

ATTACHMENT 10 - GRANBY SURVEY NOTES MAY 10-11, 2007

General comments

- HSI analysis of mine waste locations, based on site Project Manager identification of a known mining site, identified the three areas visited during the field trip. Several other areas identified in imagery should be checked for lead and zinc contamination on another field trip.
- Cedar/Juniper probably the best indicator since they are year round. Best collection would be winter when leaves off other trees.
- Trees appeared dwarfed in the contaminated areas. One Cedar in Granby was only tree with lead reading in/on needles.
- Initial sampling indicates that Cedar and grass tissue Zn samples (XRF) are positively correlated soil Zn samples (XRF).
- Cedar is an excellent candidate for HSI work:
 - It occurred in every site we visited.
 - Tissue Zn is correlated with soil Zn
 - It is easily picked out on an aerial photo
 - It is a large enough target for HSI work.
 - It is green in the winter when other trees have lost their leaves, so it could be flown over year round.
- Cedar has shallow root and would be better at reaching contamination in surface, near-surface area.
- Catalpa was also noted in contaminated areas. Tree has large leaves that may provide more area for signature. Found in Granby, not Aurora.

Abandoned Mining Area in Granby City Limits Southwest of Downtown Area

SPOT G0

Van at entrance to city mining area.

Photo G1



SPOT G1 (Imagery indicated Oak)

Mamosa Tree (dead) with Cherry growing in middle

Leaves G1 - Live Cherry

XRF 20070511 ($\mu\text{g}/\text{cm}^2$)

#10 Single Pb 0 / Zn 0

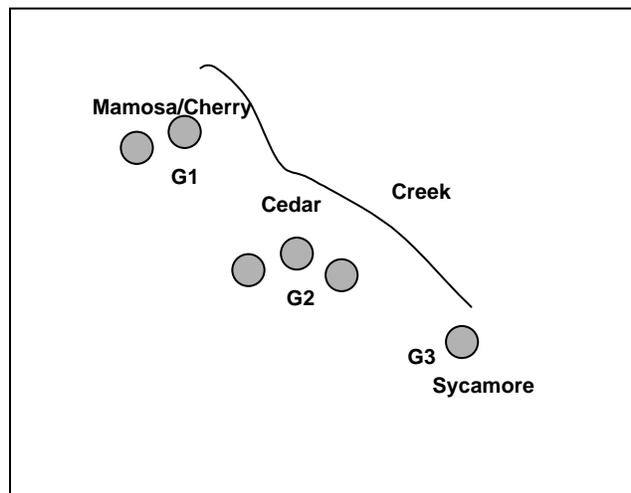
#11 Single Pb 0 / Zn 0

#12 Stacked Pb 0 / Zn 3.98

Soil

XRF 20070510 (ppm)

#4 Pb 1,050 / Zn 40,805



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SPOT G2

Cedar trees

Leaves G2 - Live branches

XRF 20070511 (ug/cm²)

#13 needles & berries Pb 0 / Zn 12.75

#14 needles & berries turned over Pb 0 / Zn 9.46

Soil

[Lat 36.914135382 Long -94.258549136]

XRF 20070510 (ppm)

#5 Pb 1,022/ Zn 29,574

Photo G2



SPOT G3 (Imagery indicated ?)

Sycamore

Leaves G3 - Live & Dead

XRF 20070511 (ug/cm²)

#15 Live Single leaf Pb 0/ Zn 0

#16 Live Stacked Pb 0/ Zn 2.92

#17 Dead Single Pb 0/ Zn 0

#18 Dead Stacked Pb 0/ Zn 5.06

Soil

XRF 20070510 (ppm)

#6 Pb 556 / Zn 51,712

SPOT G4 (Imagery indicated Oak)

Probably Maple – on small chat pile

Soil

XRF 20070510 (ppm)

#7 Pb 254 / Zn 36,918

SPOT G5

Small Catalpa Tree on top of chat pile

Leaves G4

XRF 20070511 (ug/cm²)

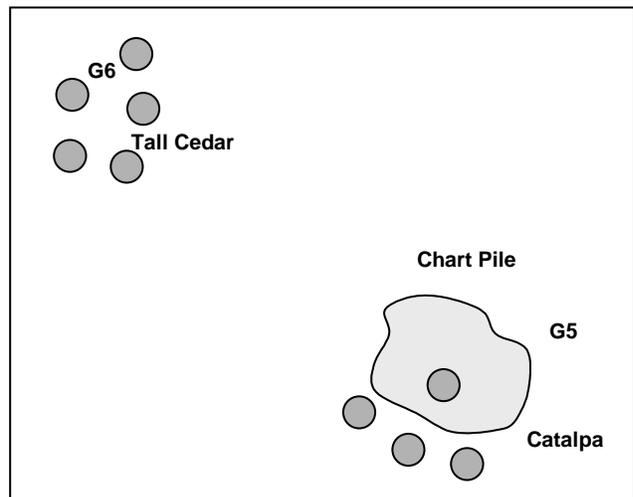
#19 Single leaf Pb 0/ Zn 0

#20 Stacked leaves Pb 0 / Zn 4.10

Soil

XRF 20070510 (ppm)

#8 Pb 614 / Zn 51,709



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SPOT G6

Tall stand of Cedar trees

Leaves G5

XRF 20070511 (ug/cm²)

#21 Needles & no berries Pb 0 / Zn 10.61

#22 Same turned over Pb 0 / Zn 5.13

Soil

[Lat 36.913129035 Long -94.259109823]

XRF 20070510 (ppm)

#9 Pb 504 / Zn 4,622

Photo G3



SPOT G7

Catalpa Tree

Leaves G6 - Live

XRF 20070511 (ug/cm²)

#23 Single leaf Pb 0 / Zn 0

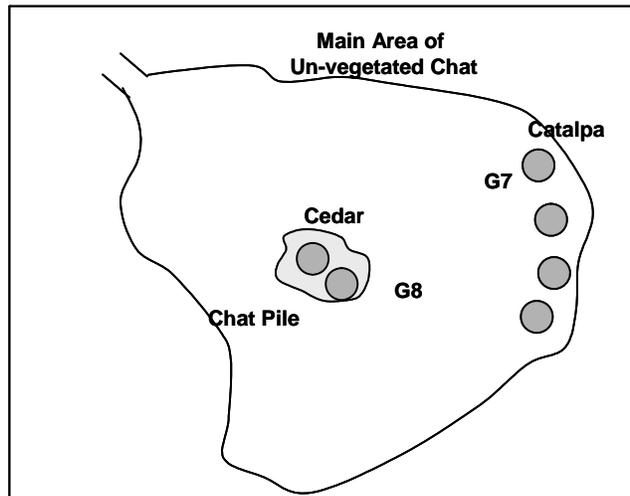
#24 Stacked leaves Pb 0 / Zn 6.25

Soil [Lat 36.913527936 Long -94.257435229]

XRF 20070510 (ppm)

#10 Pb 1,441 / Zn 25,040

Photo G4



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SPOT G8

Several Cedar in middle of chat pile

Leaves 7 - Live

XRF 20070511 (ug/cm²)

#25 Needles & berries Pb 0 / Zn 13.63

#26 Same over Pb 0 / Zn 4.85

Soil

[Lat 36.912986360 Long -94.258255722]

XRF 20070510 (ppm)

#11 Pb 373 / Zn 12,921

Photo G5 & 6



Granby City Park Southwest of Downtown Area

SPOT G9 - City Park near mine waste

Standard Grass

Grass G8

XRF 20070511 (ug/cm²)

#27 Grass stacked Pb 0 / Zn 11.26

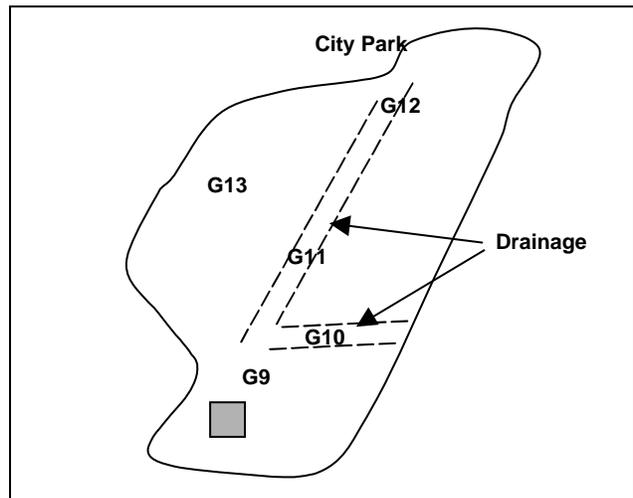
#28 Grass over Pb 0 / Zn 8.94

Soil

XRF 20070510 (ppm)

#14 Pb 0 / Zn 232

Photo G7



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SPOT G10

Bermuda Grass in drainage ditch. Drains from housing area

Grass G9

XRF 20070511 (ug/cm²)

#29 Stacked Pb 0 / Zn 15.36

#30 Other side of Stacked Pb 0 / Zn 28.05

Soil

XRF 20070510 (ppm)

#15 Pb 971 / Zn 11,815

SPOT G11

Bermuda Grass in yellow spot

Grass G10

XRF 20070511 (ug/cm²)

#31 Stacked Pb 0 / Zn 5.44

#32 Other side of Stacked Pb 0 / Zn 15.83

Soil

XRF 20070510 (ppm)

#16 Pb 93 / Zn 44

SPOT G12

Yellow spot in grassy area

Soil

XRF 20070510 (ppm)

#17 Pb 377 / Zn 5,056

SPOT G13

Park hillside that may have been chat pile. Soil readings from materials dug from a hole.

Grass G11 - *Plantago lanceolata* growing around hole.

XRF 20070511 (ug/cm²)

#33 Single Leaf Pb 0 / Zn 0

#34 Stacked Leaves Pb 0 / Zn 34.23

Soil

XRF 20070510 (ppm)

#18 Pb 5,318 / Zn 16,476

SPOT G14

Bare spot on same hillside.

Grass G12 - *Plantago lanceolata* growing around bare spot.

XRF 20070511 (ug/cm²)

#35 Stacked Leaves Pb 0 / Zn 17.57

Soil

XRF 20070510 (ppm)

#19 Pb 511 / Zn 7,141

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Abandoned Mining Area Southwest of Granby

SPOT G15

Mining area transferred to County

Soil

XRF 20070510 (ppm)

#20 Pb 158 / Zn 7,271

SPOT G16

Cedar trees on edge of pond

Leaves G13 - Cedar needles/no berries

XRF 20070511 (ug/cm²)

#36 Pb 0 / Zn 27.18

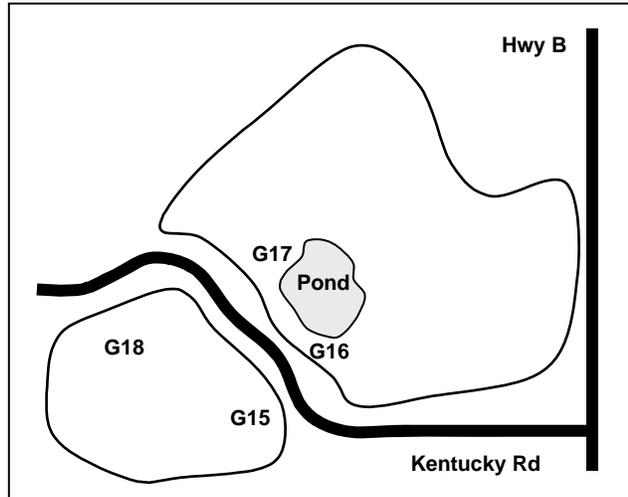
#37 Pb 0 / Zn 39.67

Soil

[Lat 36.893975156 Long -94.270403358]

XRF 20070510 (ppm)

#21 Pb 1,145 / Zn 39,832



SPOT G17

Stand of short and tall Cedar on edge of pond

Leaves G14 - Cedar needles/no berries

XRF 20070511 (ug/cm²)

#38 Pb 0 / Zn 3.53

#39 Pb 0 / Zn 4.54

Soil

[Lat 36.894645261 Long -94.270753271]

XRF 20070510 (ppm)

#22 Pb 1,354 / Zn 13,950

Photo G8



SPOT G18

Cedar tree in middle of southern portion of mining area.

Leaves - No needles collected.

Soil

[Lat 36.893717014 Long -94.272019193]

XRF 20070510 (ppm)

#23 Pb 291 / Zn 16,934

Photo G9 (Mining Structures) & 11 (Cedar to the left of mining structures)



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Abandoned Lead Smelter on West side of Downtown Granby

SPOT G19W

Possible clean fill on west side of smelter bag house floor.

Soil

XRF 20070510 (ppm)
#26 Pb 494 / Zn 456

Lead slag or smelting waste west of bag house on the surface, mixed with the clean cover. Streaks of slag were clearly visibly on the surface of the cover.

Slag

XRF 20070510 (ppm)
#28 Pb 14,782 / Zn 471

SPOT G19E

Undisturbed area on east side of smelter bag house floor.

Cedar tree about 13 ft west of soil area growing in cracks in concrete floor.

Leaves S1 Cedar tree is ~13ft west of
[~4086866.90129 N 387942.54982 E]

XRF 20070511 (ug/cm²)
#40 Pb 3.54 / Zn 14.34
#41 Pb 0 / Zn 16.22
#42 Pb 3.08 / Zn 8.52

Soil

XRF 20070510 (ppm)
#27 Pb 55,215 / Zn 67,637
Photo G12, 13, 14



ATTACHMENT 10 - GRANBY SURVEY NOTES MAY 10-11, 2007

Athletic Complex East of Downtown Granby

SPOT G20

Ball fields and athletic complex on east side of Granby.
No grass samples taken.

Soil

XRF 20070510 (ppm)

#29 Pb 106 / Zn 2,366

#30 Pb 208 / Zn 2,052

Photos G15, 16

