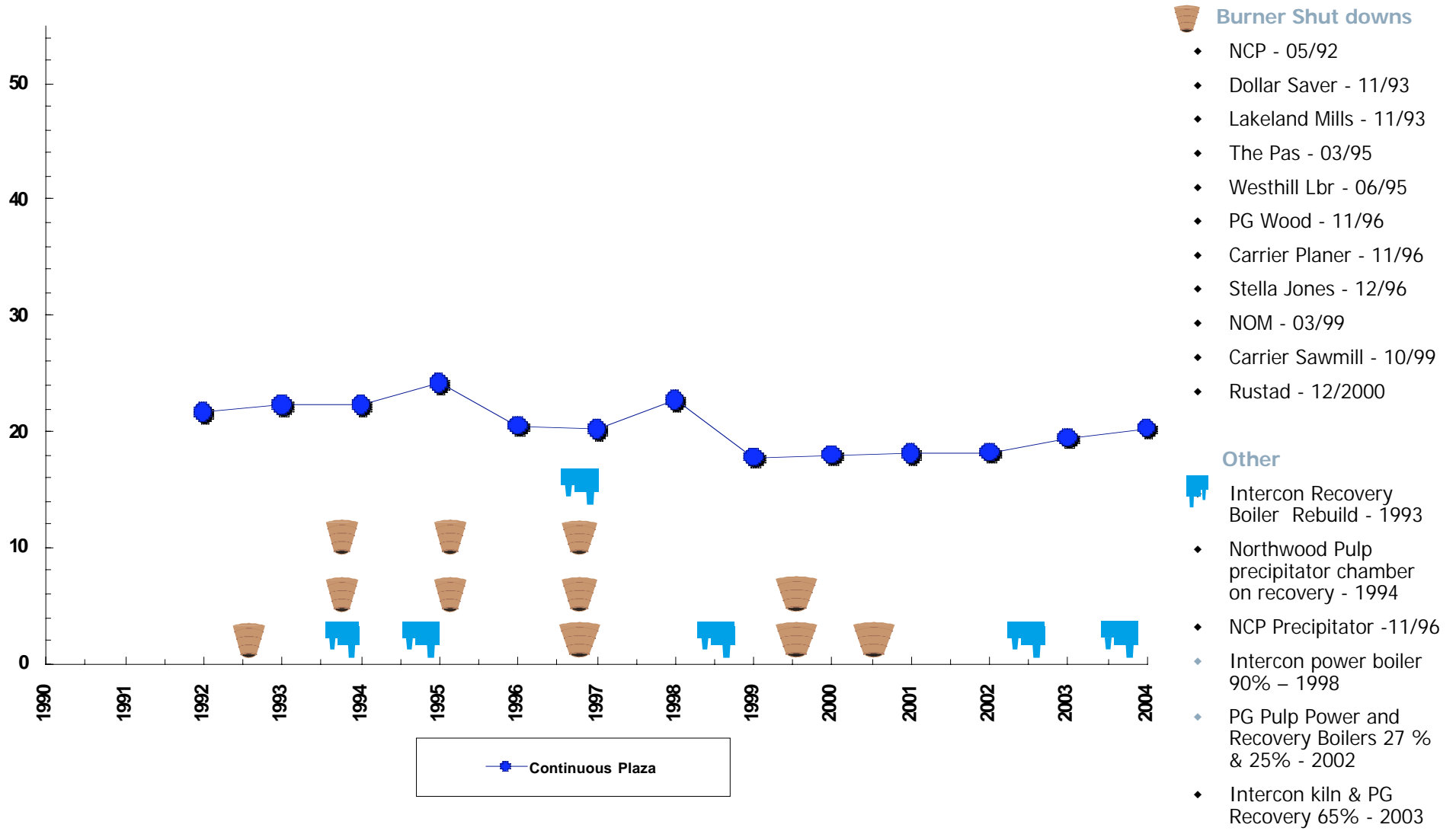
Burner Shut downs

- ◆ NCP - 05/92
- ◆ Dollar Saver - 11/93
- ◆ Lakeland Mills - 11/93
- ◆ The Pas - 03/95
- ◆ Westhill Lbr - 06/95
- ◆ PG Wood - 11/96
- ◆ Carrier Planer - 11/96
- ◆ Stella Jones - 12/96
- ◆ NOM - 03/99
- ◆ Carrier Sawmill - 10/99
- ◆ Rustad - 12/2000

Other

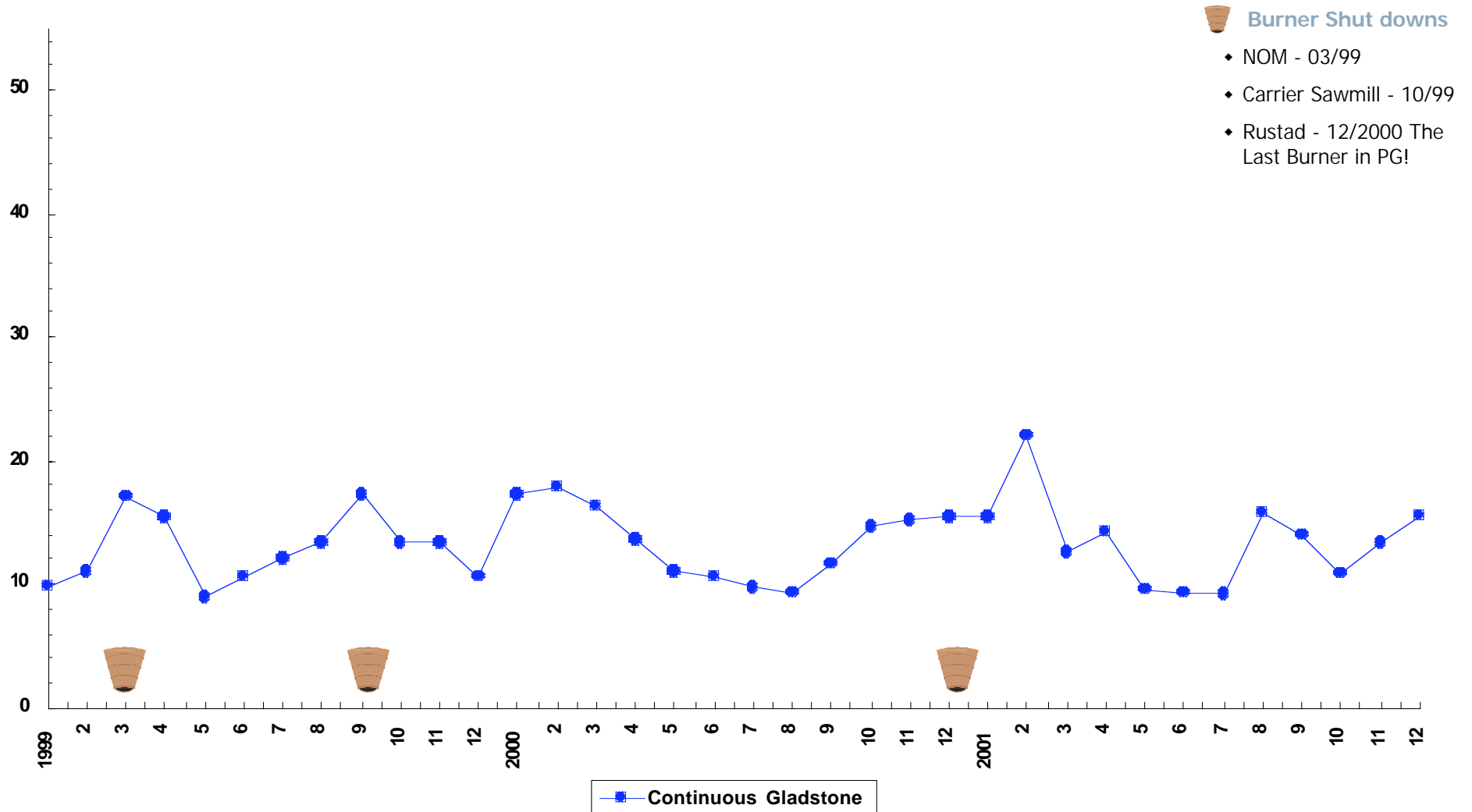
- ◆ Intercon Recovery Boiler Rebuild - 1993
- ◆ Northwood Pulp precipitator chamber on recovery - 1994
- ◆ NCP Precipitator - 11/96
- ◆ Intercon power boiler 90% - 1998
- ◆ PG Pulp Power and Recovery Boilers 27 % & 25% - 2002
- ◆ Intercon kiln & PG Recovery 65% - 2003

Trends in Annual Average PM10 at Plaza 400

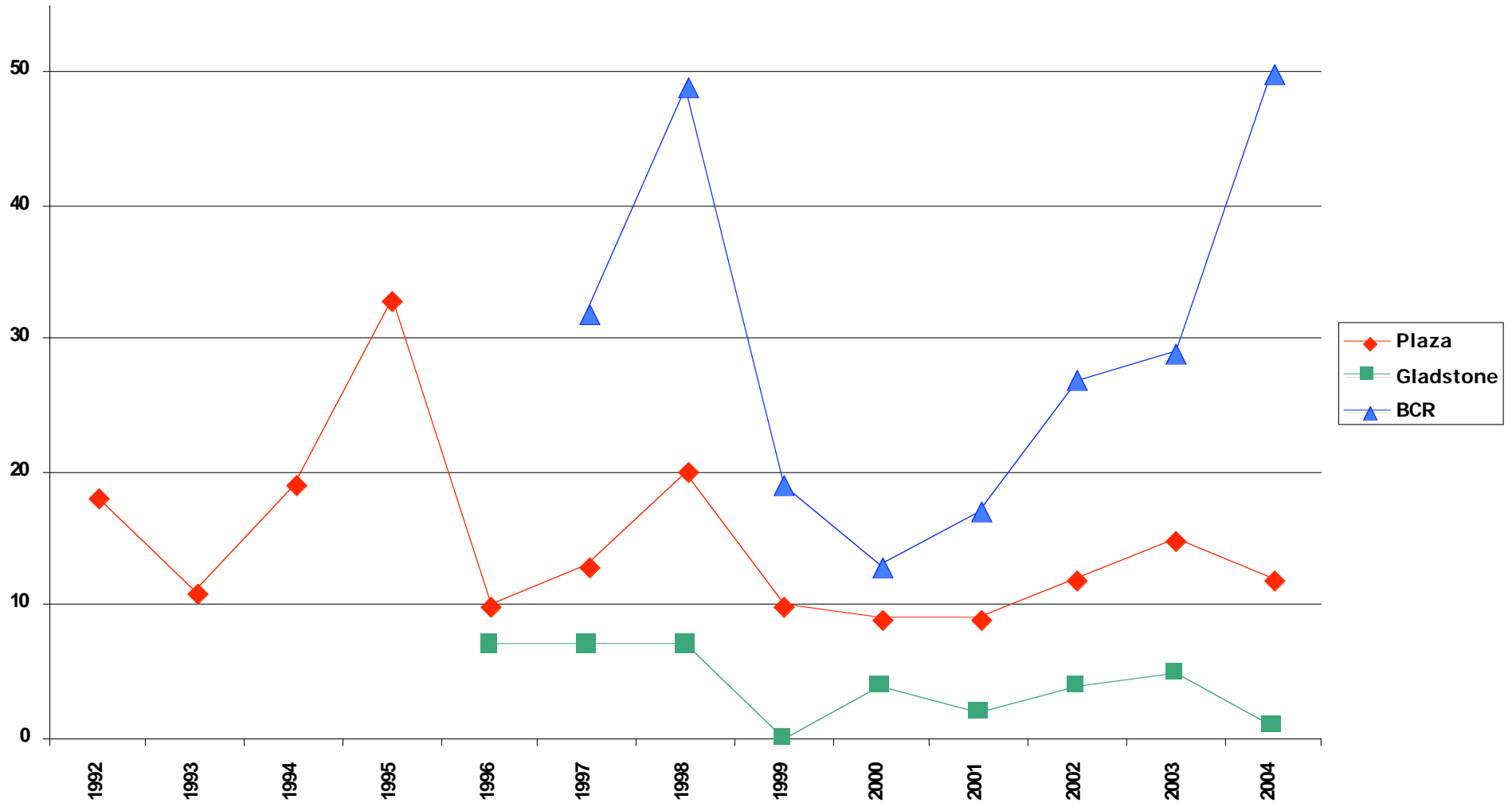


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Trends in PM10 in College Heights



Exceedences = No. days $> 50\mu\text{g}/\text{m}^3$



Airshed Modeling

- Circa 1996 - Northwood Pulpmill ISC Model
- May 1998 – Ministry of Environment modeled Northwood sources
- Similar conclusions - most effective/efficient results from low level, low velocity emissions
- Model limitations
- Calpuff Model recommended

Calpuff Modeling Study 98/99

- Two Objectives:
 - Relative impact of the Northwood Pulpmill sources
 - Relative impact of Northwood Pulpmill versus other airshed sources
- Deliverables:
 - Ability to predict effectiveness of projects
- Findings:
 - Diminishing returns at pulp mills
 - Improve knowledge of area sources and remodel

The 00s - Where Are We?

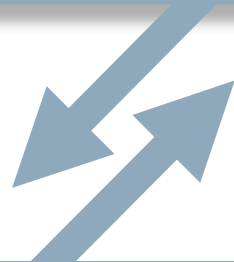
- Further improvements at 3 pulp mills
(Prince George Cogen, Northwood power boilers, Intercon scrubber)
- What we thought were the big hits are complete
 - Beehive burners are all gone
 - Several major projects (precipitators, boiler rebuilds)
 - Wood handling systems improved
- PM10 and 2.5 data has not improved
(annual monitoring cost ~\$120,000)
- Positives - Modeling, UNBC Studies, AQ Committees, Research Plan

Since September 2002 . . .

Prince George Air Quality Steering Committee



Prince George Air Quality Implementation Committee



Monitoring Working Group



Research Working Groups

The Plan (approved September 2003). . .

- Update and refine emissions inventory
- Run community airshed models to evaluate significance of sources
- Develop priority list of management actions based on predicted benefit
- Go to work on the most effective/efficient items –
Note: *Canfor is fully committed to this approach and to the work that will be identified*
- Measure our success

What We've Learned . . .

- Science ahead of planning
- Low level sources
- Airshed approach
- Actions based on predicted benefit to air quality
- Accurate information to citizens