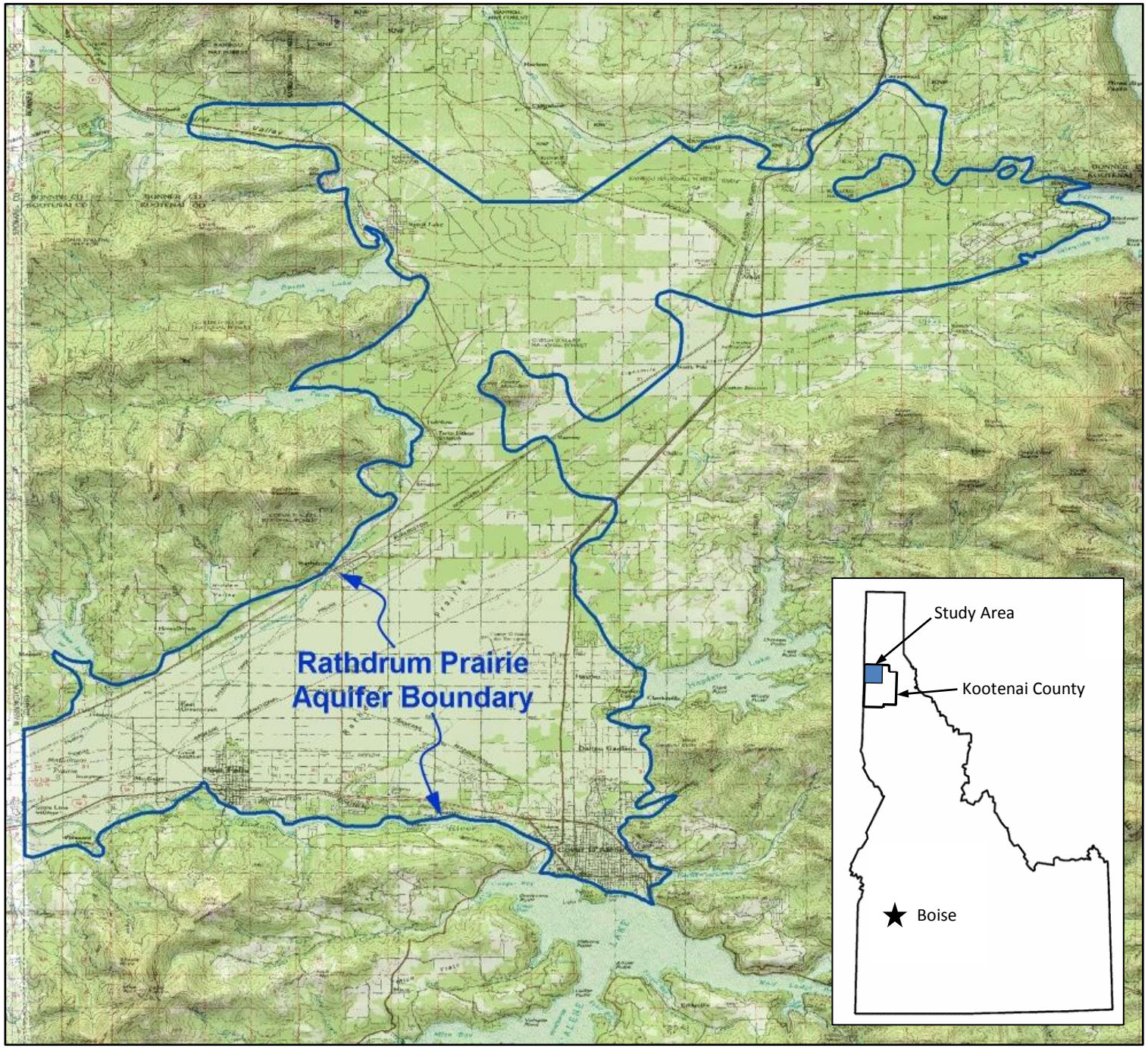

Figure 1. Location of study area

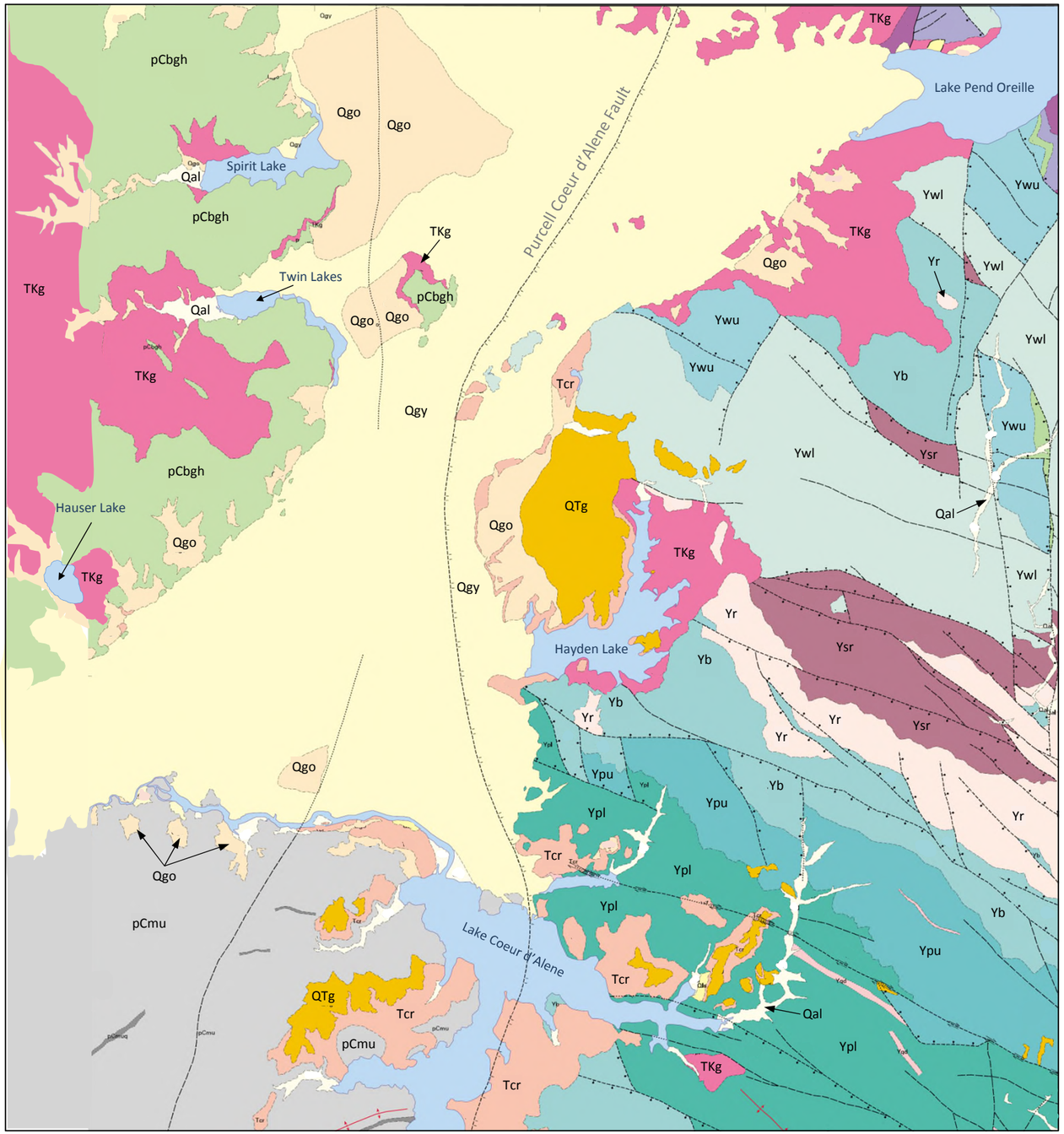

Figure 2. Bedrock geology map of the Rathdrum Prairie Aquifer and surrounding area.

Explanation

- Qal - Alluvium
- Qgy - Younger glacial deposits
- Qls - Landslide deposits
- Qgo - Older glacial deposits
- Qp - Palouse Formation
- QTg - Older gravel deposits
- Tcr - Columbia River Group and Latah Formation
- TKg - Granitic rocks
- Cl - Lakeview Limestone
- Crg - Rennie Shale and Gold Creek Quartzite

Belt Supergroup

- Yl - Libby Formation
- Ysp - Striped Peak Formation
- Yws - Wallace and Striped Peak Formations, undivided
- Ywu - Upper part of the Wallace Formation
- Ywl - Lower part of the Wallace Formation
- Ysr - St. Regis Formation
- Yr - Revett Formation
- Yrb - Revett and Burke Formations, undivided
- Yb - Burke Formation
- Yp - Prichard Formation, undivided
- Ypu - Upper part of the Prichard Formation
- Ypl - Lower part of the Prichard Formation

Other Precambrian Units

- Yqd - Quartz diorite
- pCbgh - Hauser Lake Gneiss
- pCmu - metamorphic rocks, undivided
- pCmuq - Quartzite in undivided metamorphic rocks

- Contacts; dashed where approximate; dotted where concealed.
- Fault, unknown offset; dashed where approximate; dotted where concealed.
- Normal fault; dashed where approximate; dotted where concealed. Bar and ball on downthrown side.
- Reverse fault, approximate; open teeth on downthrown side.
- Strike-slip fault with indeterminate lateral motion; dotted where concealed.
- Strike-slip fault with indeterminate lateral motion and normal offset, approximate; dotted where concealed. Bar and ball on downthrown side.
- Right-lateral strike-slip fault, approximate; dotted where concealed.
- Right-lateral strike-slip fault with normal offset; dashed where approximate; dotted where concealed. Bar and ball on downthrown side.
- Thrust fault, approximate. Teeth on upper plate.
- Detachment fault, concealed. Teeth on upper plate.
- Horizontal symcline; dotted where concealed.
- Horizontal anticline.
- Strike and dip of beds:
- 10 inclined, showing dip

Complied and modified from USGS Digital Geologic Map of the Coeur d'Alene 1:100,000 Quadrangle, Idaho and Montana, OFR 00-135 and USGS Digital Geologic Map of the Spokane County and Vicinity, OFR 98-503 and Idaho Geological Survey, Surficial Geologic Map of the Rathdrum Quadrangle and Part of the Newman Lake Quadrangle, Kootenai County, Idaho, SGM-6

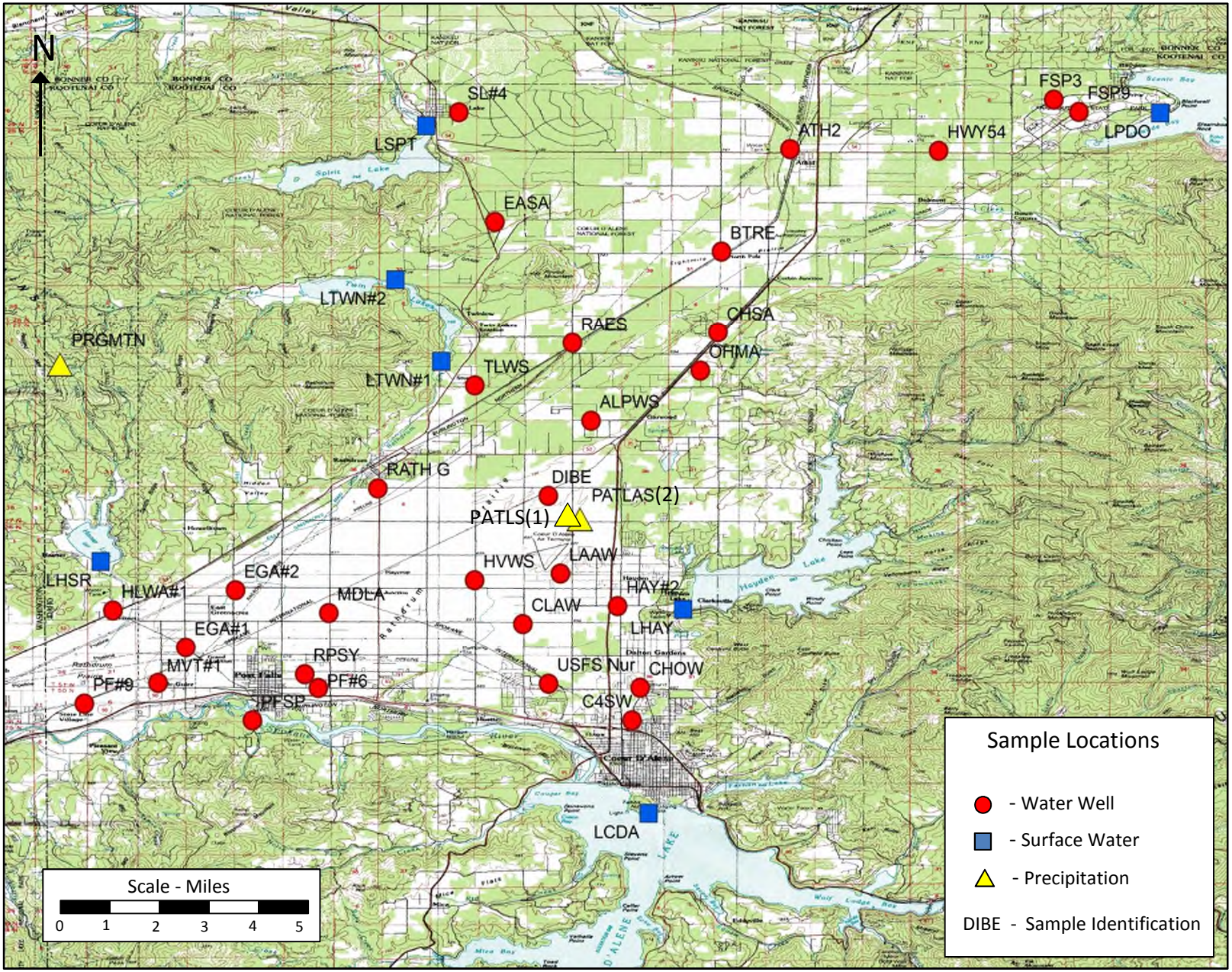

Figure 3. Sample locations and identifications.

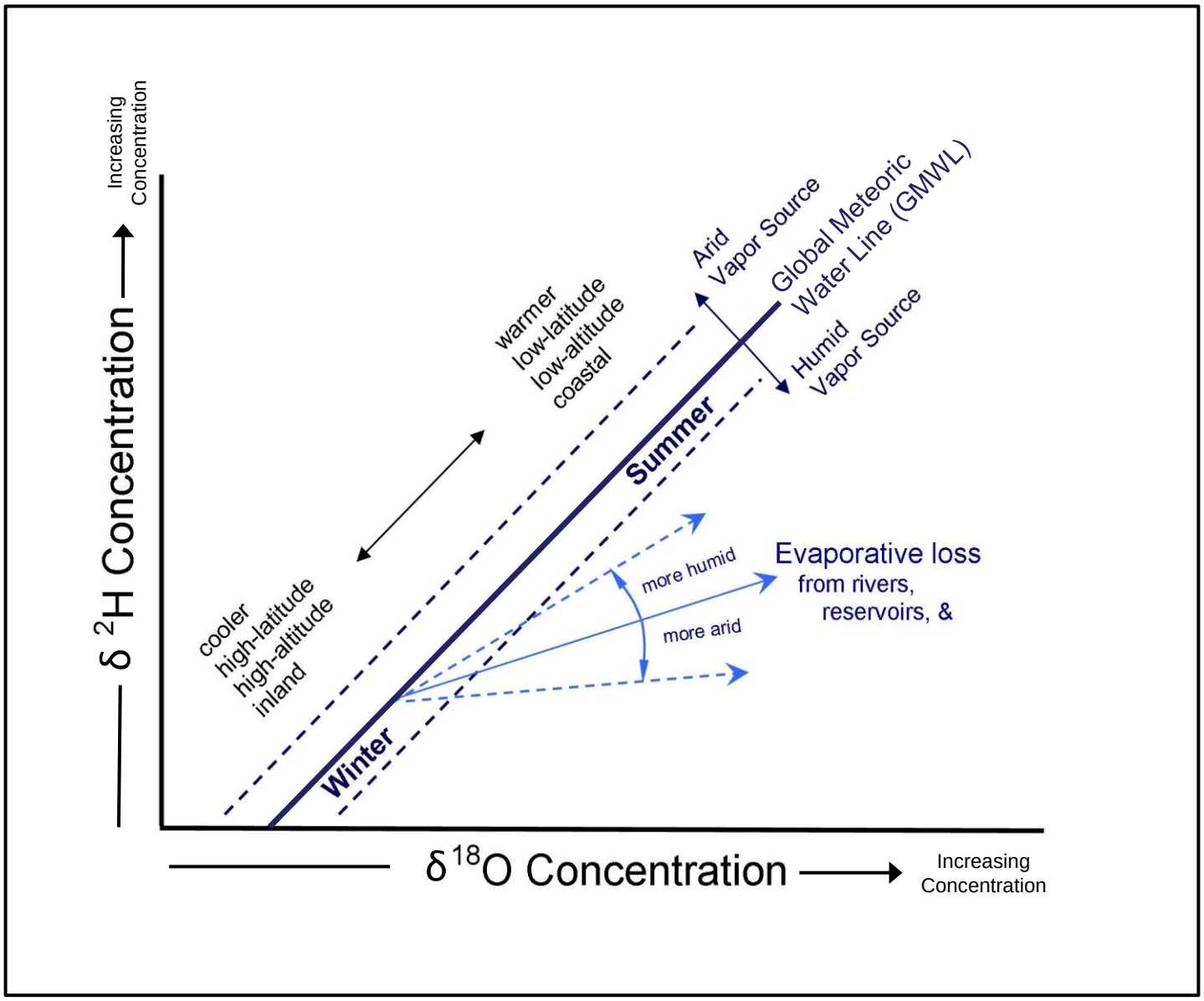

Figure 4. $\delta^{2}H$ versus $\delta^{18}O$ fields and the global meteoric water line.

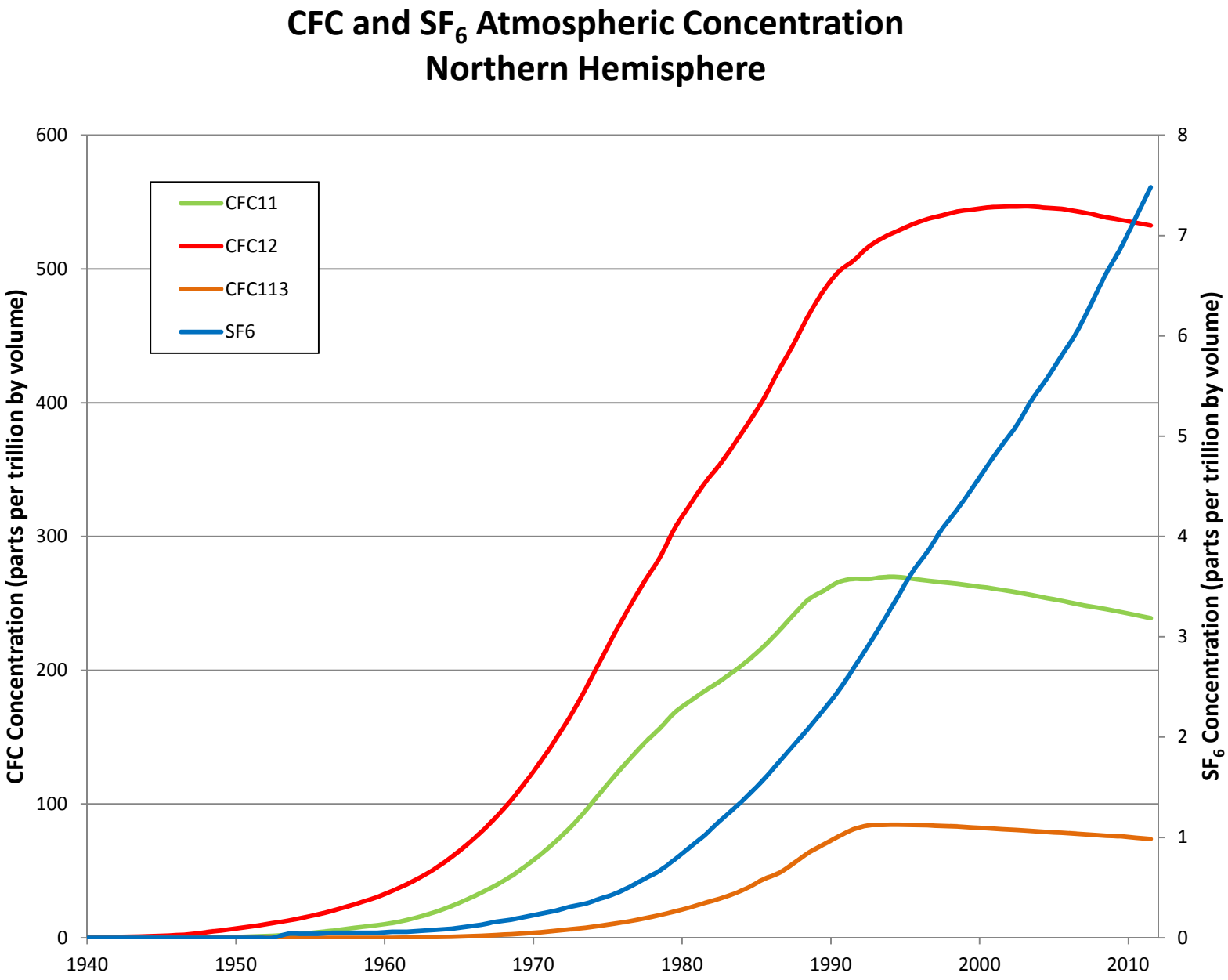

Figure 5. CFCs and SF_6 Historic Northern Hemisphere Atmospheric Concentrations.

June 2012

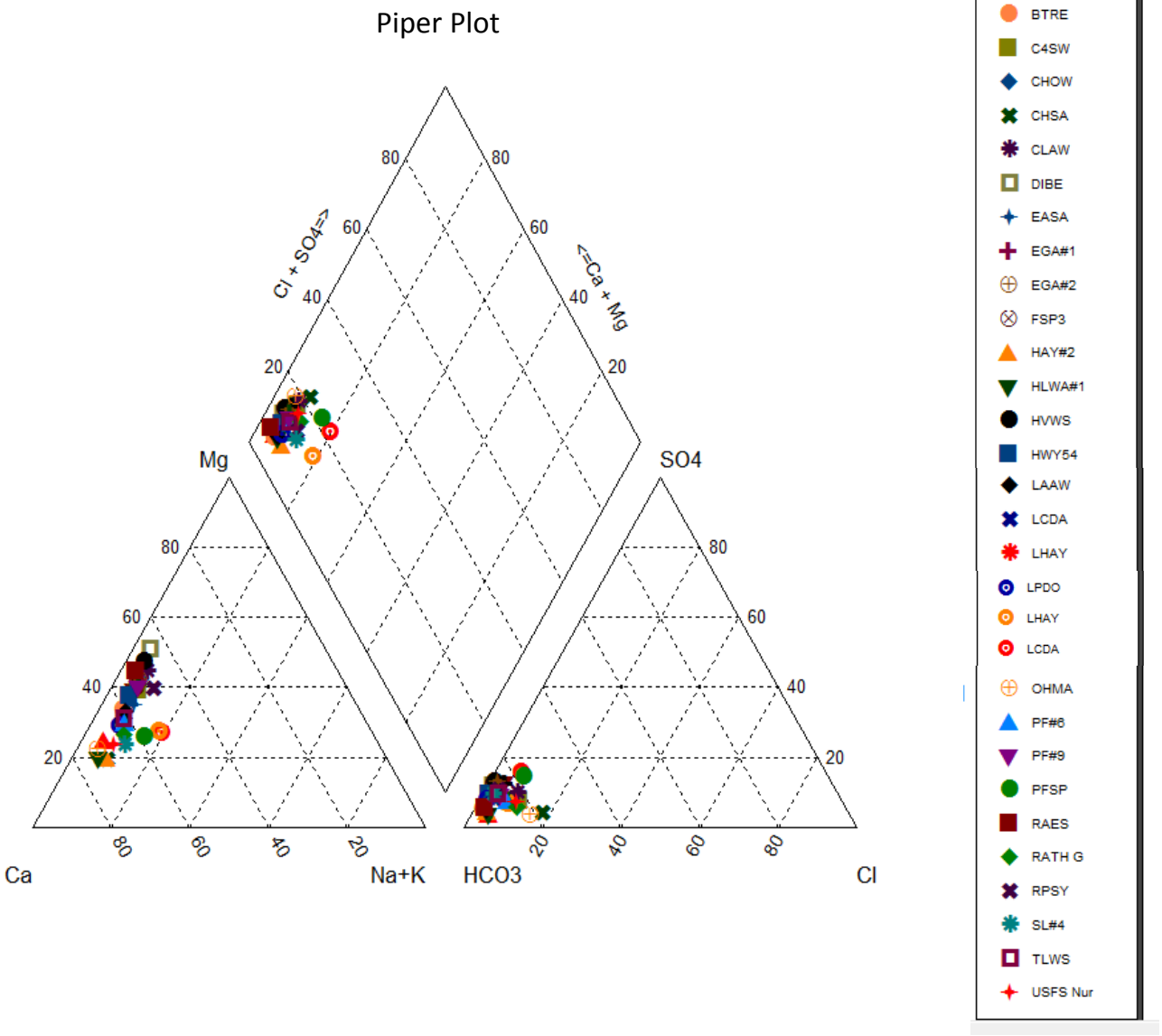

Figure 6. Piper plot for June 2012 sampling event.

September 2012

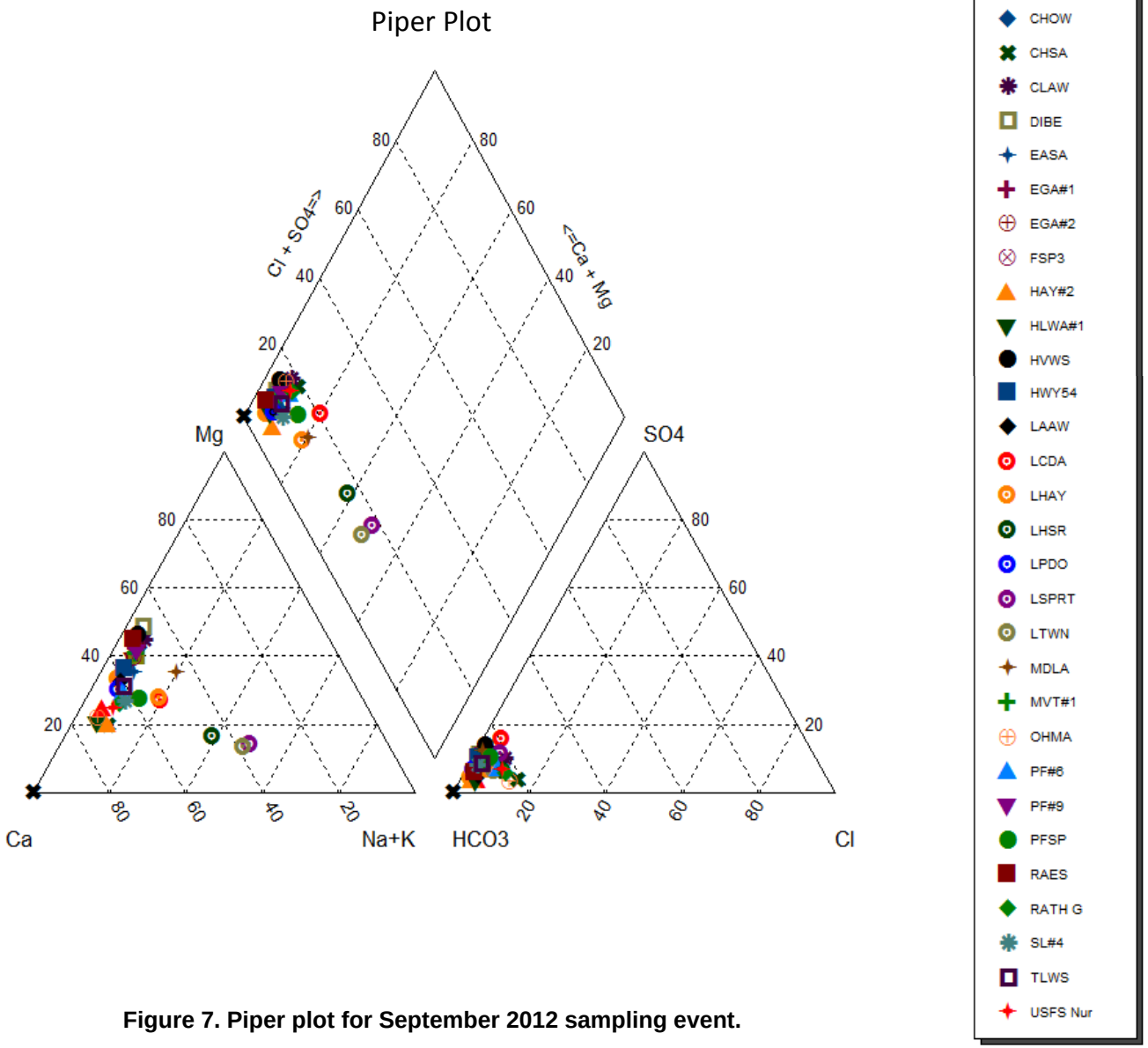

Figure 7. Piper plot for September 2012 sampling event.

January/February 2013

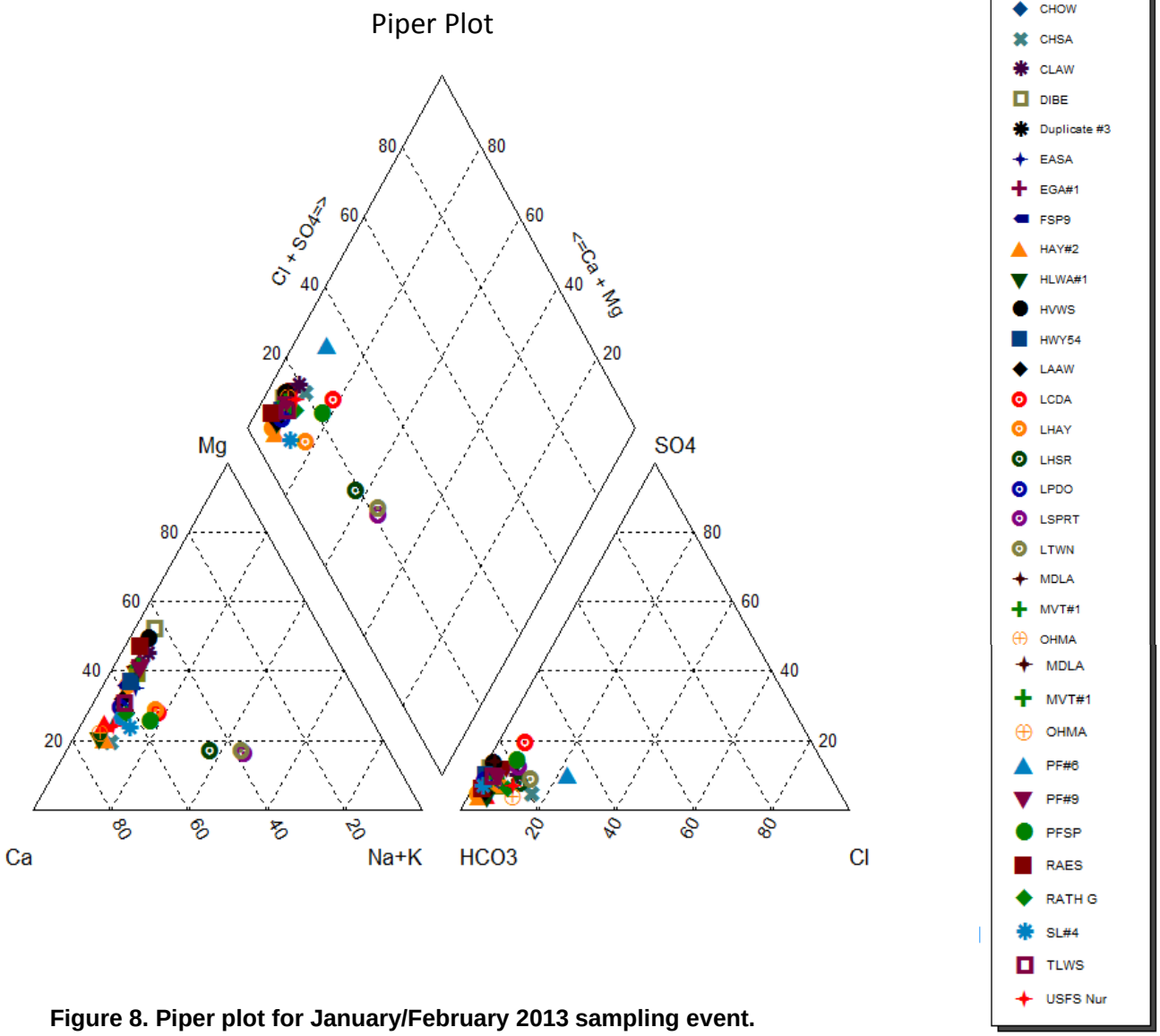

Figure 8. Piper plot for January/February 2013 sampling event.

June 2012

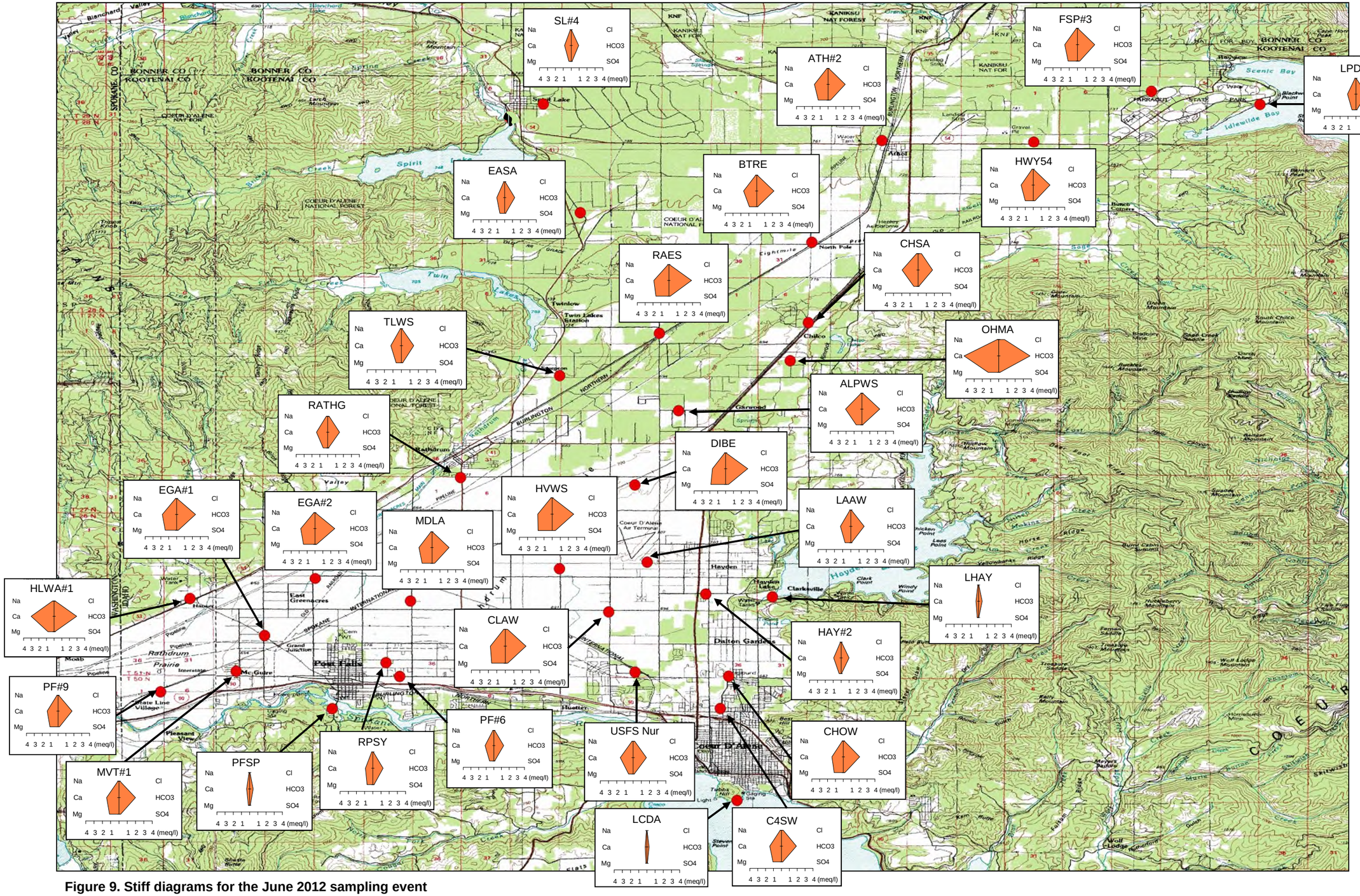

Figure 9. Stiff diagrams for the June 2012 sampling event

September 2012

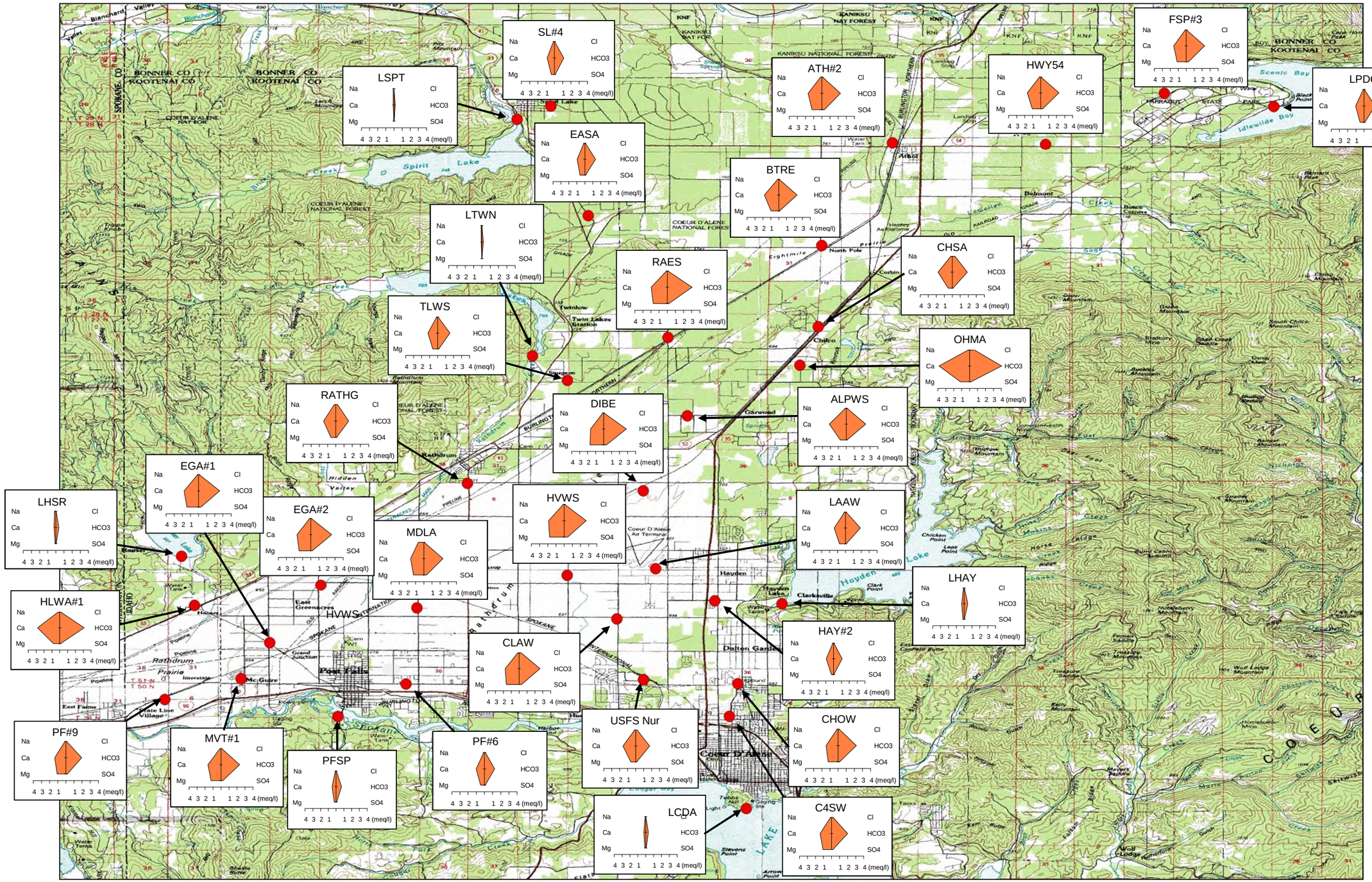

Figure 10. Stiff diagrams for the September 2012 sampling event

January/February 2013

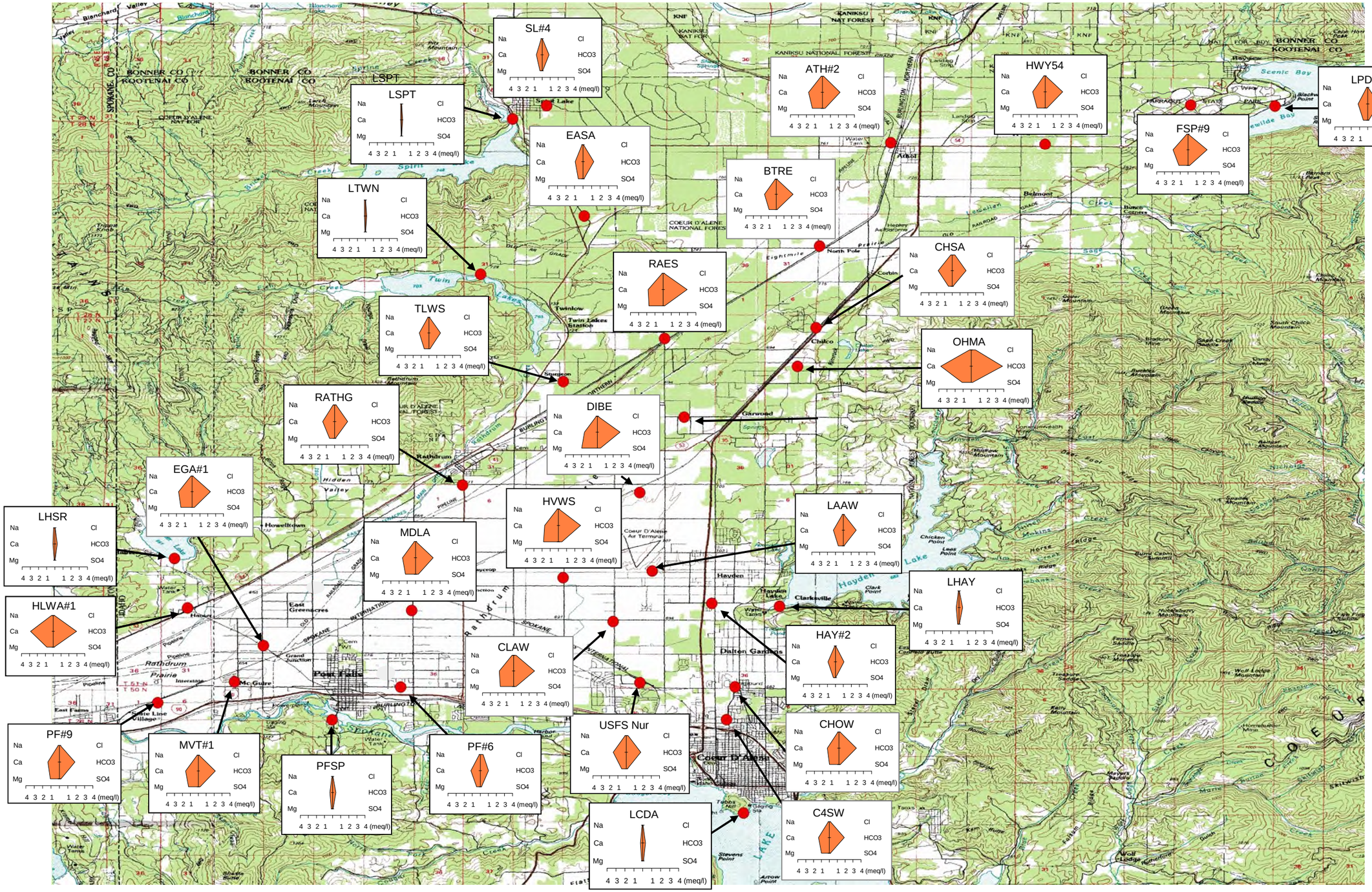

Figure 11. Stiff diagrams for the January/February 2013 sampling event

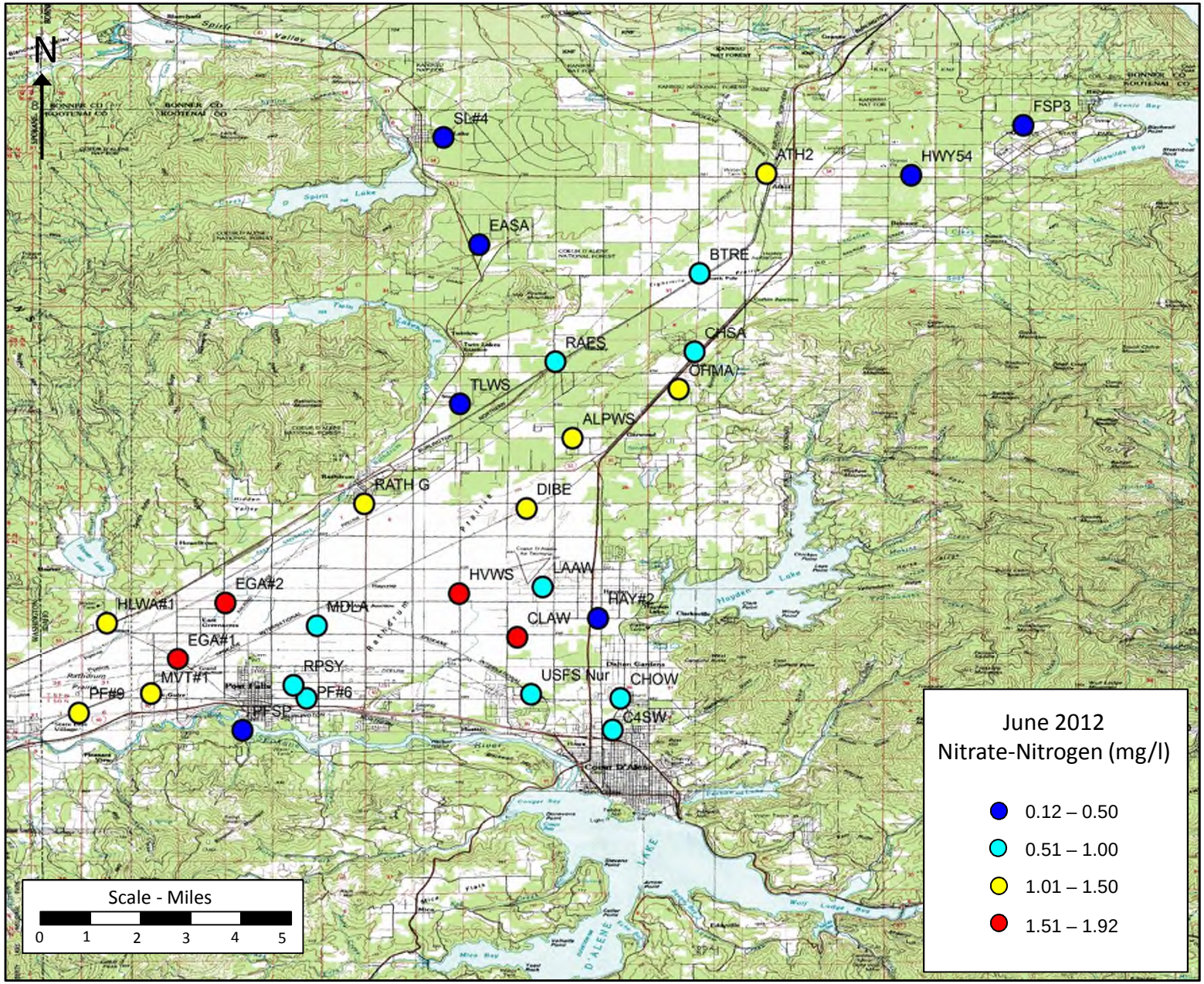

Figure 12. June 2012 Nitrogen-Nitrate Analytical Results

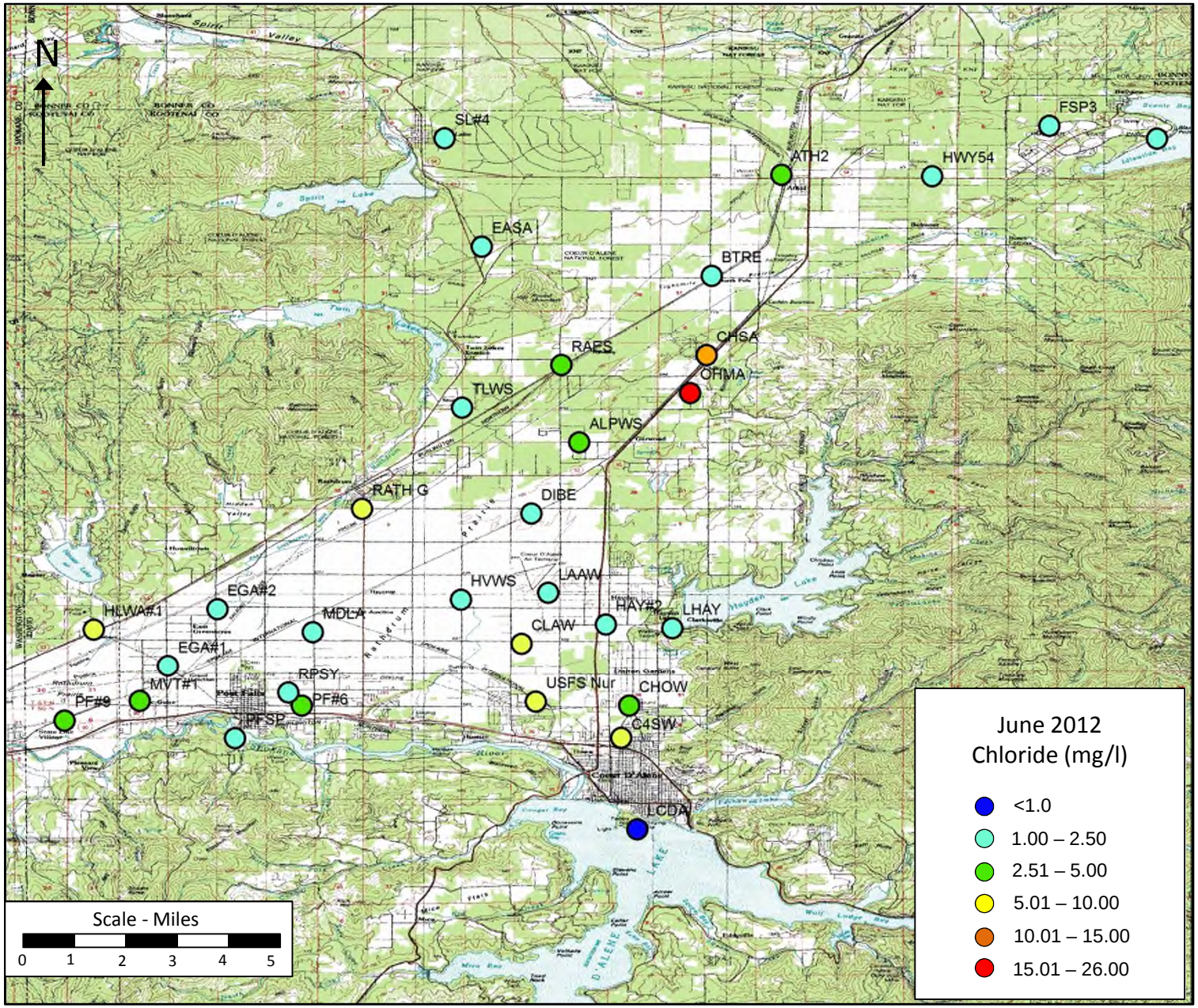

Figure 13. June 2012 Chloride Analytical Results

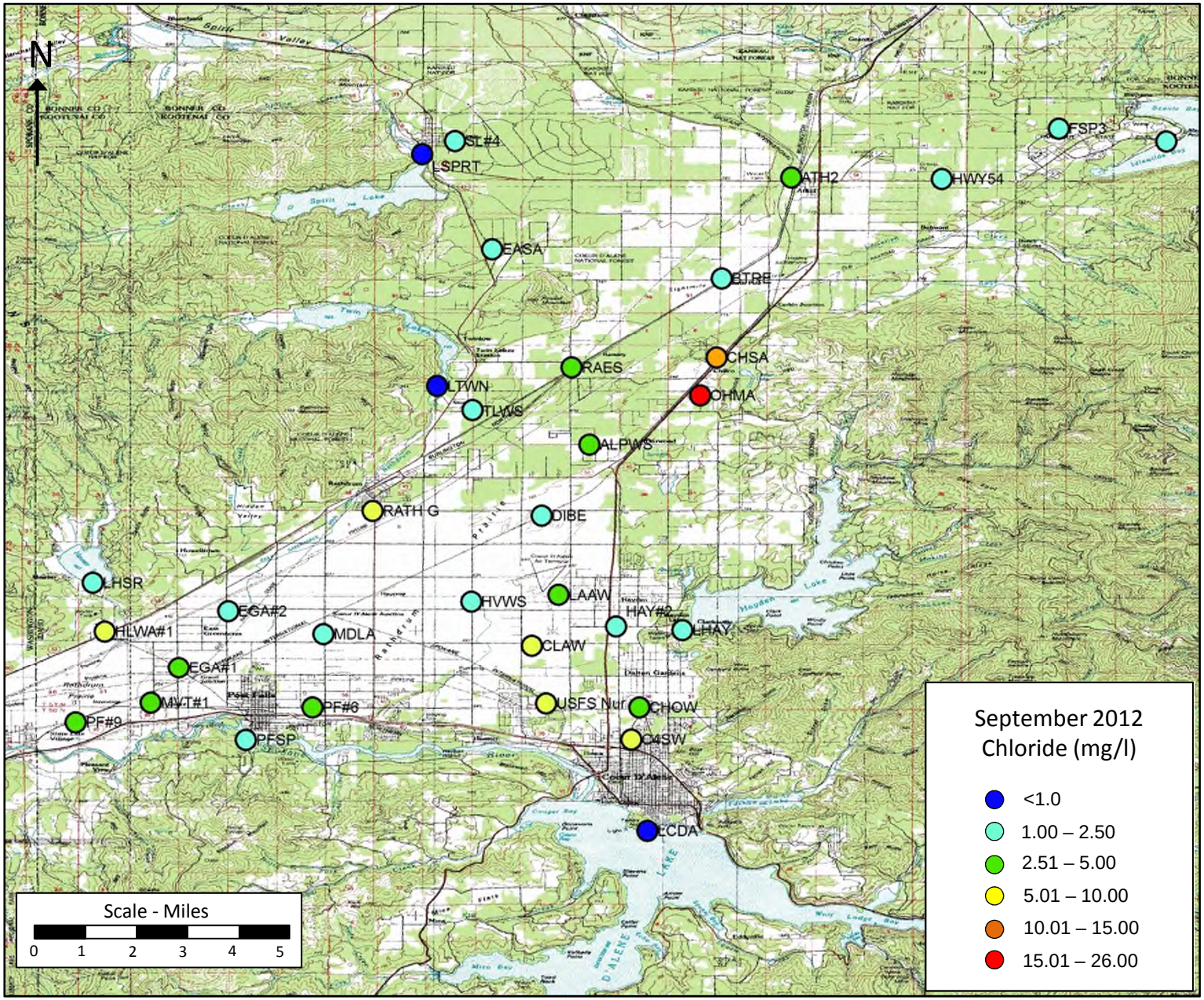

Figure 14. September 2012 Chloride Analytical Results

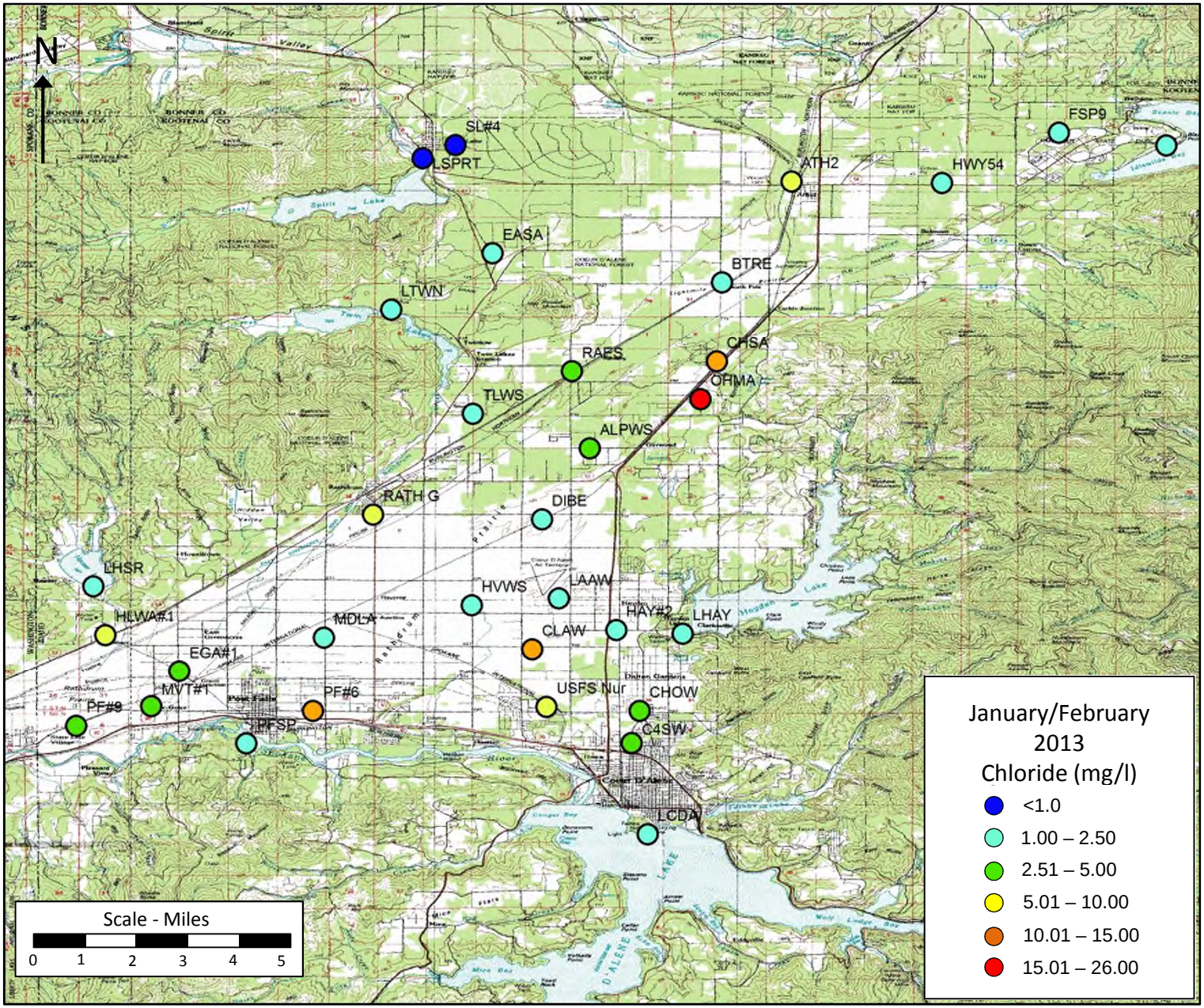

Figure 15. January/February 2013 Chloride Analytical Results

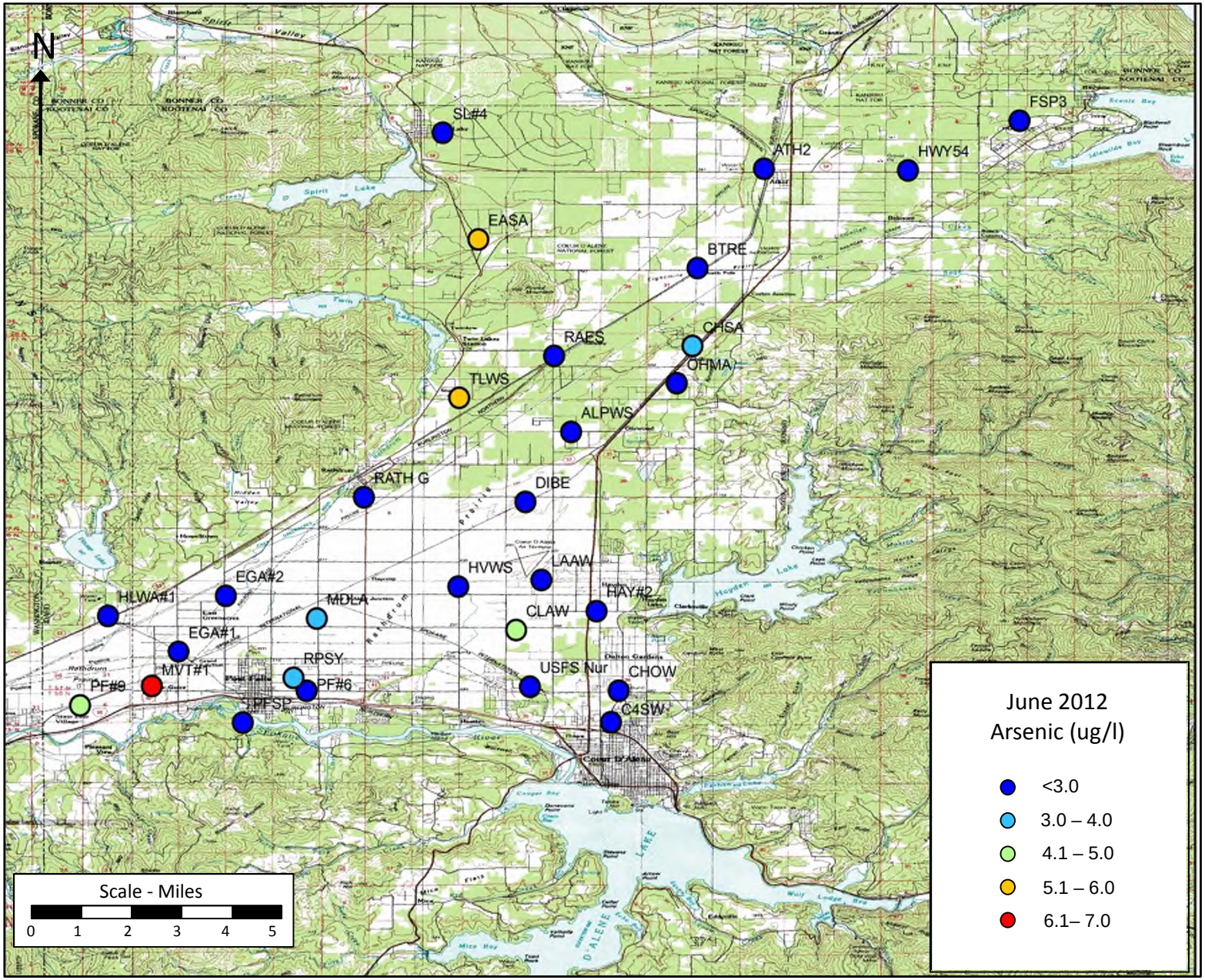

Figure 16. June 2012 Arsenic Analytical Results

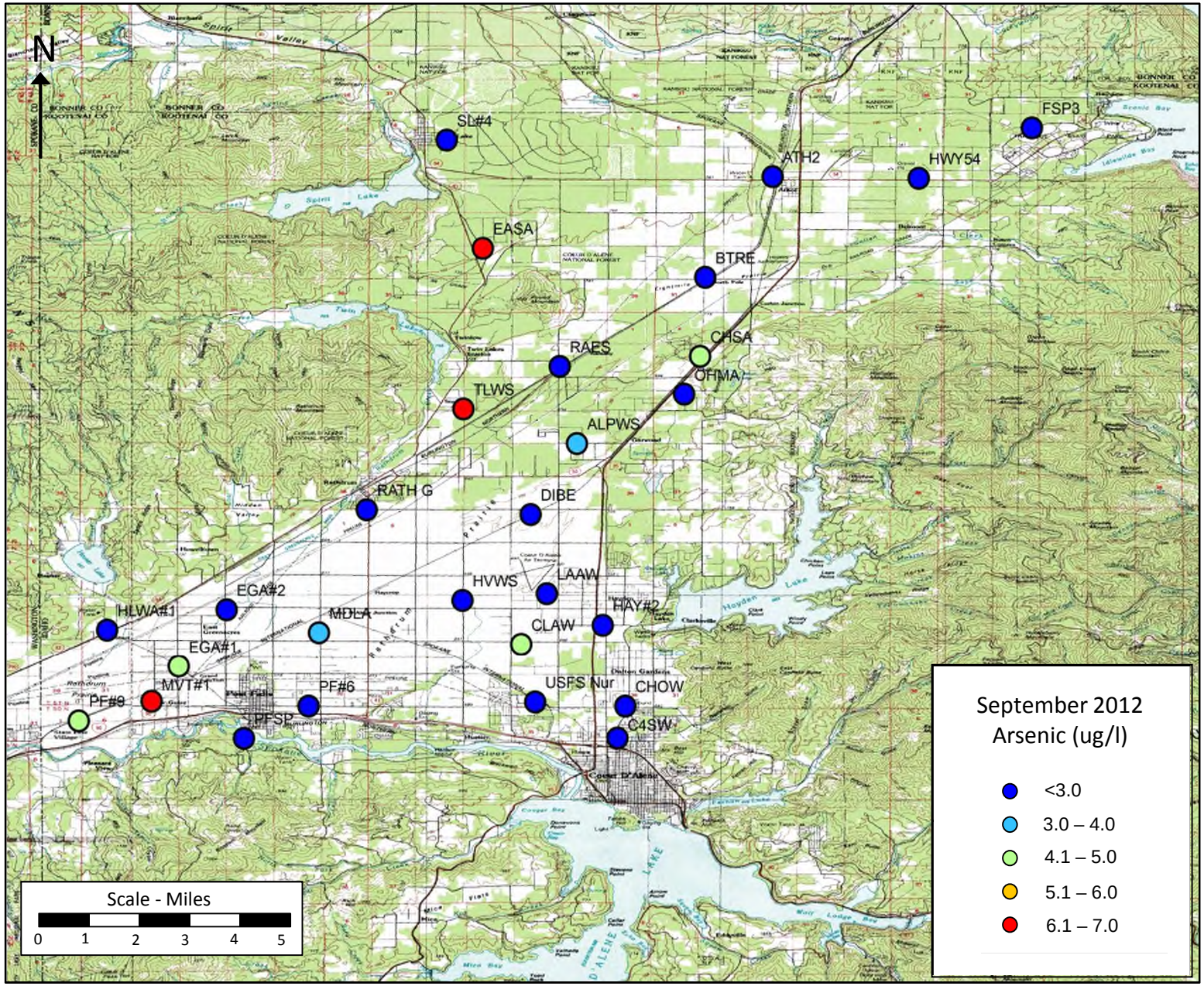

Figure 17. September 2012 Arsenic Analytical Results

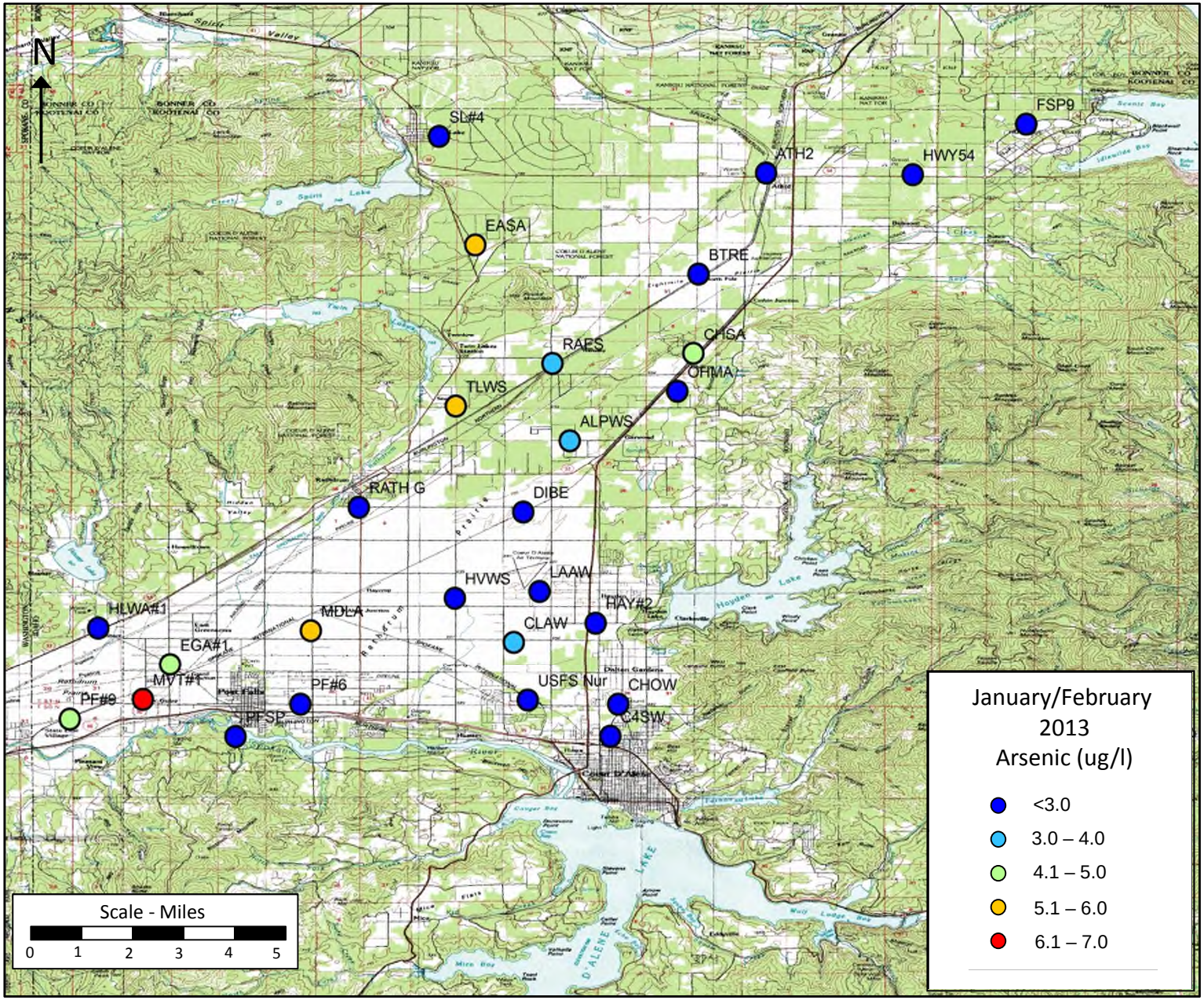

Figure 18. January/February 2013 Arsenic Analytical Results

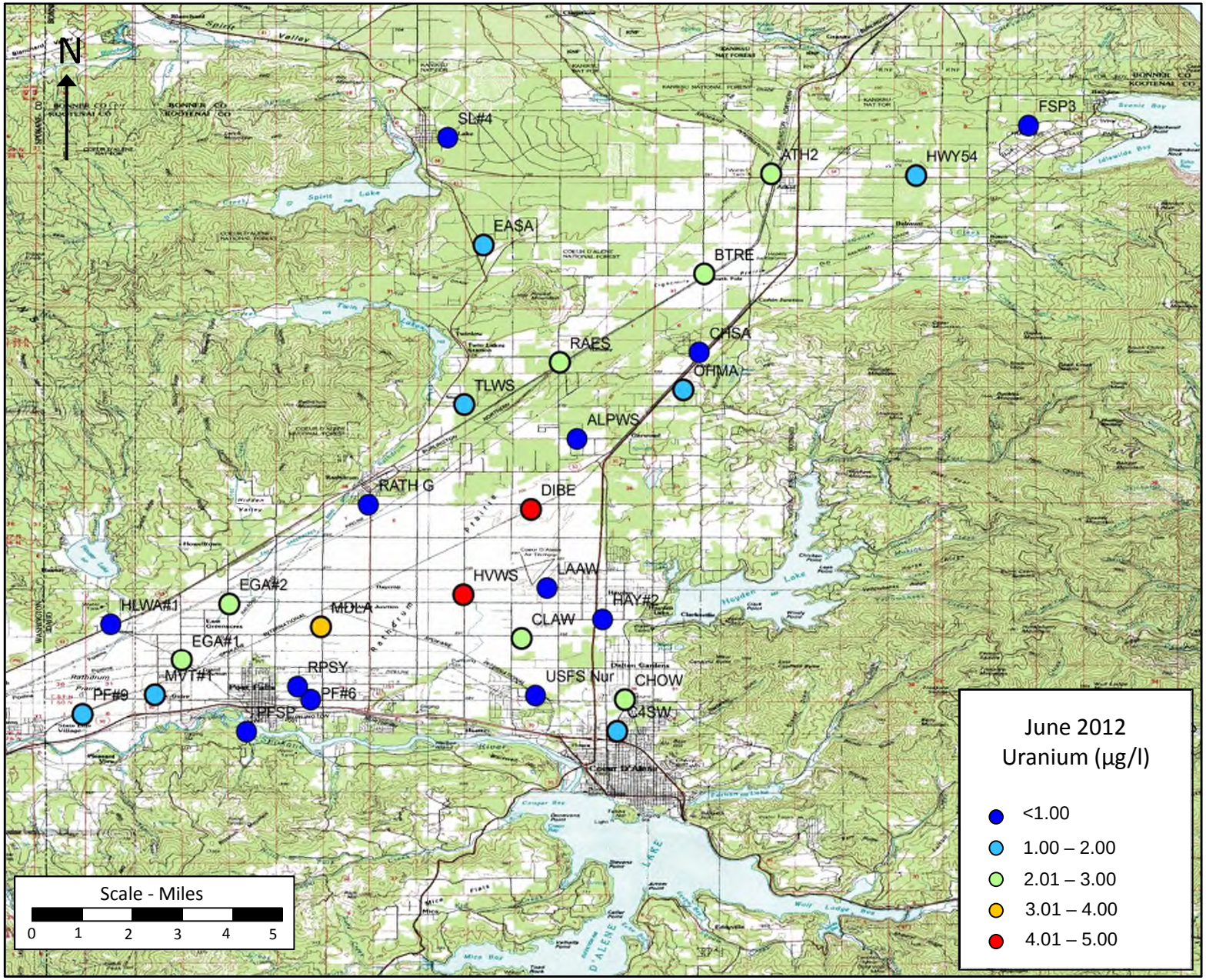

Figure 19. June 2012 Uranium Analytical Results

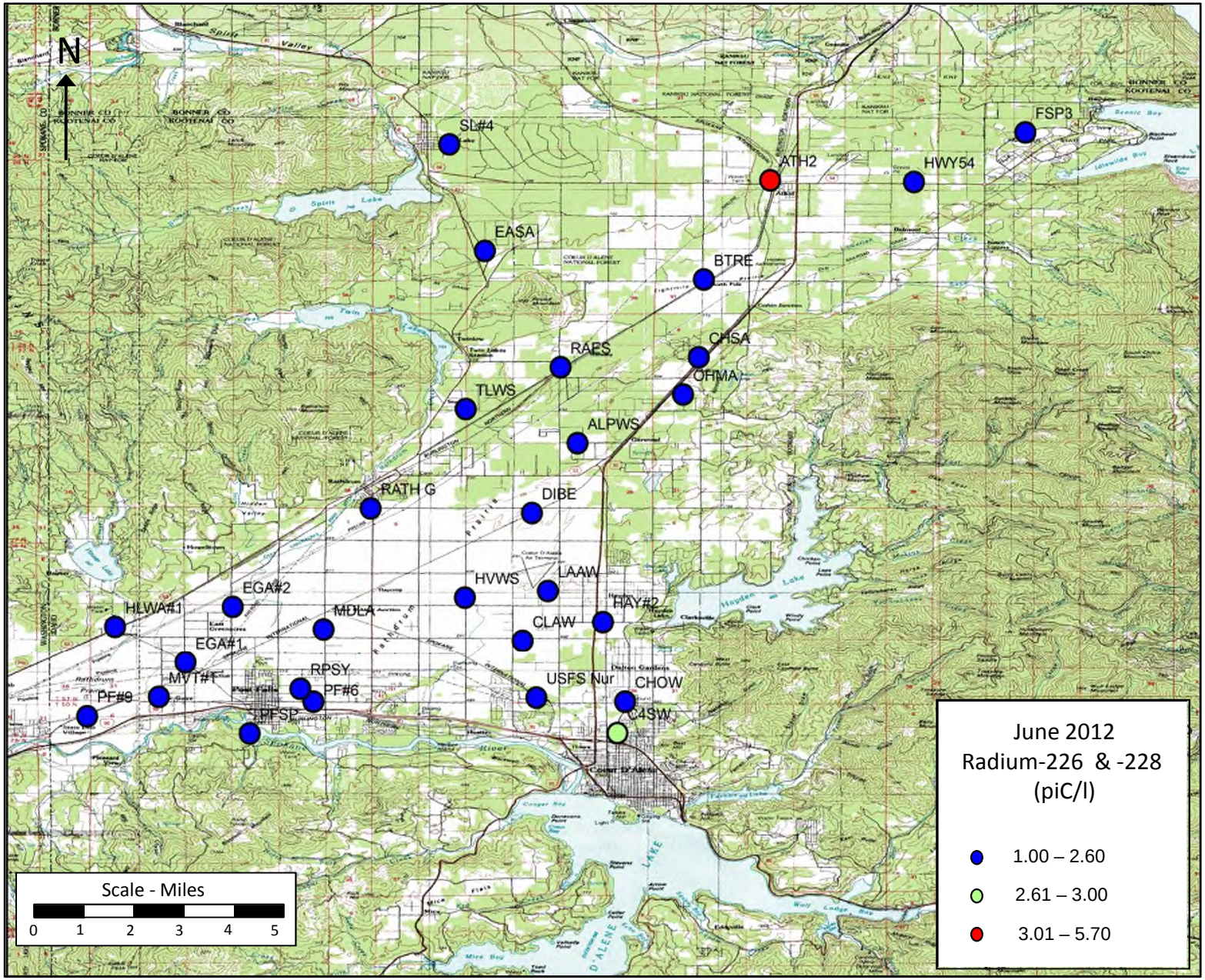

Figure 20. June 2012 Radium-226 & Radium-228 Analytical Results

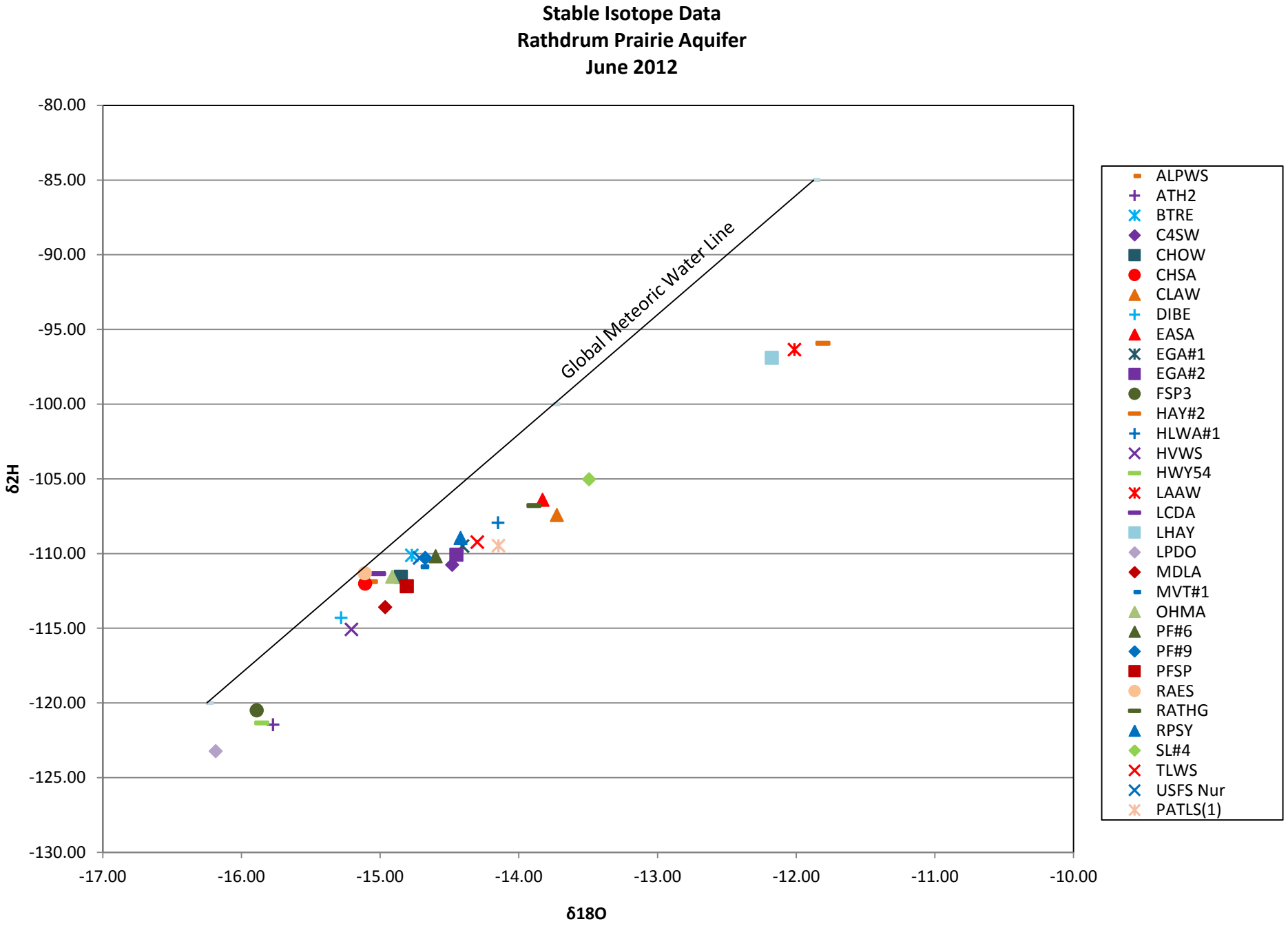

Figure 21. June 2012 $\delta^{2}H$ and $\delta^{18}O$ Results

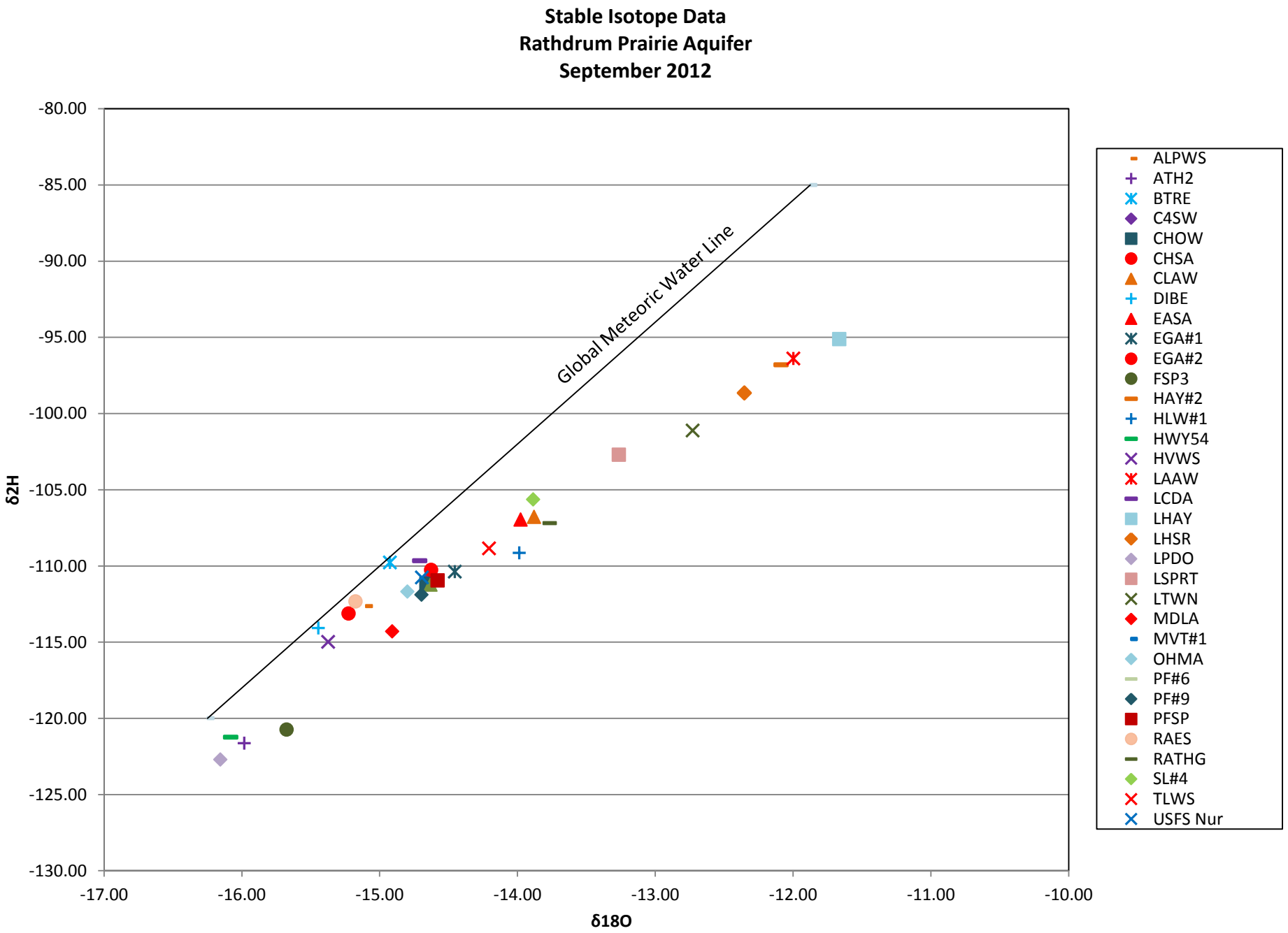

Figure 22. September 2012 δH & δ18O Results

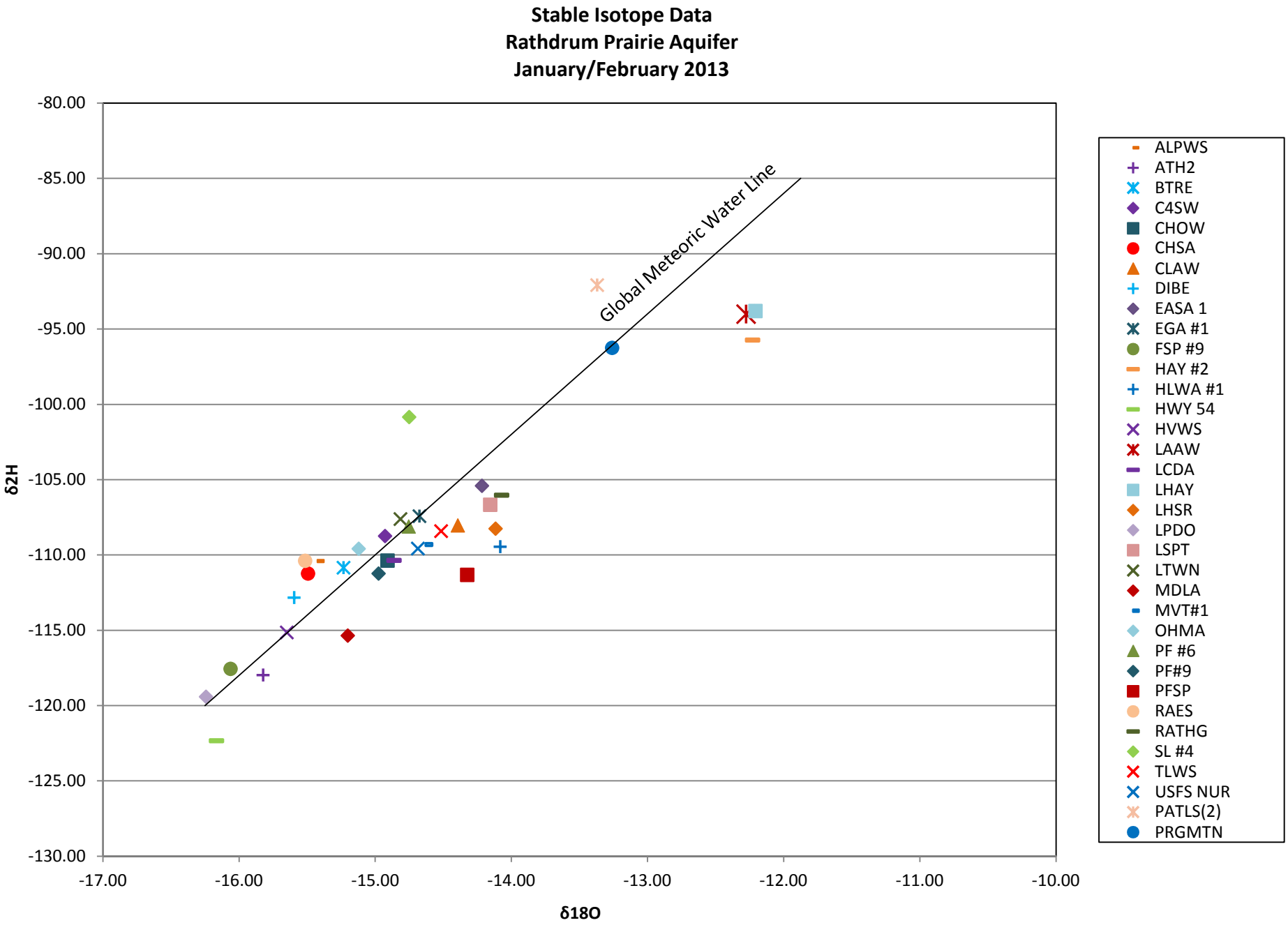

Figure 23. January/February 2013 $\delta^{2}H$ and $\delta^{18}O$ Results

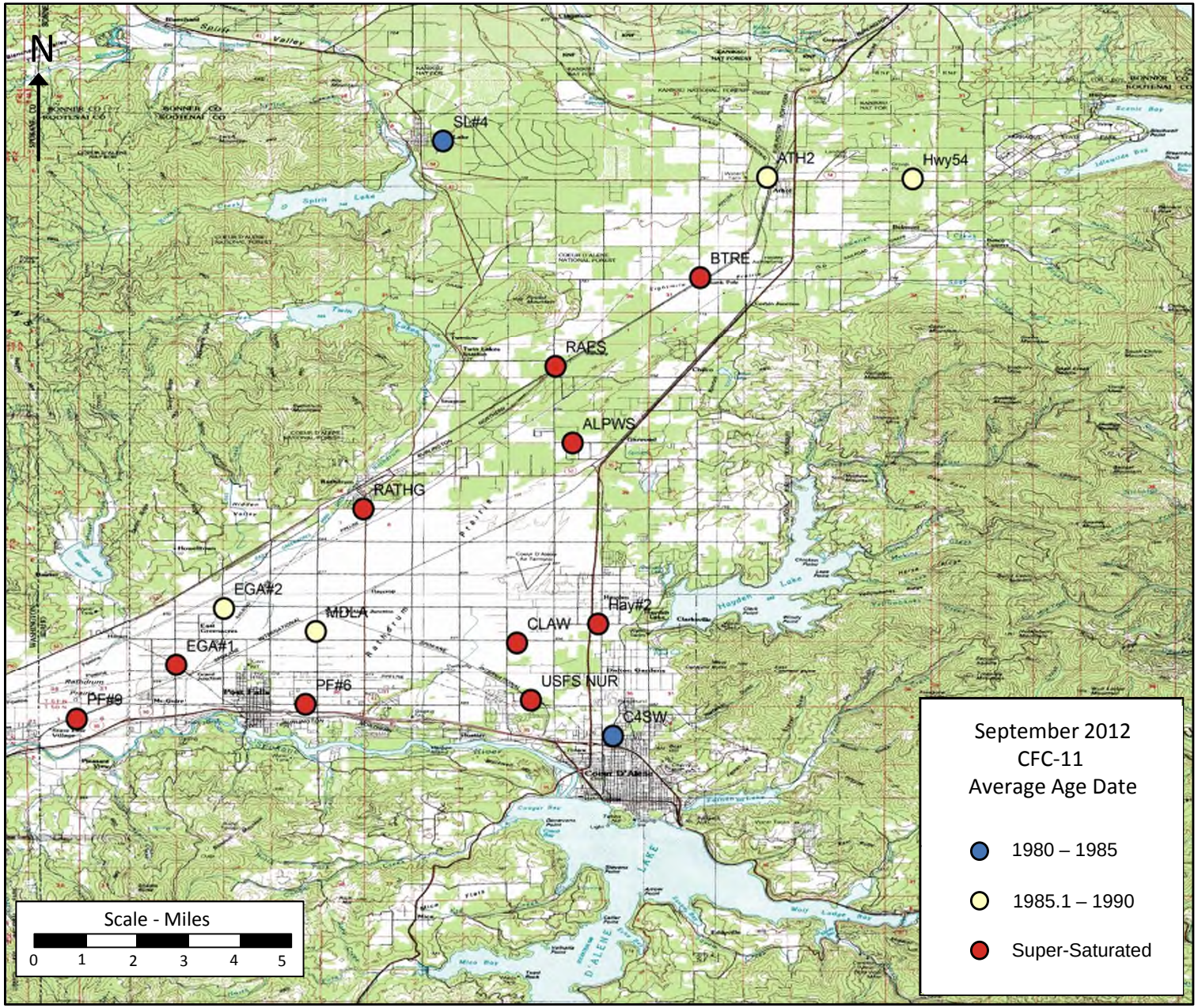

Figure 24. September 2012 CFC-11 Apparent Age Dates

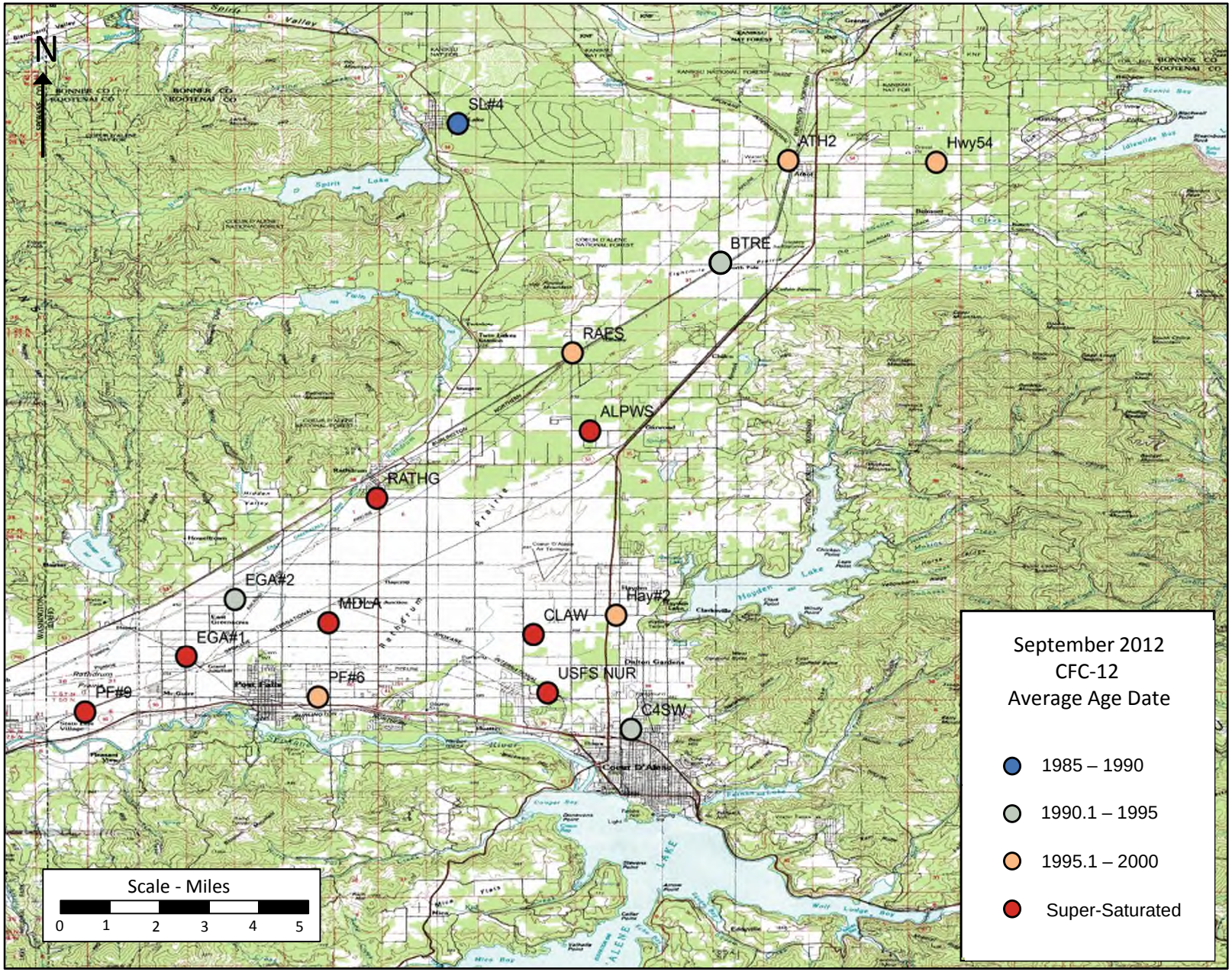

Figure 25. September 2012 CFC-12 Apparent Age Dates

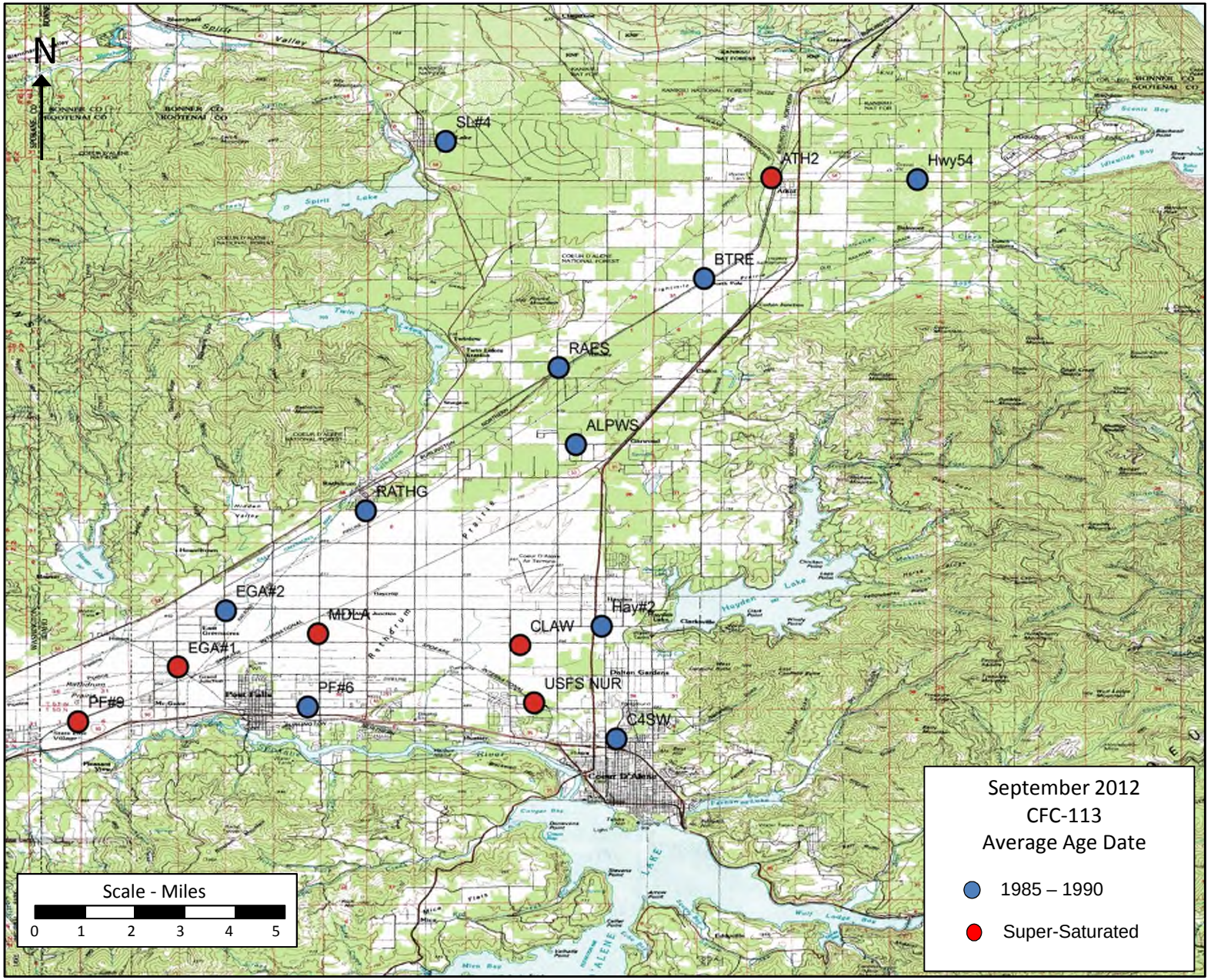

Figure 26. September 2012 CFC-113 Apparent Age Dates

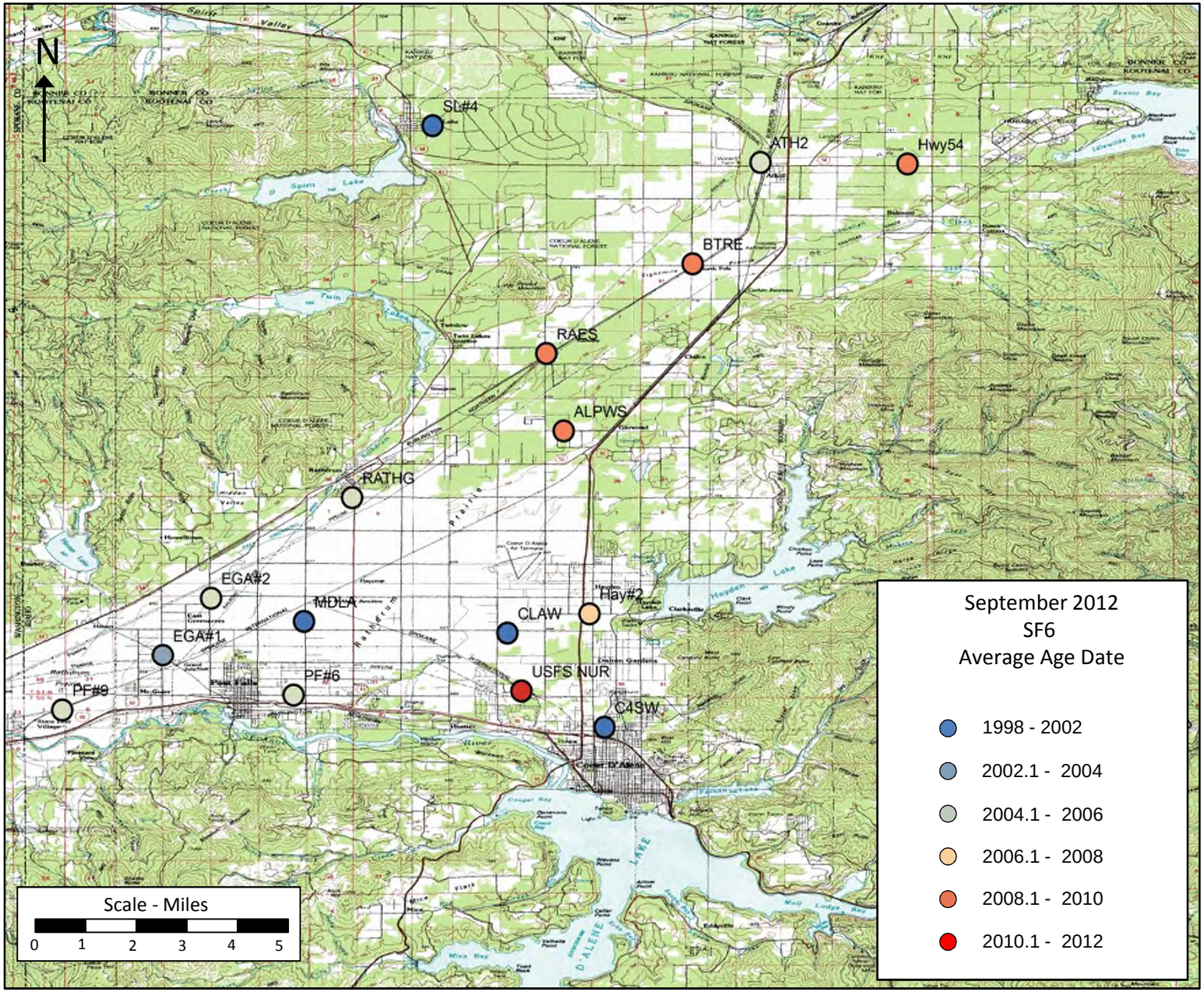

Figure 27. September 2012 SF_6 Apparent Age Dates

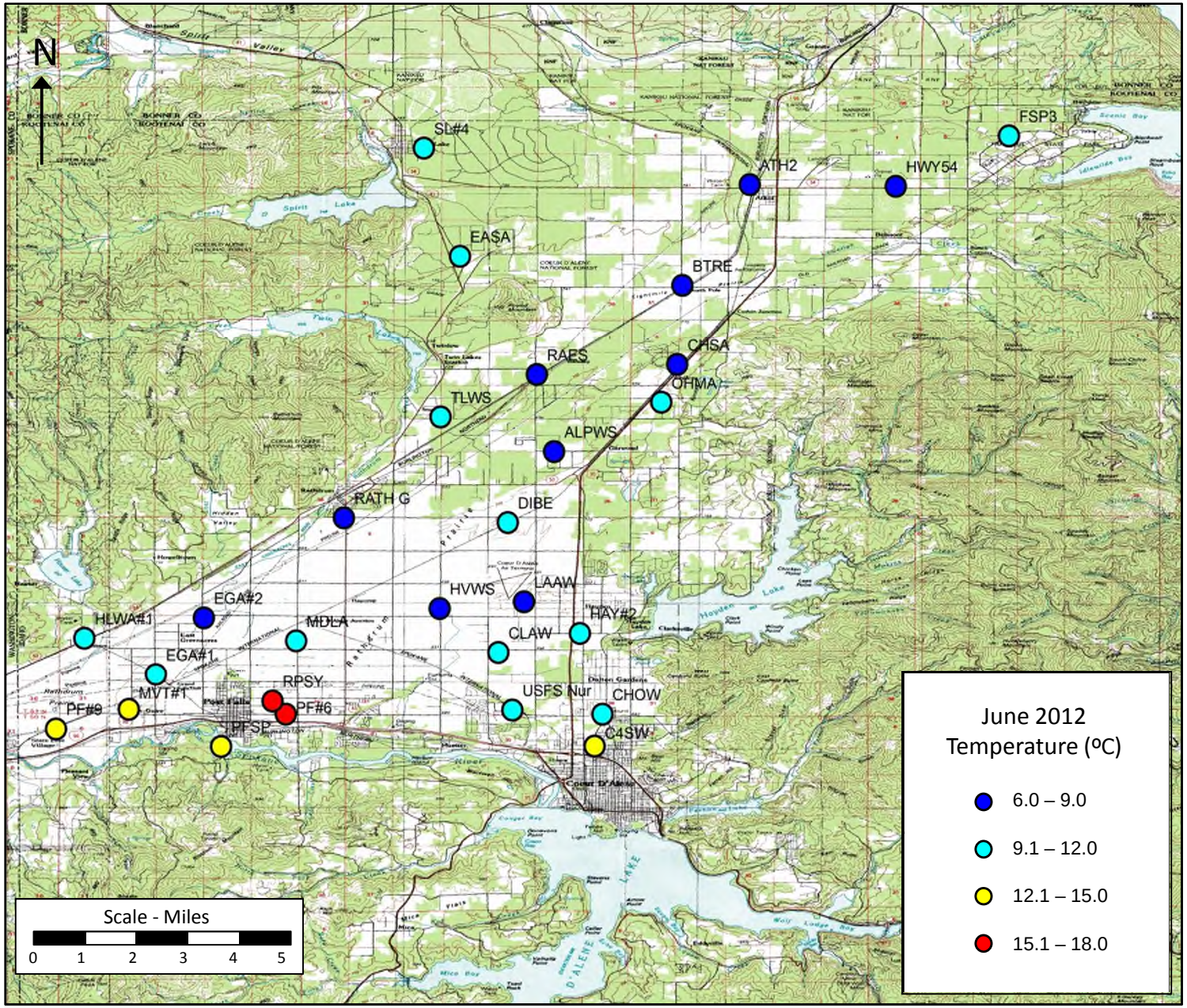

Figure 28. June 2012 Ground Water Temperature

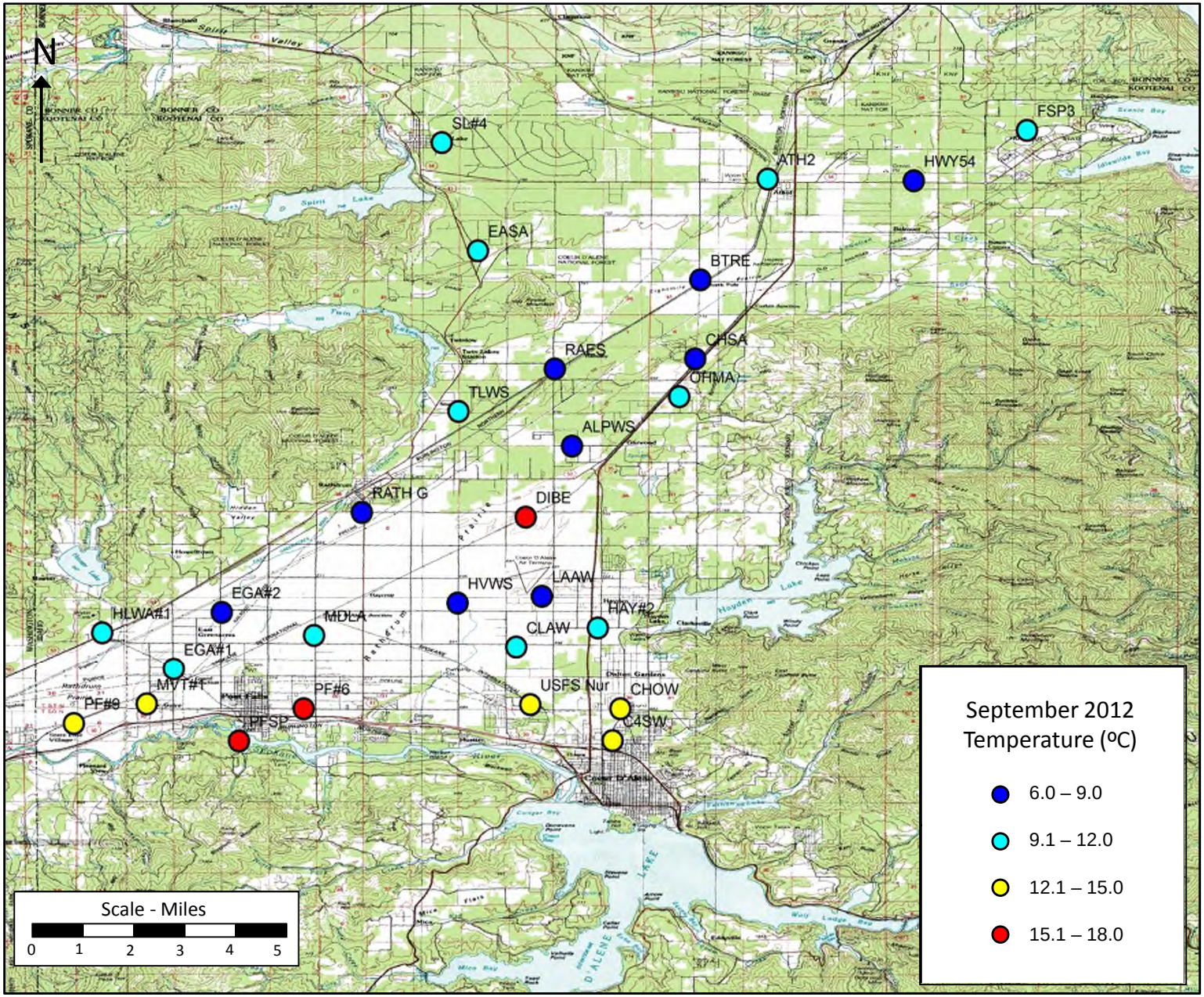

Figure 29. September 2012 Ground Water Temperature

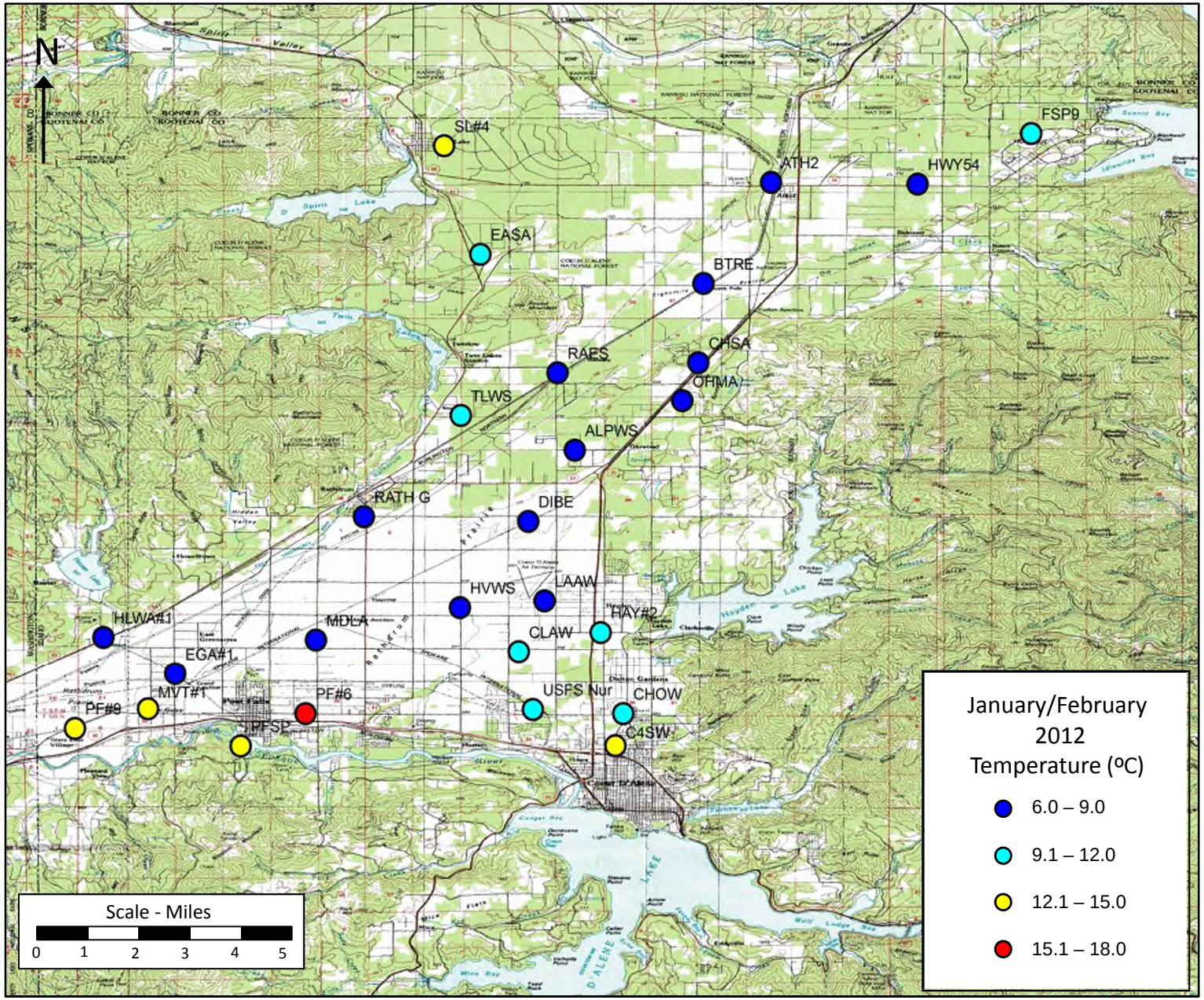

Figure 30. January/February 2013 Ground Water Temperature

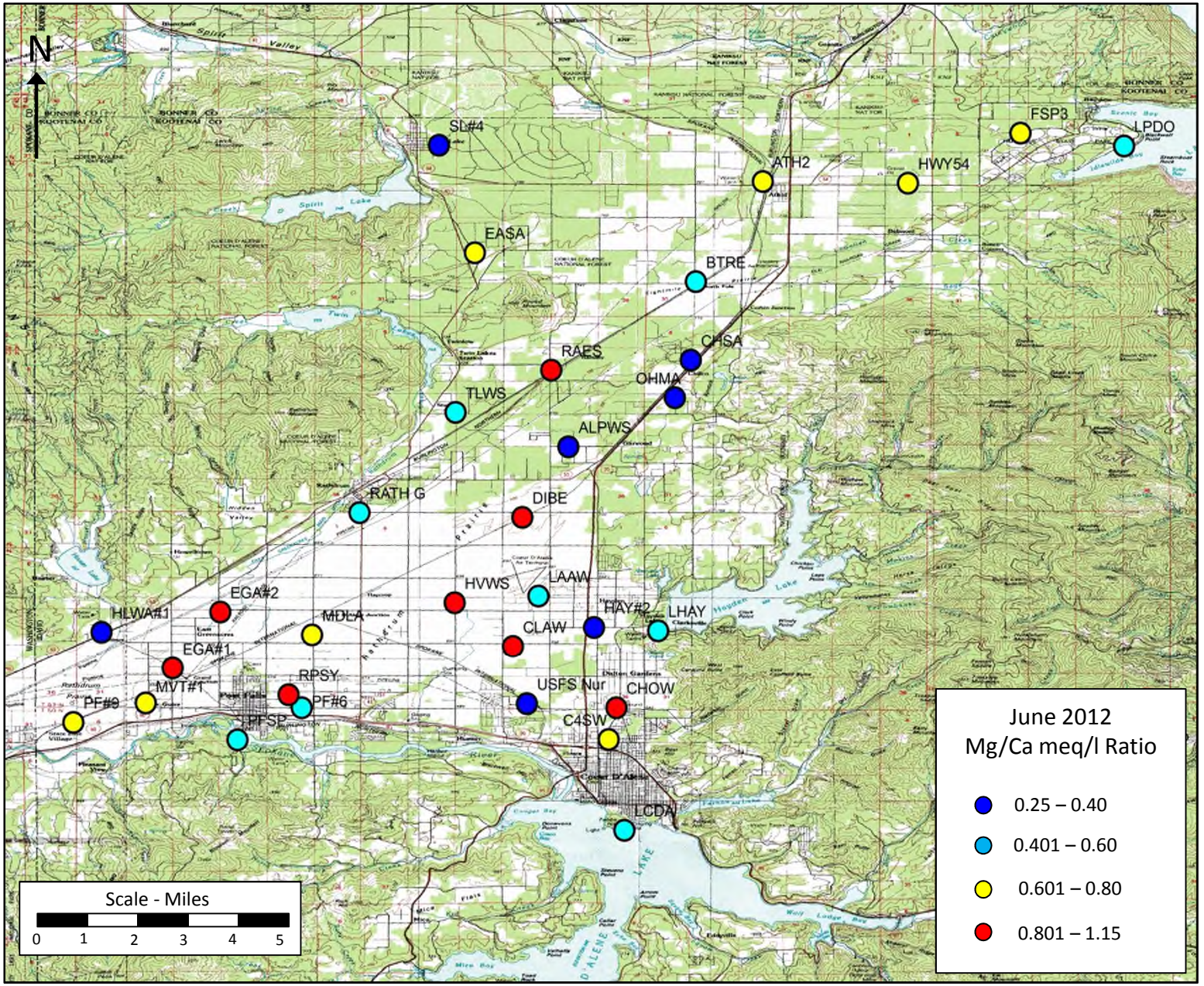

Figure 31. June 2012 Magnesium/Calcium Ratio Results

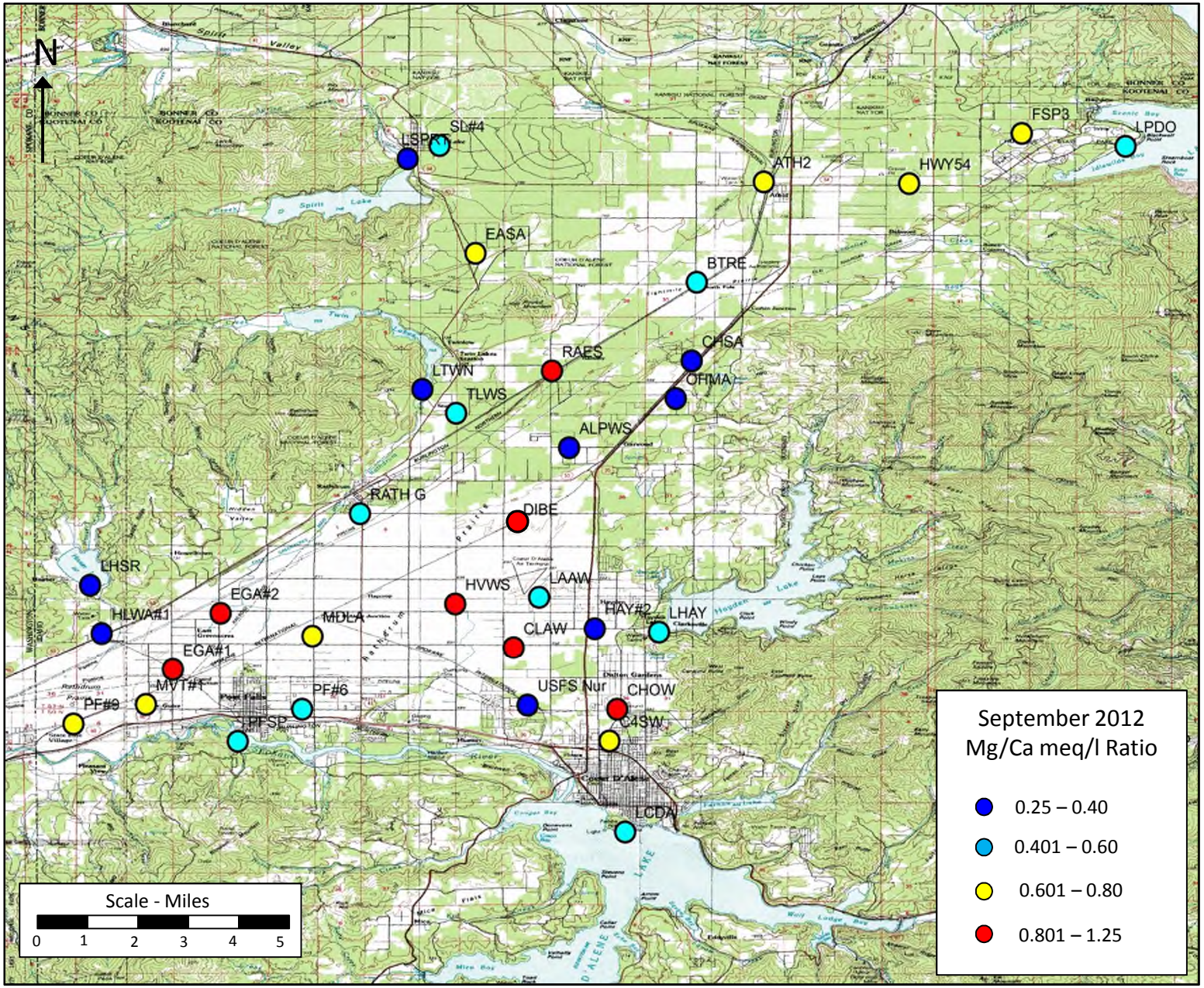

Figure 32. September 2012 Magnesium/Calcium Ratio Results

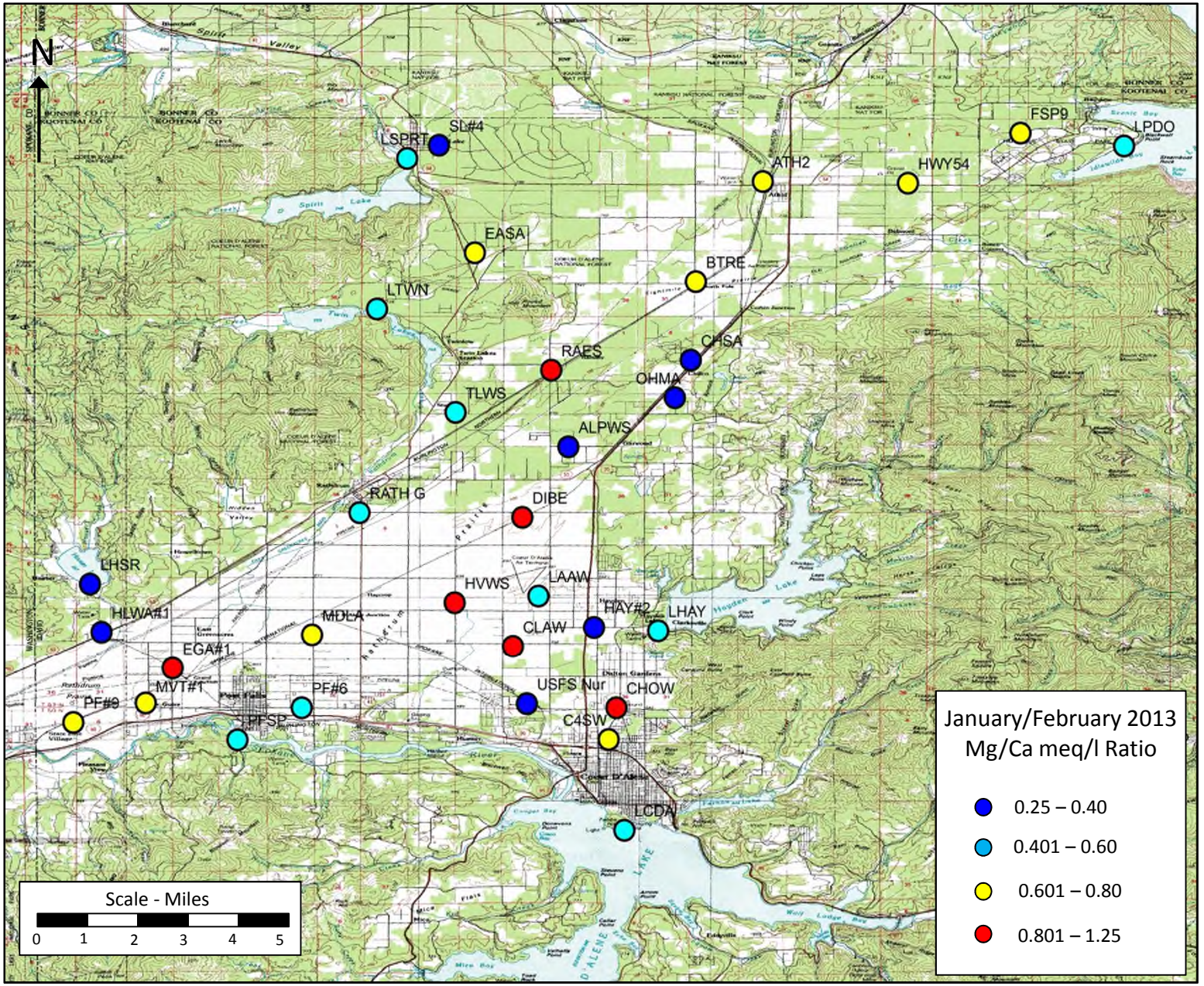

Figure 33. January/February 2013 Magnesium/Calcium Ratio Results

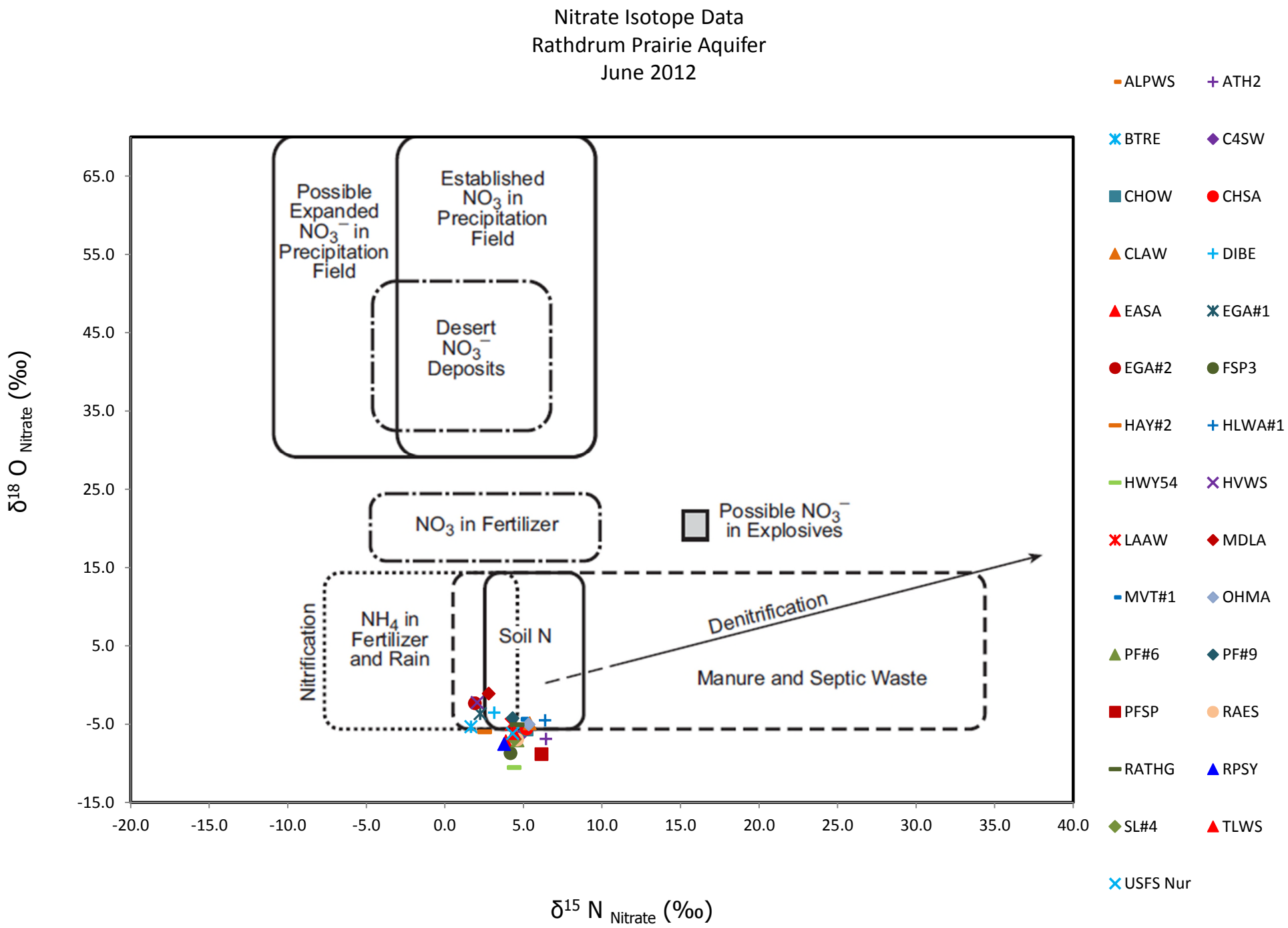

Figure 34. June 2012 Nitrate Isotope Results – Large Scale

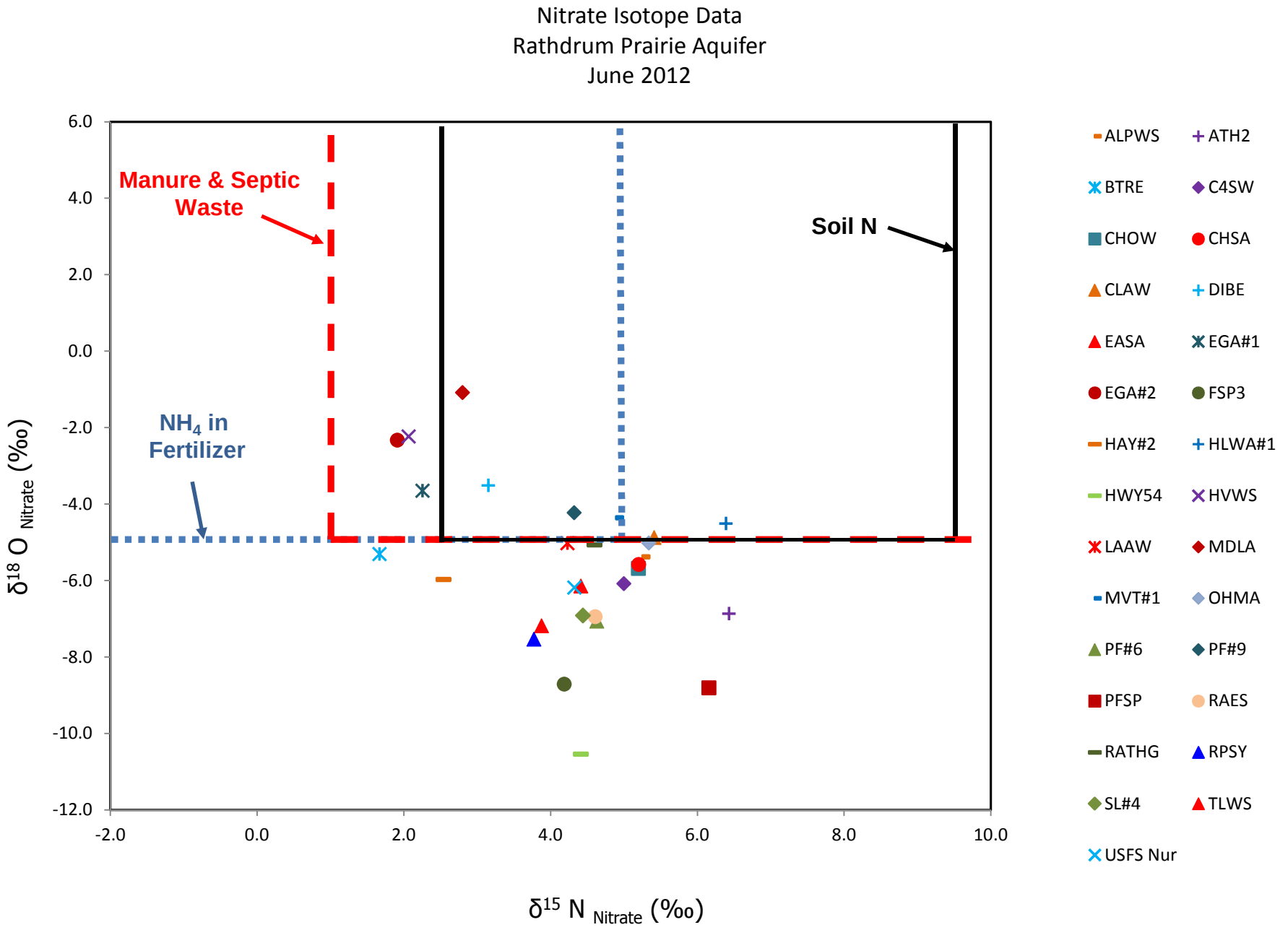

Figure 35. June 2012 Nitrate Isotope Results - Small Scale

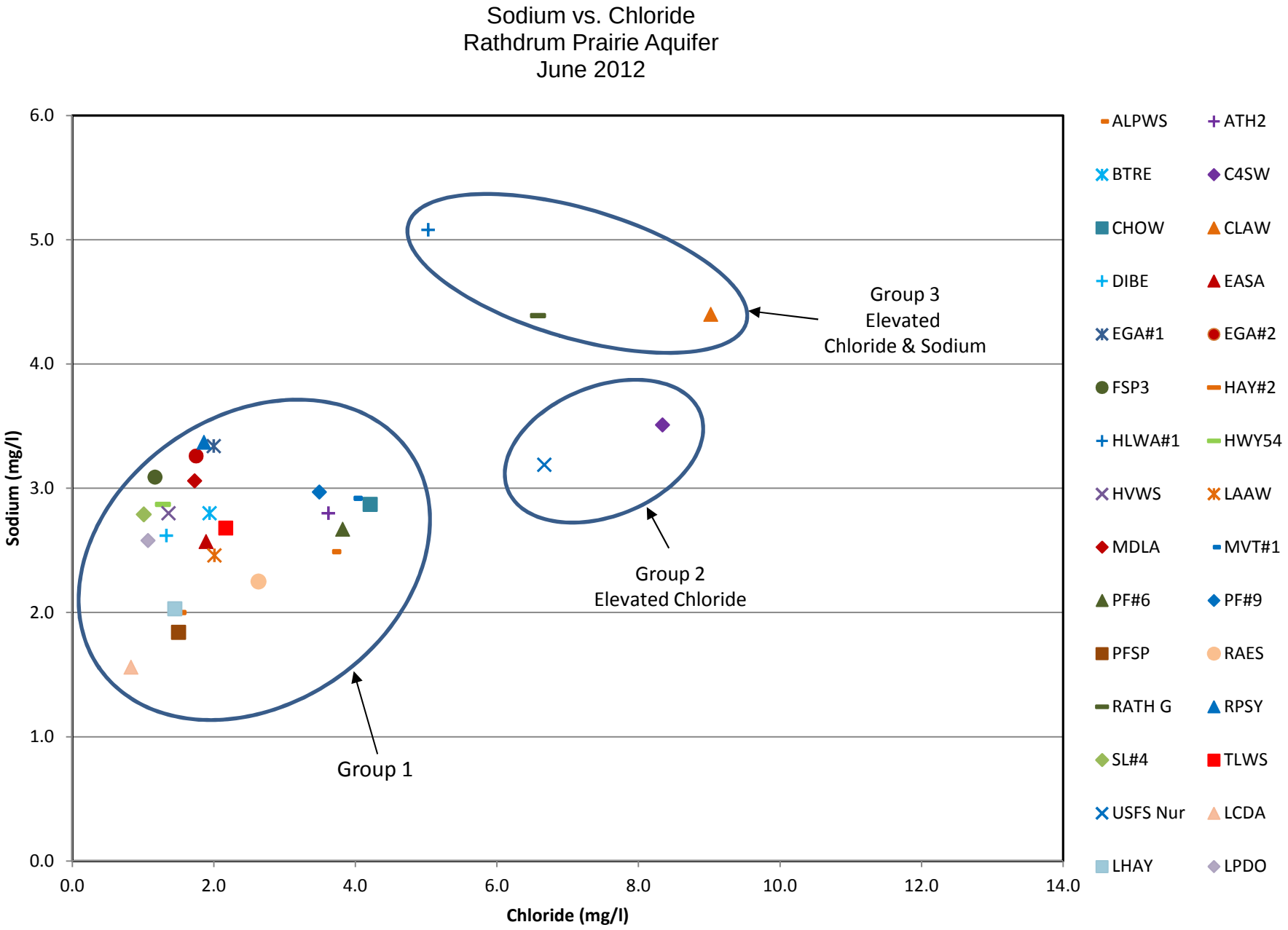

Figure 36. June 2012 Sodium vs. Chloride Concentration Results

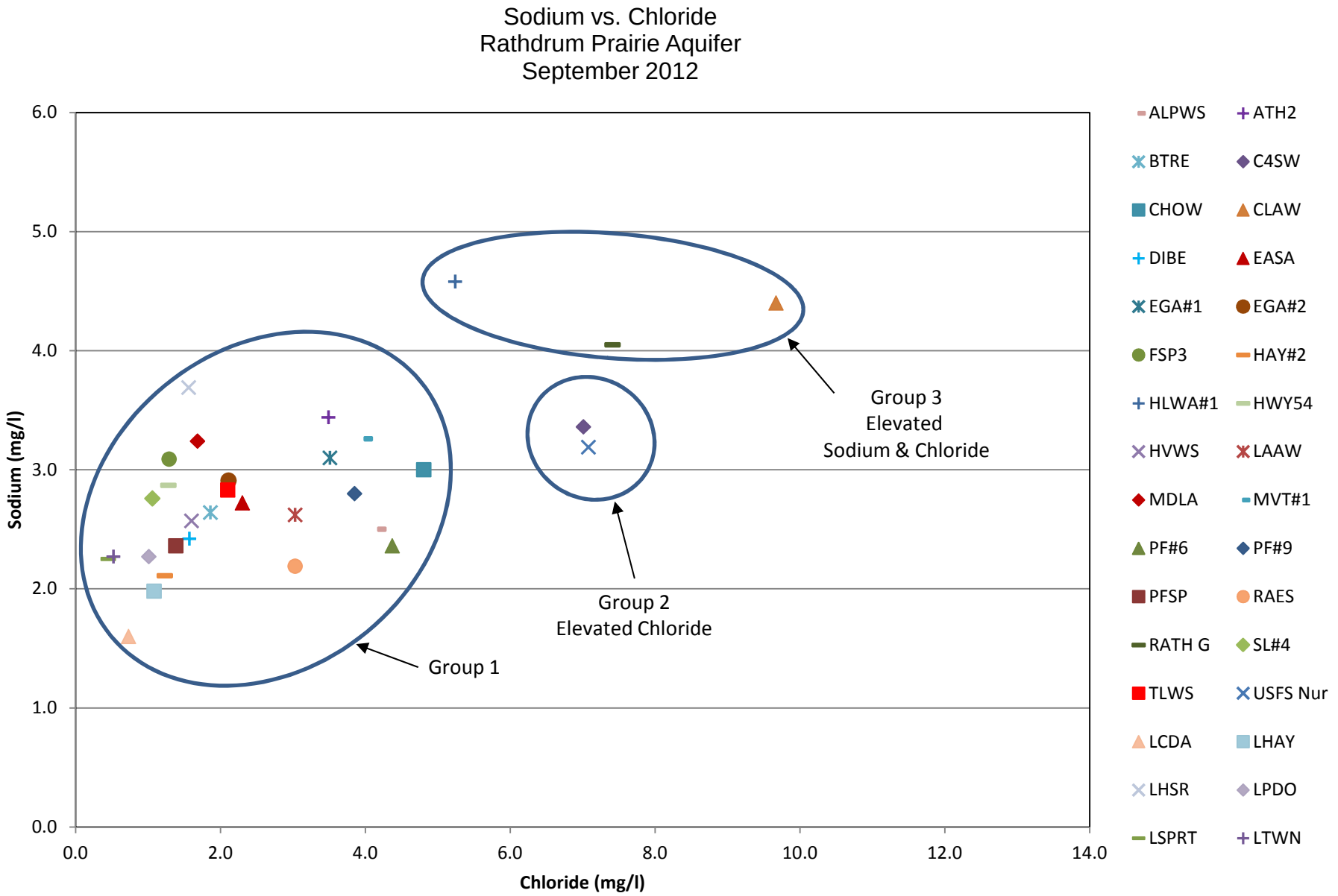

Figure 37. September Sodium vs. Chloride Concentrations

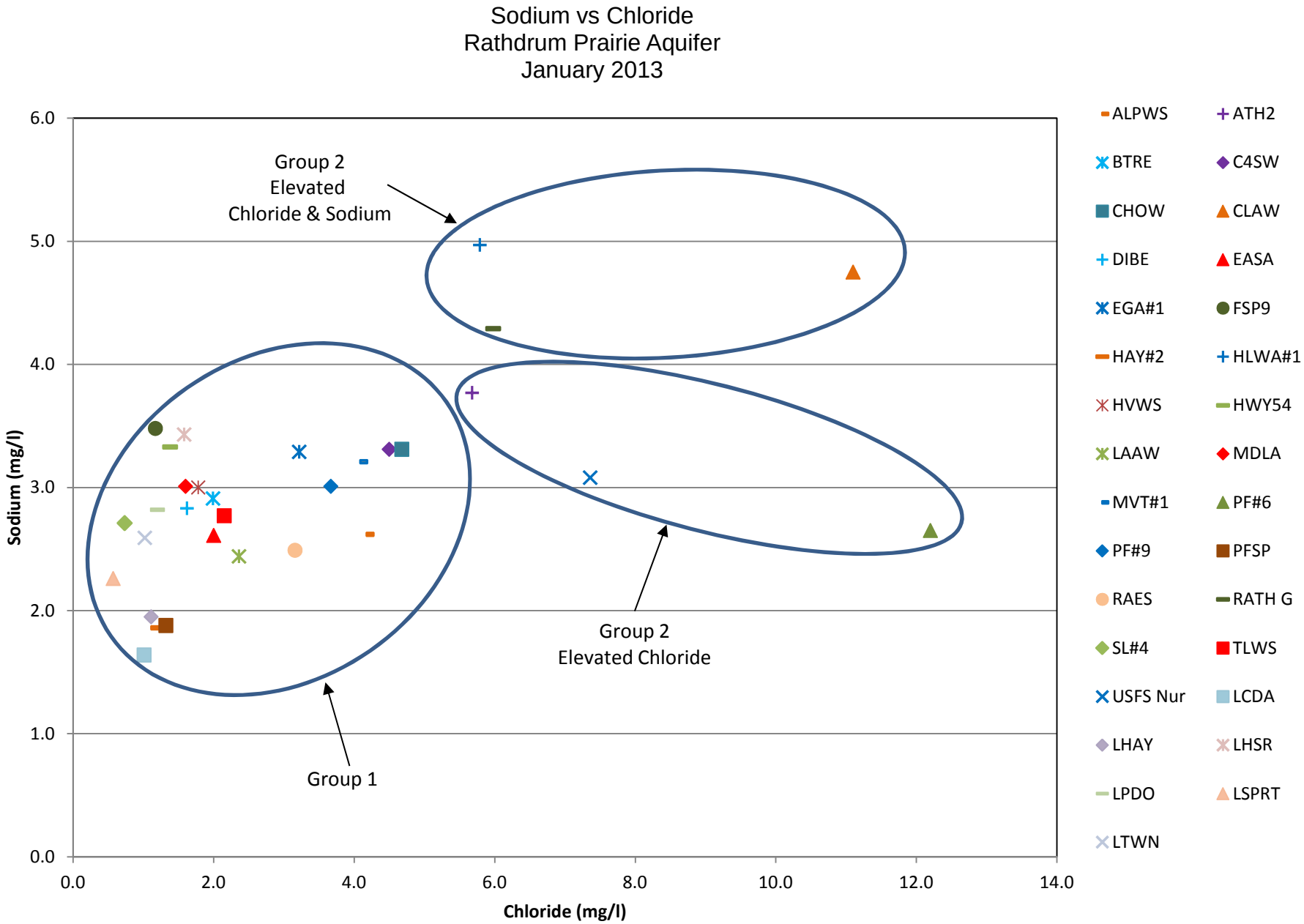

Figure 38. January 2013 Sodium vs. Chloride Concentrations

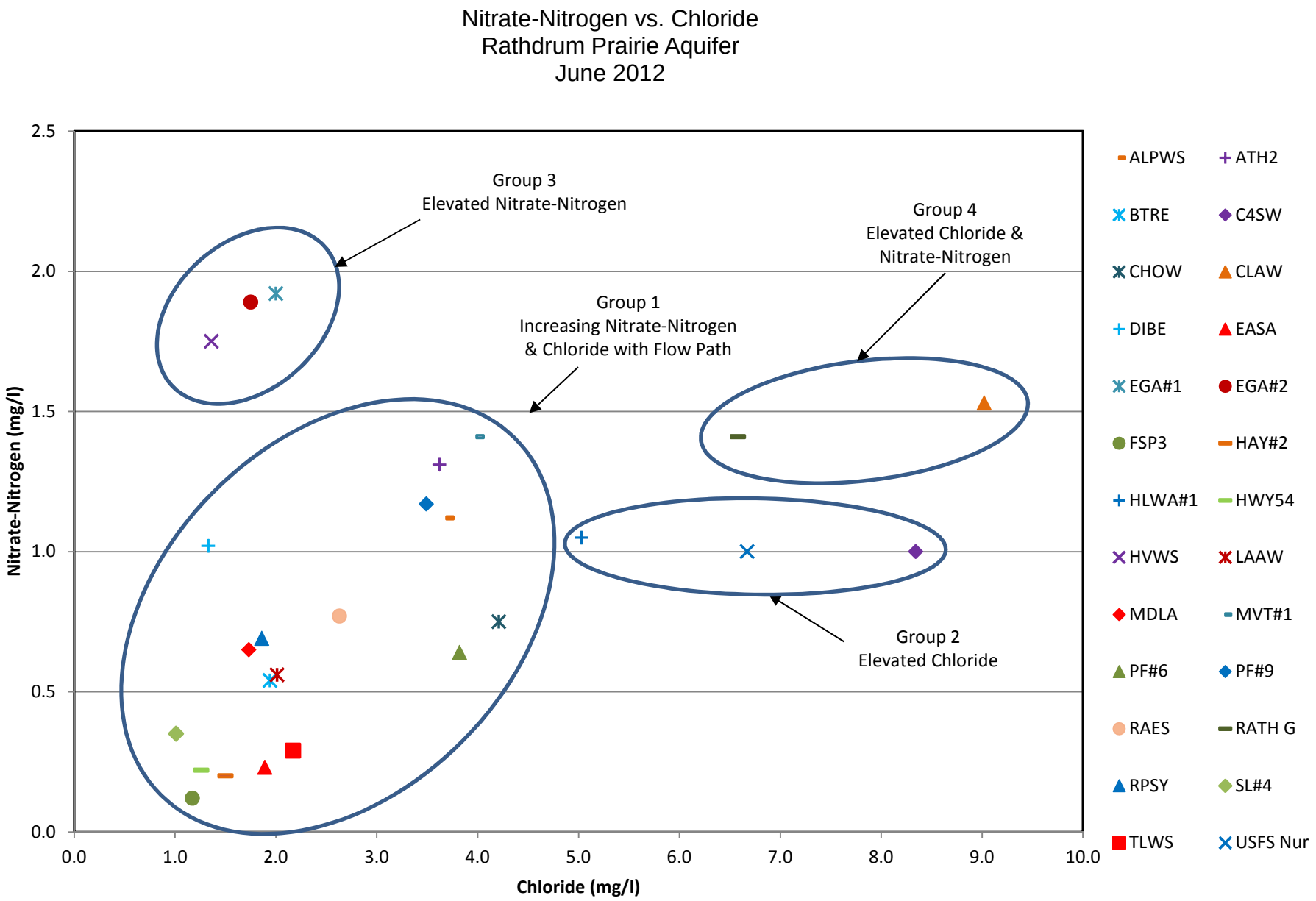

Figure 39. June 2012 Nitrate-Nitrogen vs. Chloride Concentrations

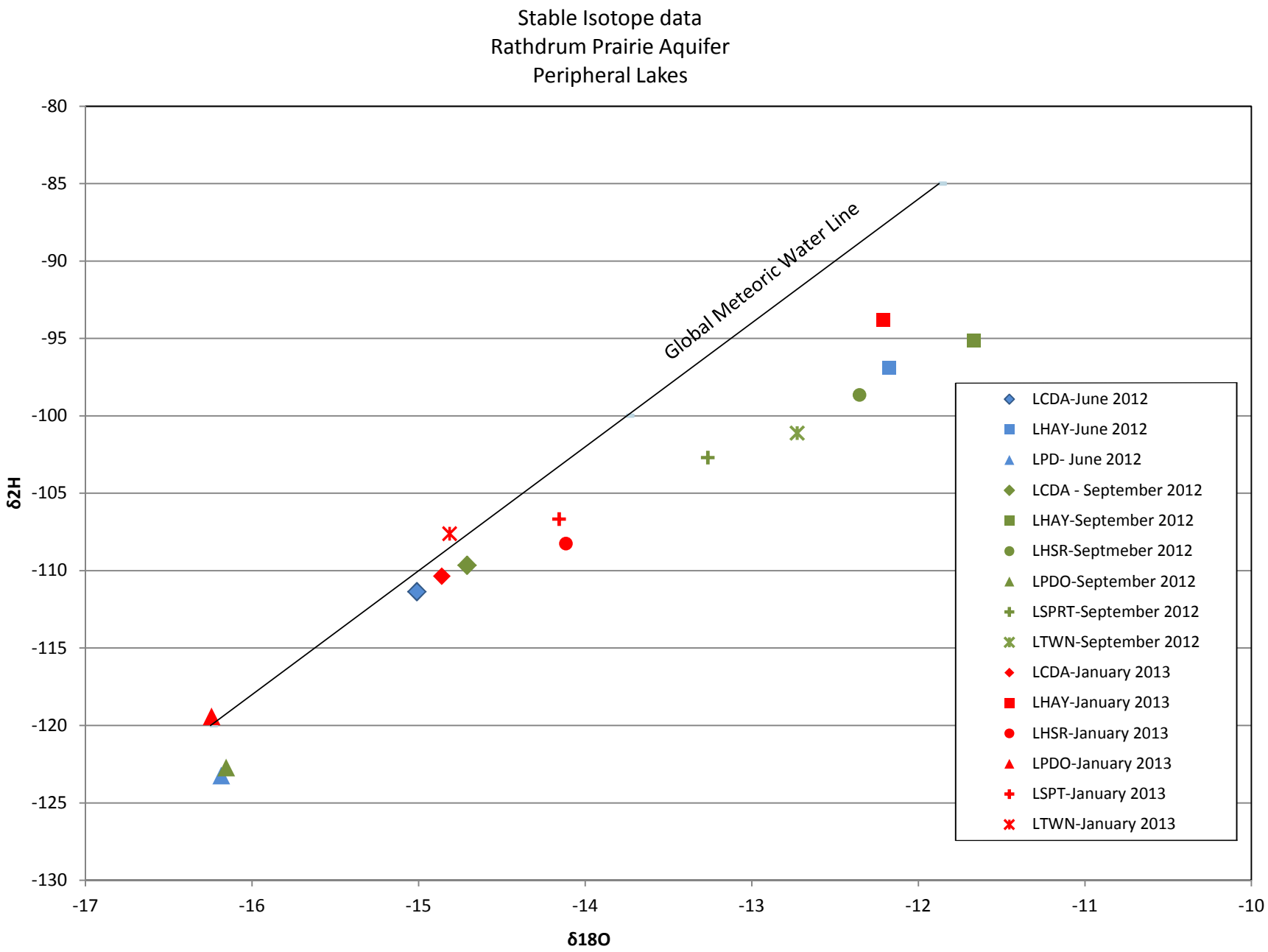

Figure 40. ^{2}H and ^{18}O Results for Peripheral Lakes for June and September 2012 and January/February 2013

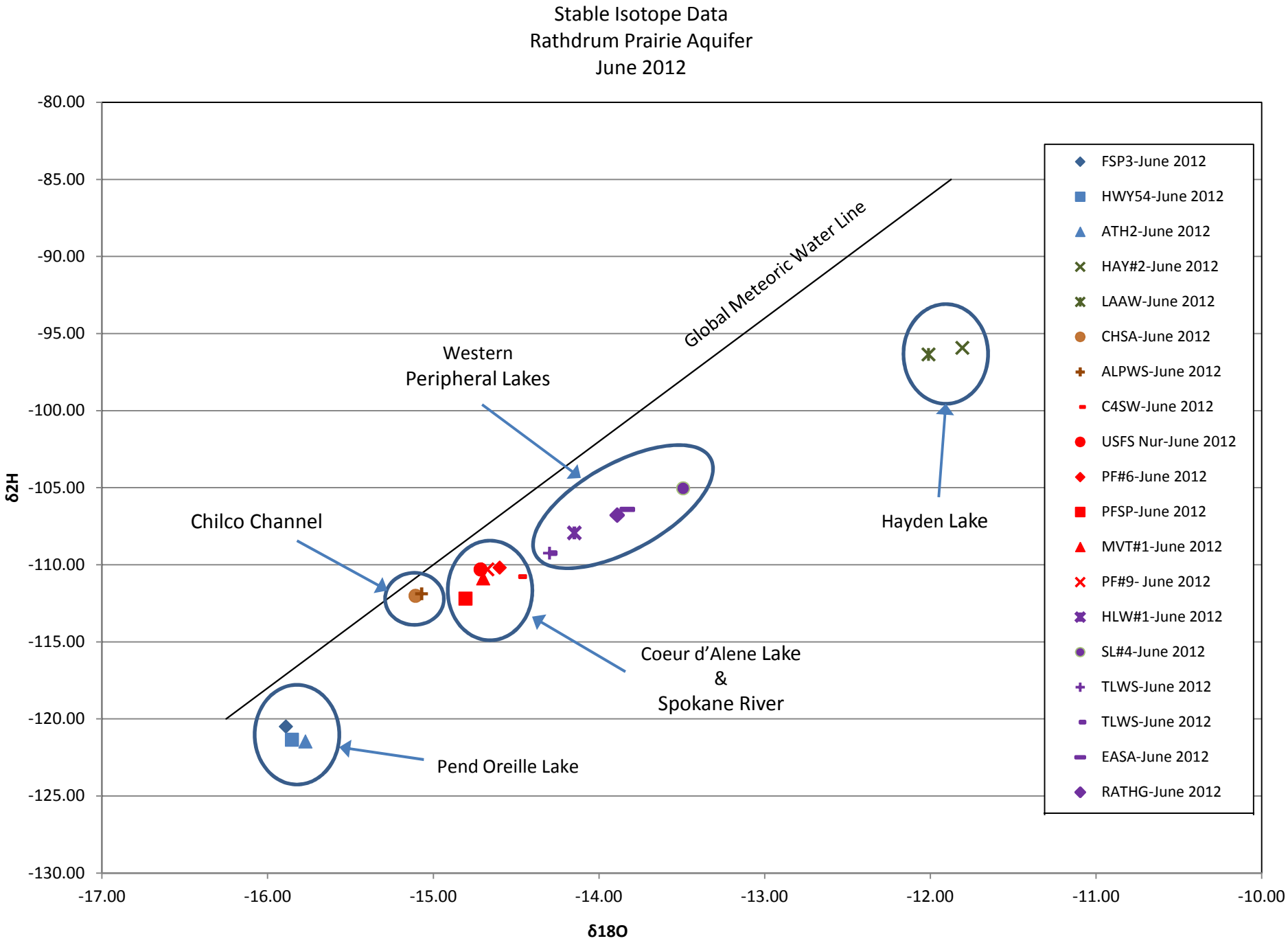

Figure 41. ^{2}H and ^{18}O Results for Recharge Areas – June 2012

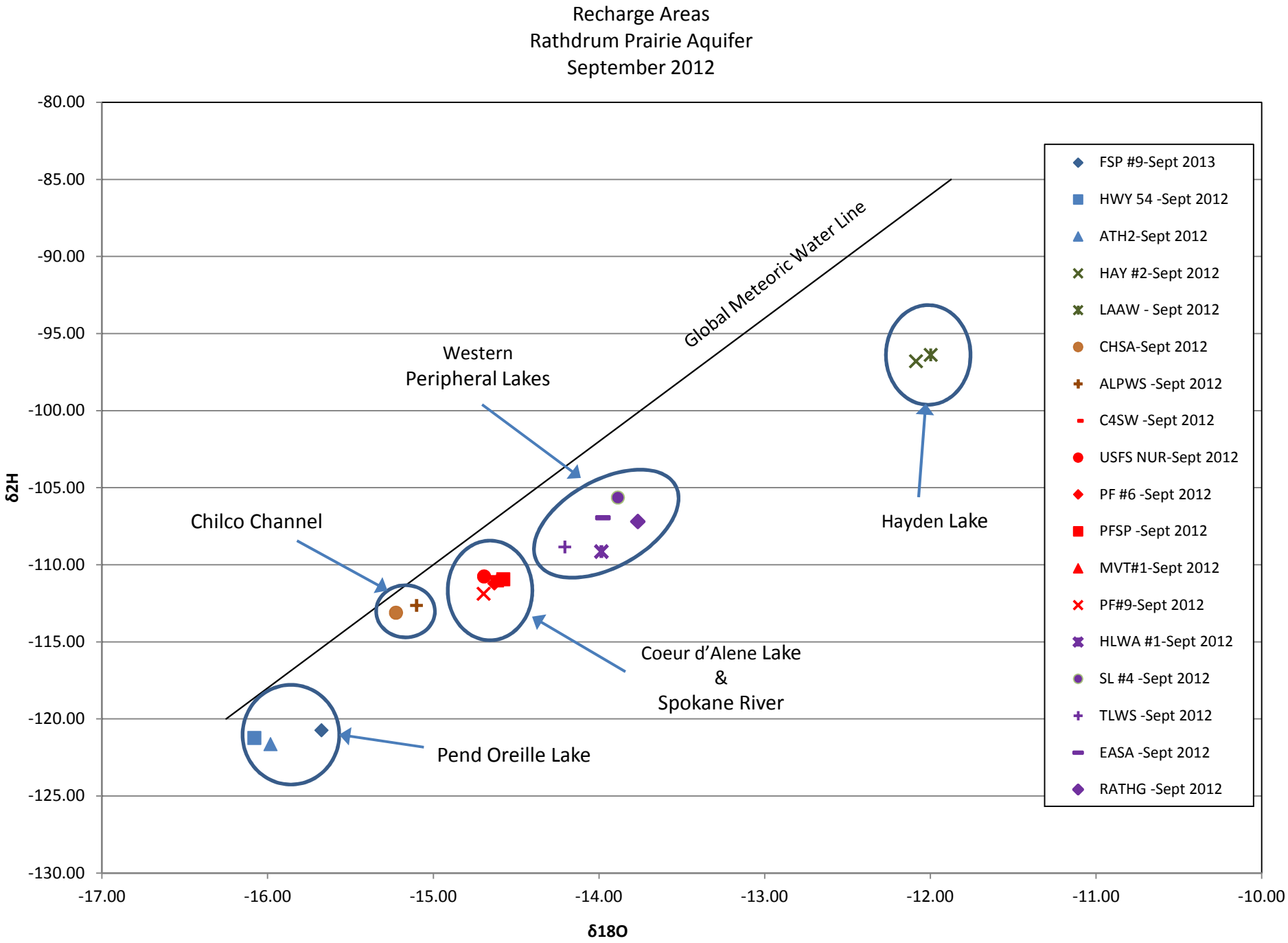

Figure 42. ^{2}H and ^{18}O Results for Recharge Areas – September 2012

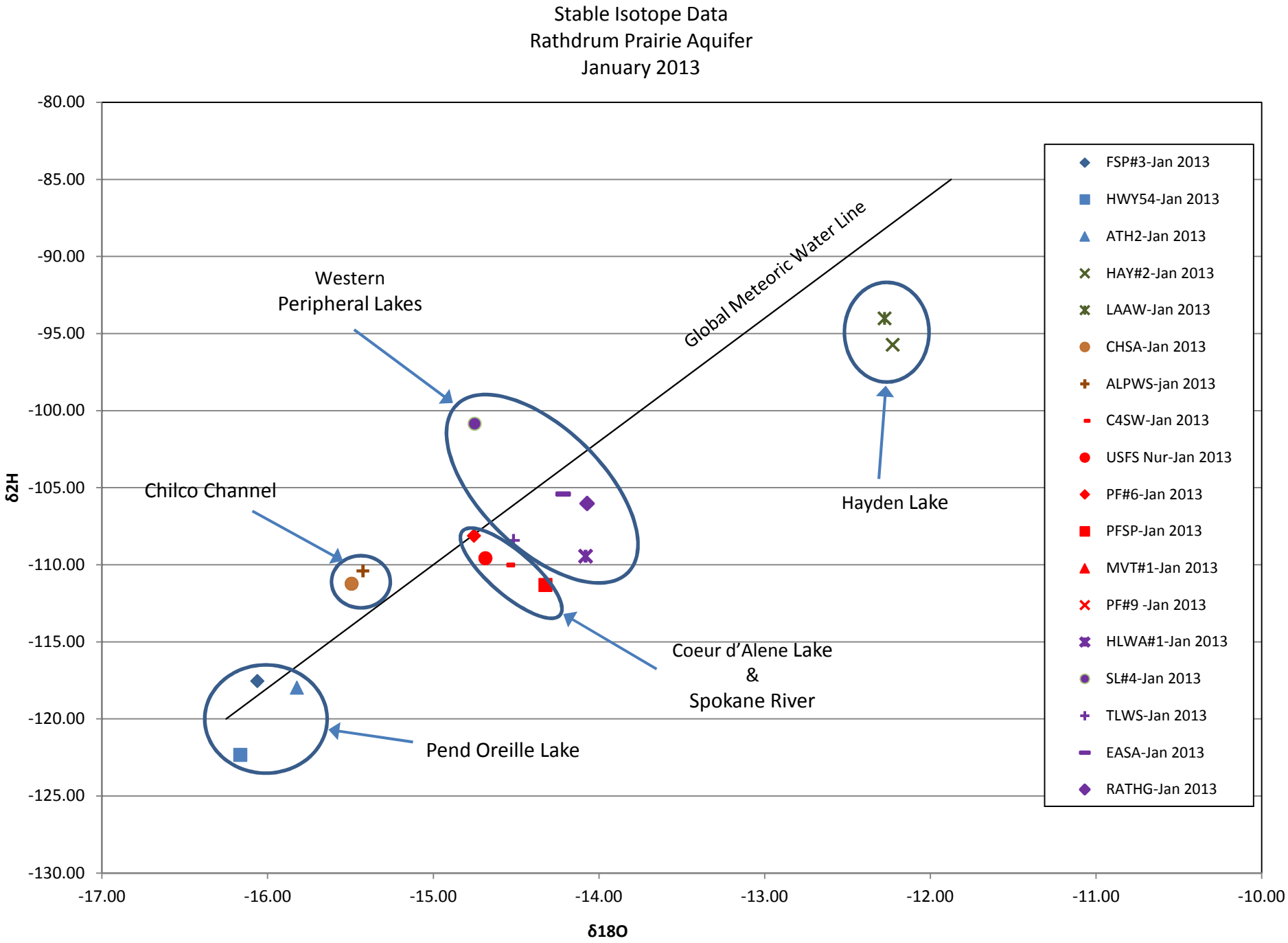

Figure 43. ^{2}H and ^{18}O Results for Recharge Areas – January 2013

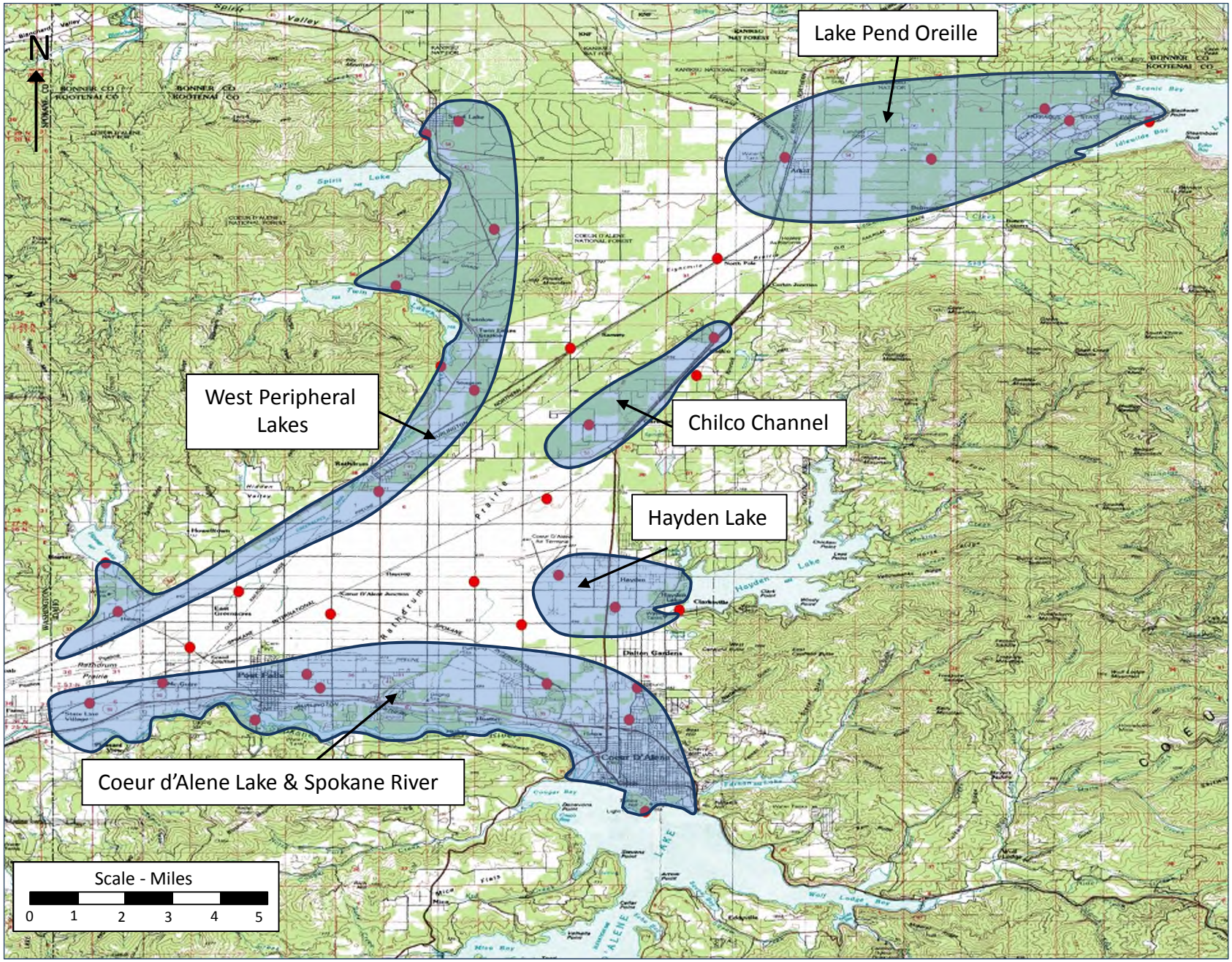

Figure 44. Recharge Areas as defined by ^{2}H and ^{18}O Results

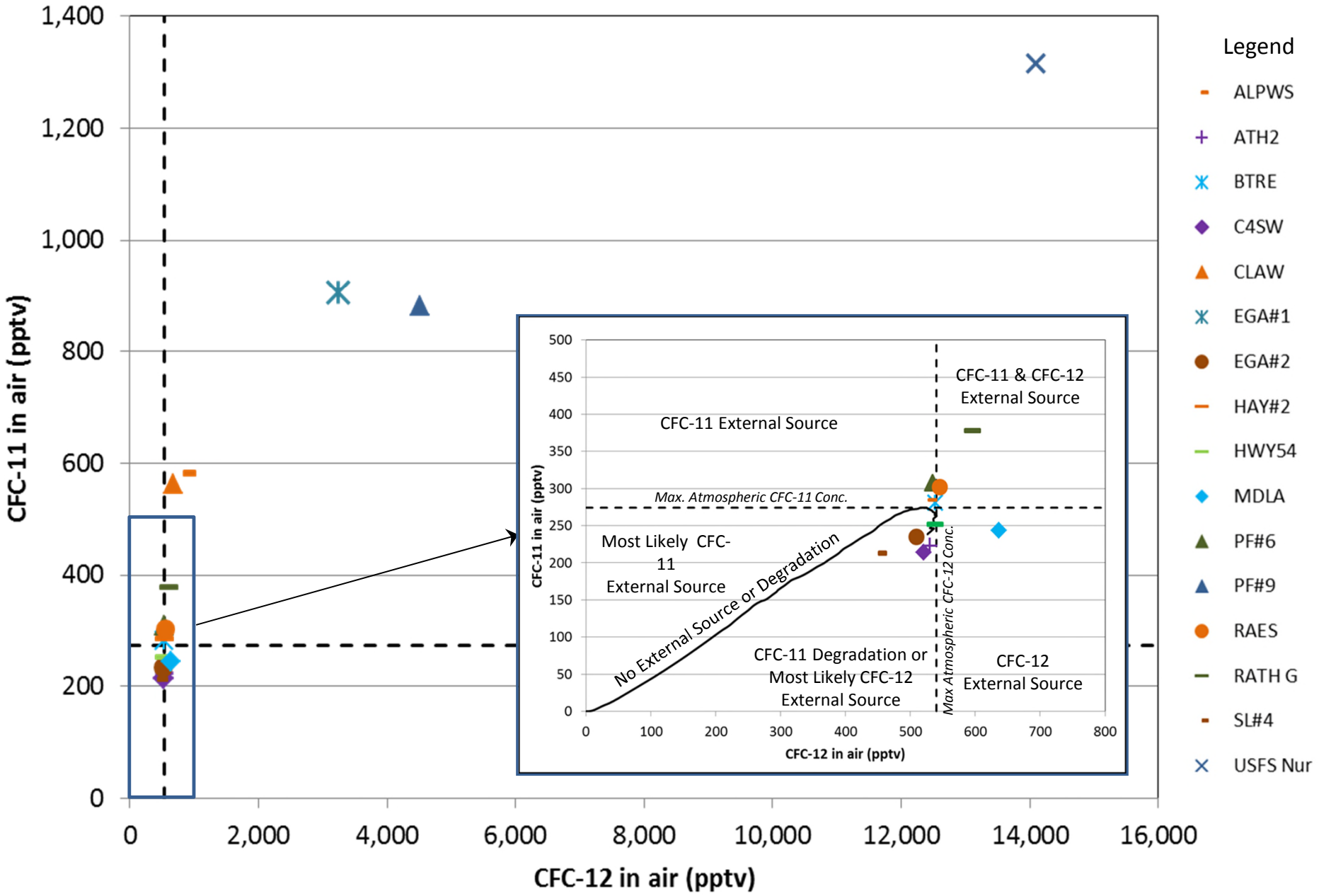

Figure 45. Plot of CFC-11 versus CFC-12 equivalent atmospheric concentrations in wells sampled

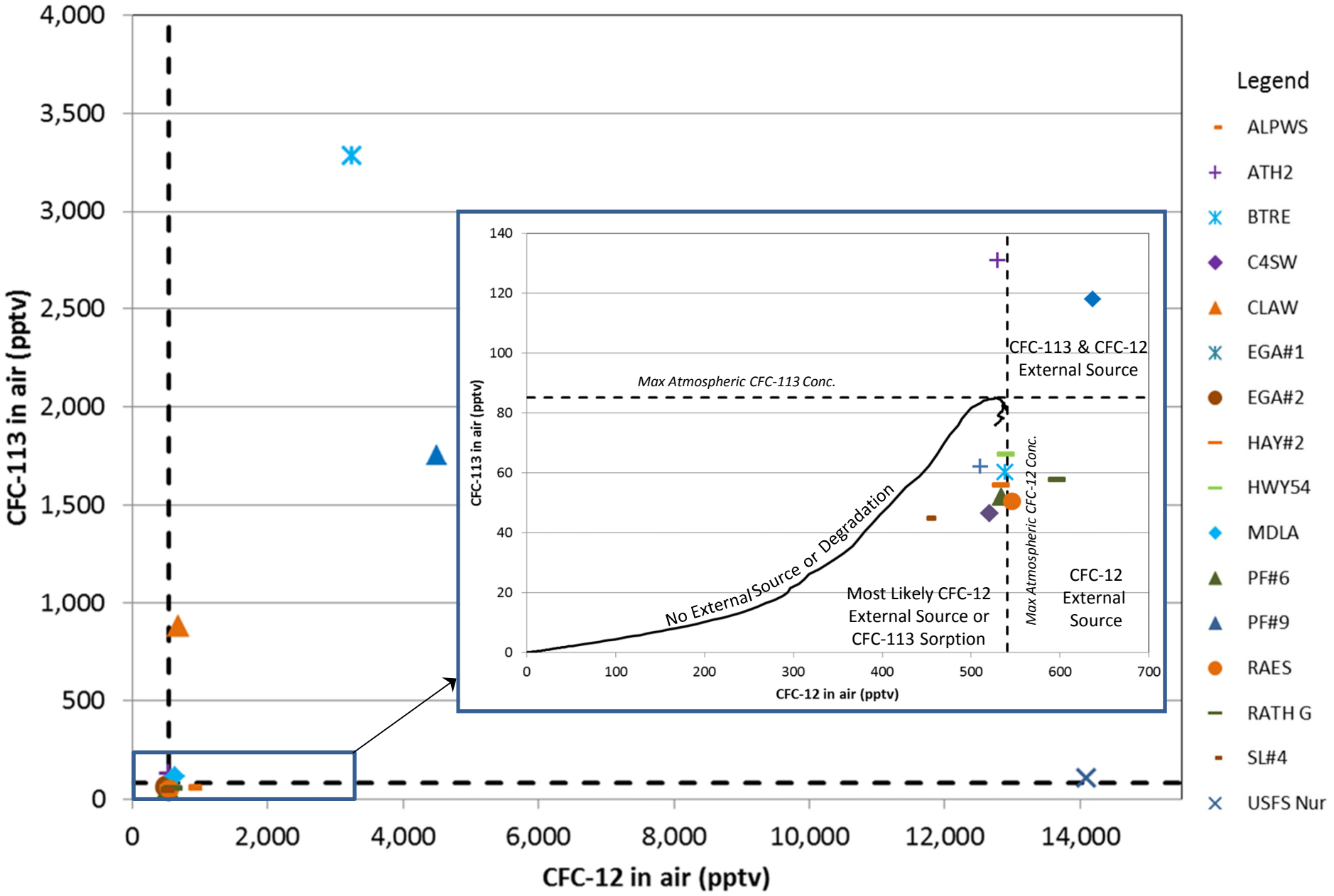

Figure 46. Plot of CFC-113 versus CFC-12 equivalent atmospheric concentrations in wells sampled

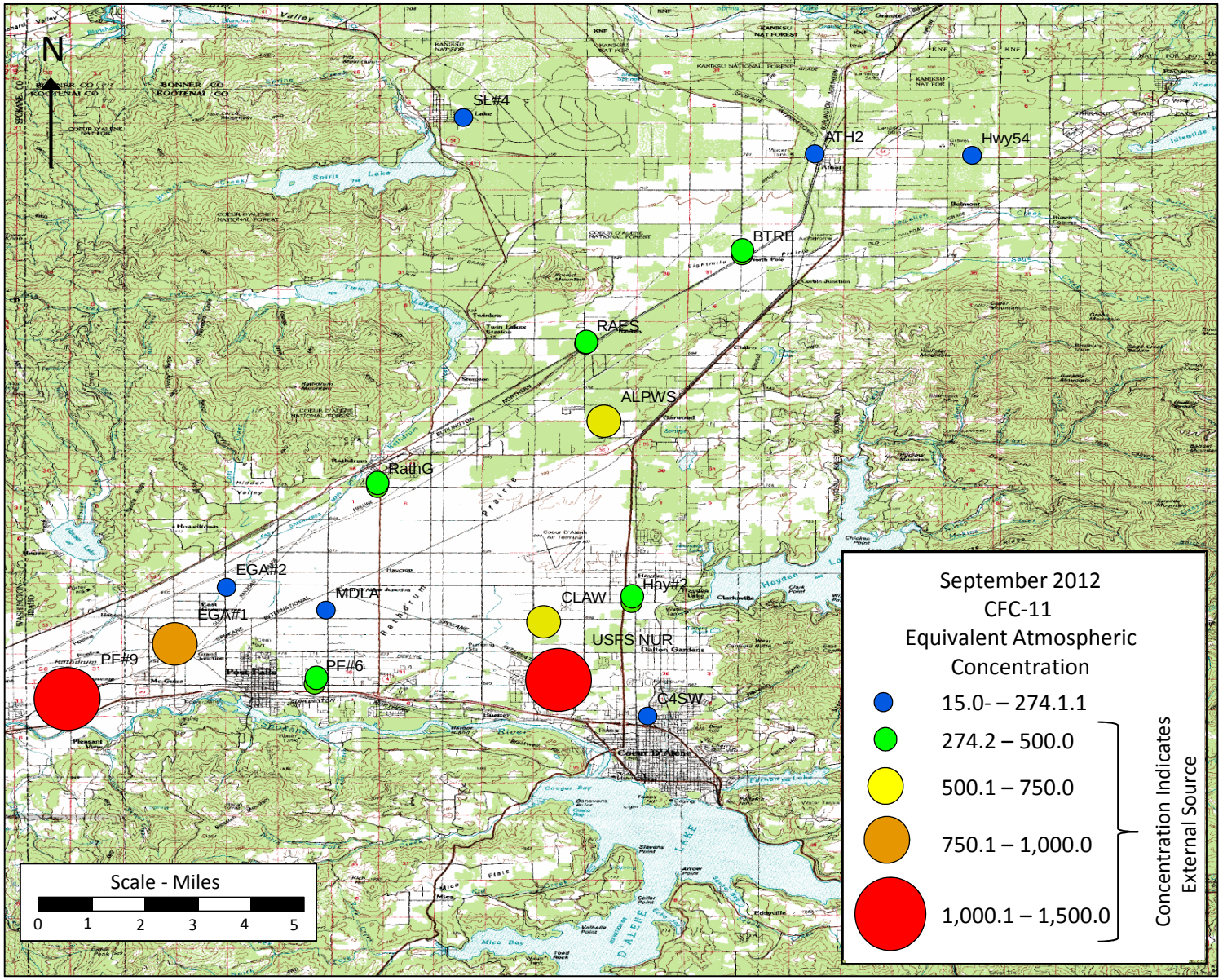

Figure 47. Equivalent atmospheric concentrations of CFC-11 in wells sampled.

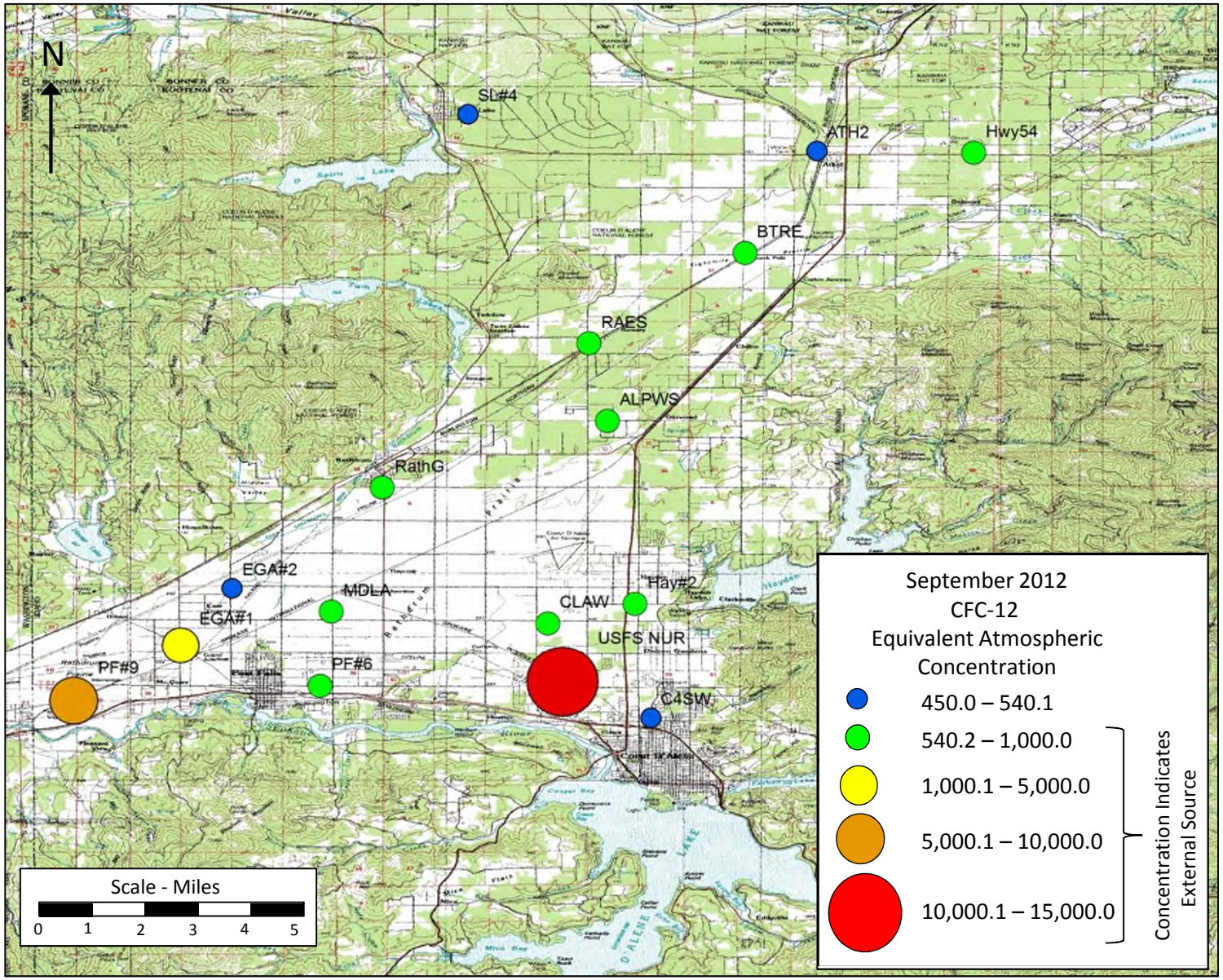

Figure 48. Equivalent atmospheric concentrations of CFC-12 in wells sampled.

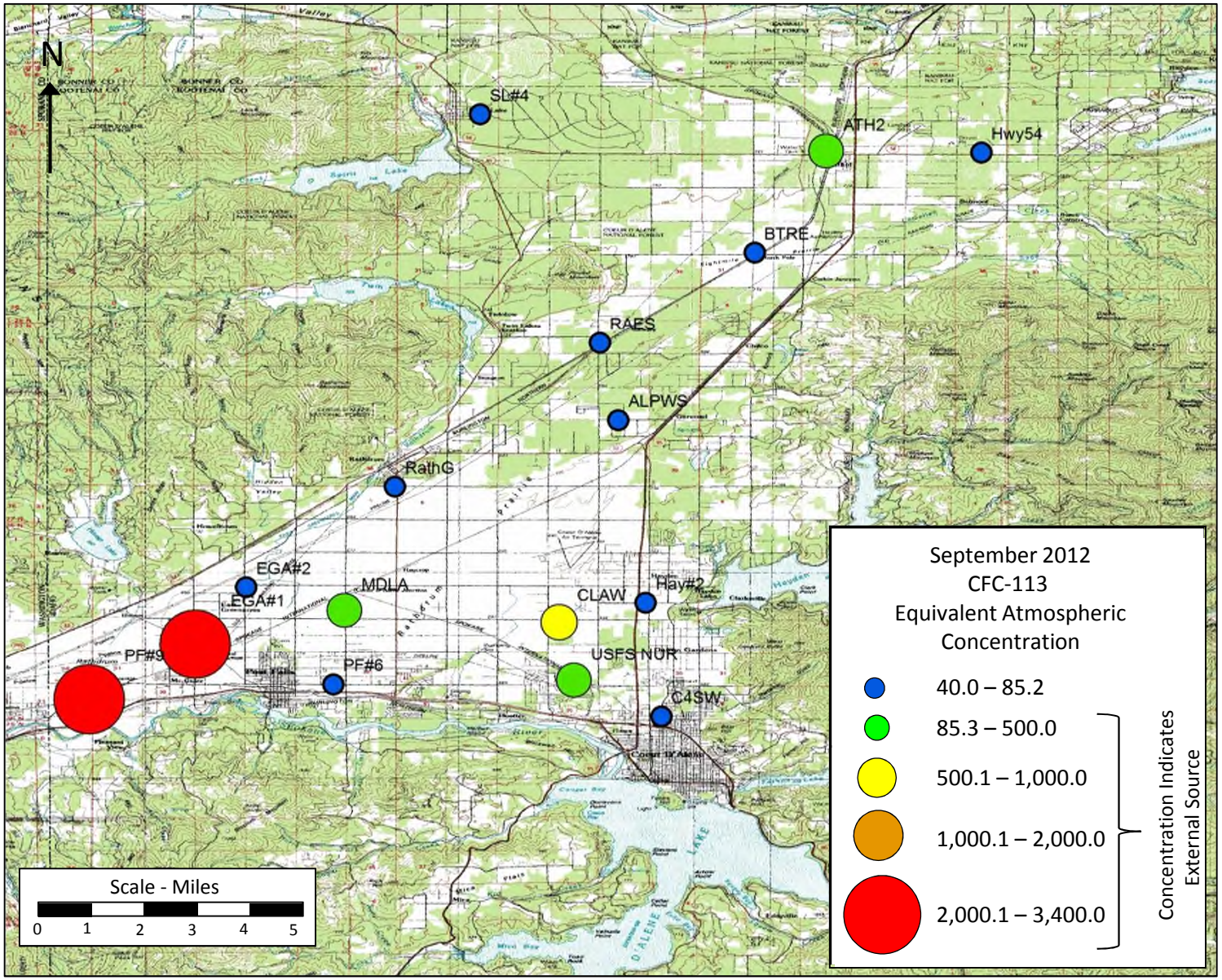

Figure 49. Equivalent atmospheric concentrations of CFC-113 in wells sampled.

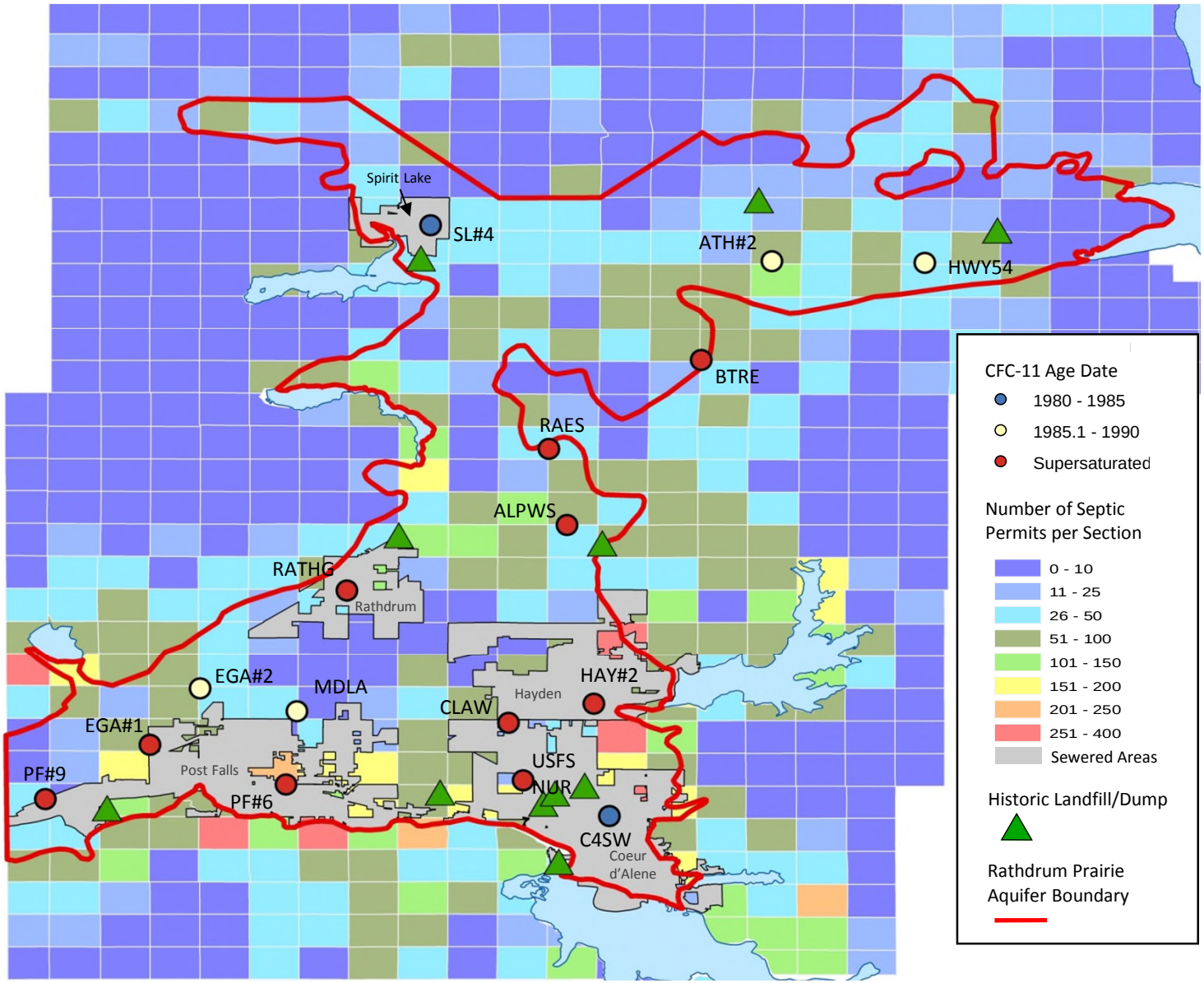

Figure 50. CFC-11 apparent age date and potential external CFC source locations.

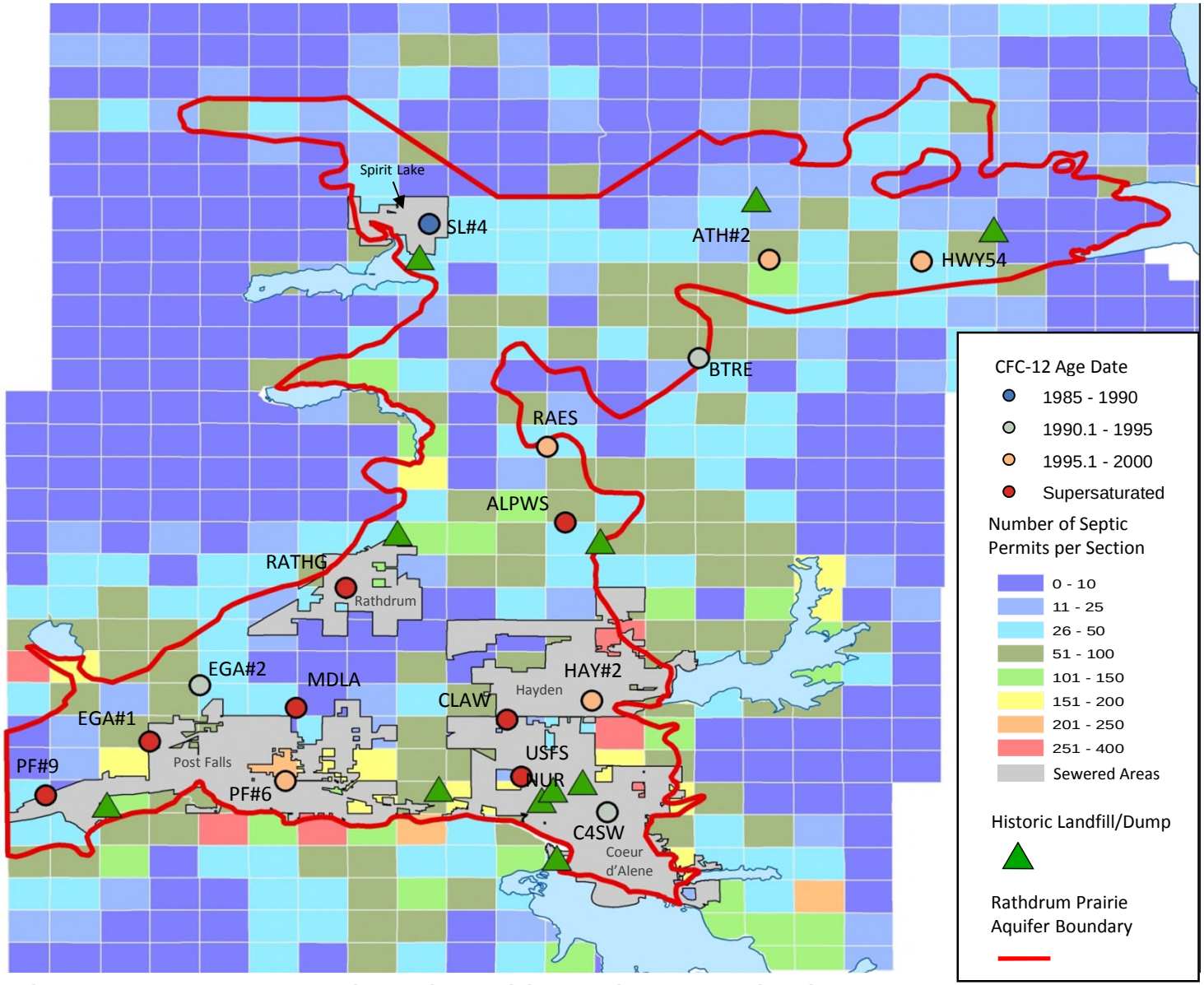

Figure 51 CFC-12 apparent age date and potential external CFC source locations.

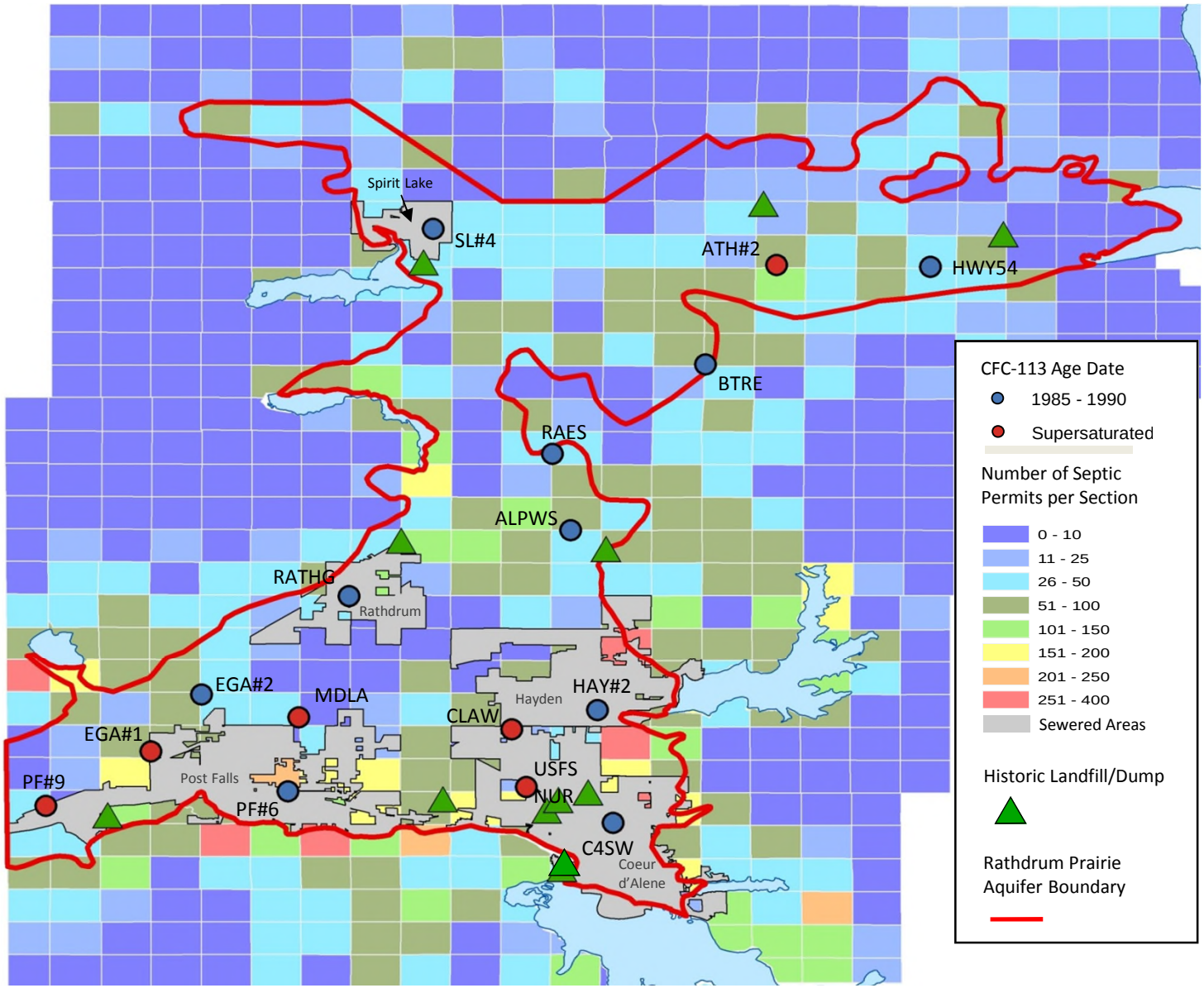

Figure 52 CFC-113 apparent age date and potential external CFC source locations.