FIGURES

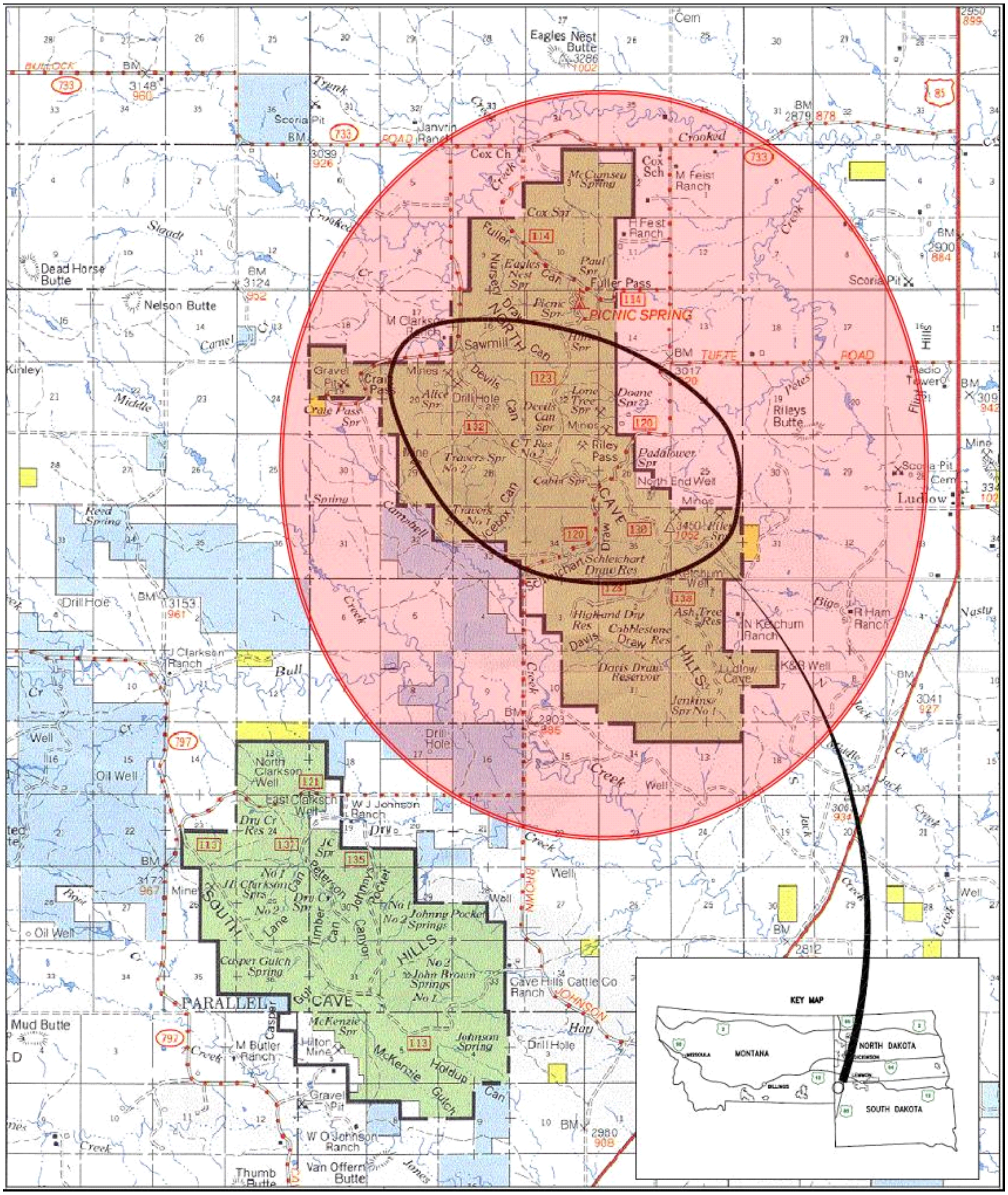

Figure 2.1: Study location map of the North Cave Hills**;** black oval marks the abandoned Riley Pass uranium mines; red, shaded oval represents the area covered by this investigation.

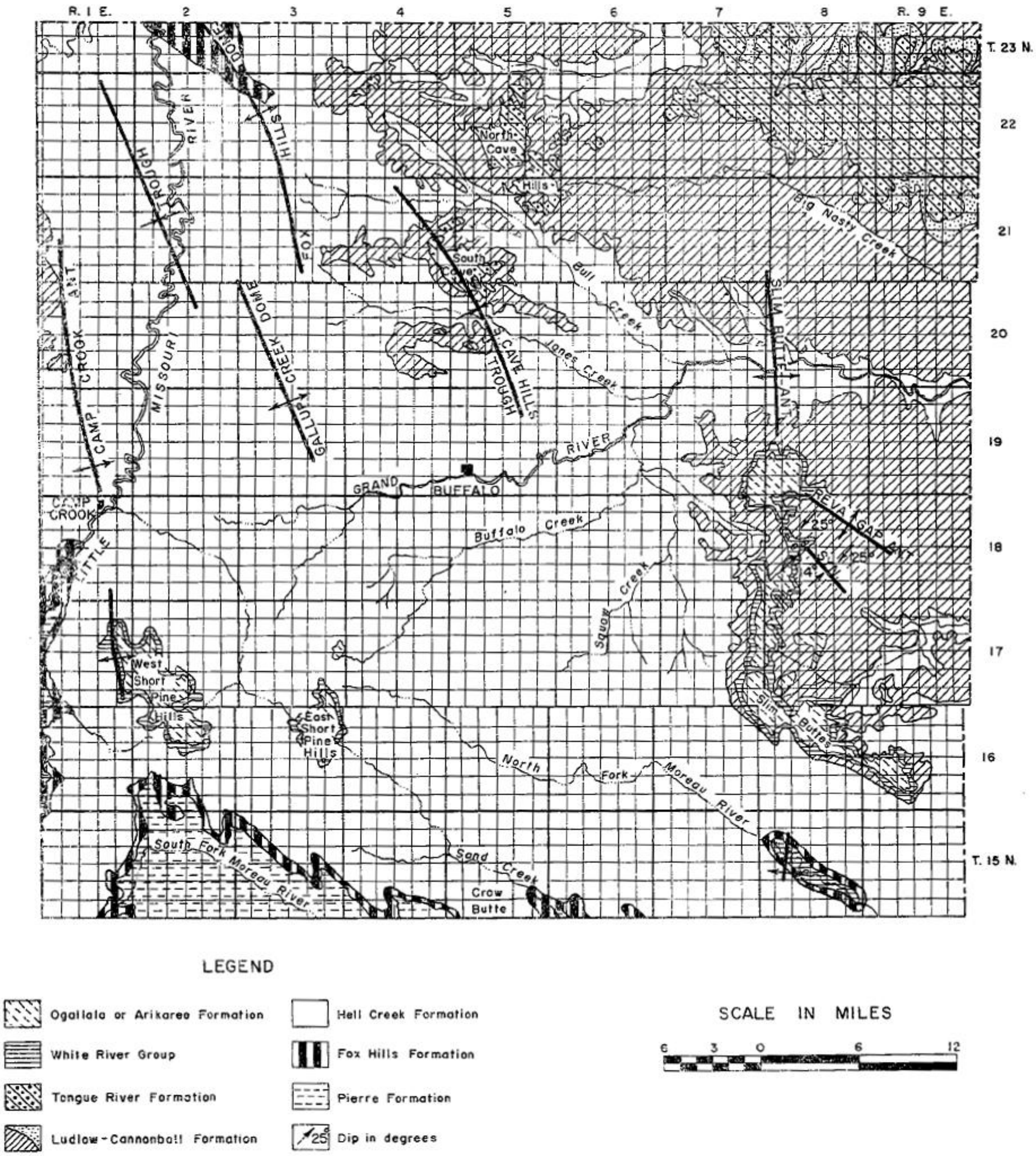

Figure 2.2: Geologic map of Harding County (from Curtiss, 1955).

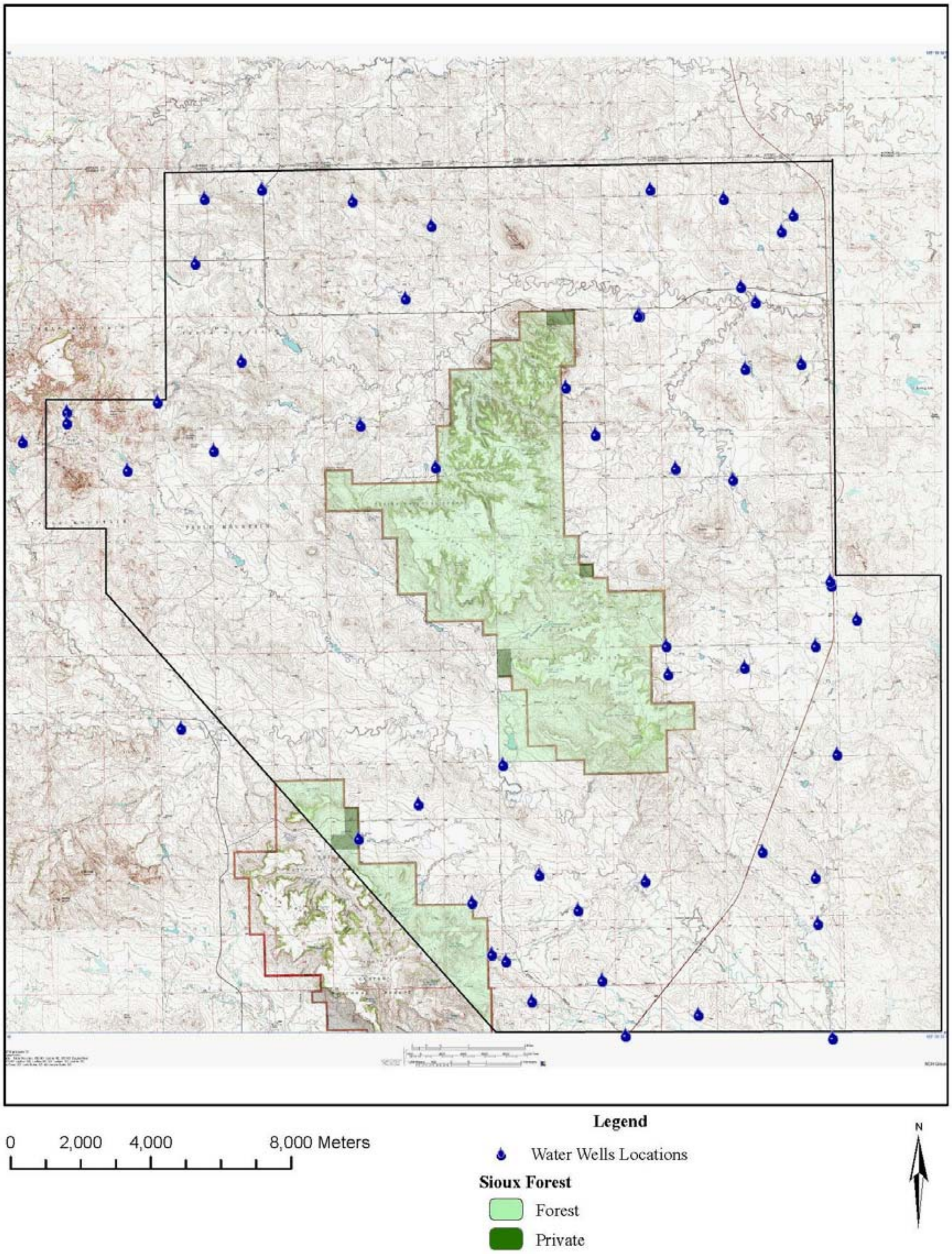

Figure 2.3: Groundwater study location map (5-mile radius inside black box) and location of 57 wells from which 34 were sampled. Northern border is the SD-ND line

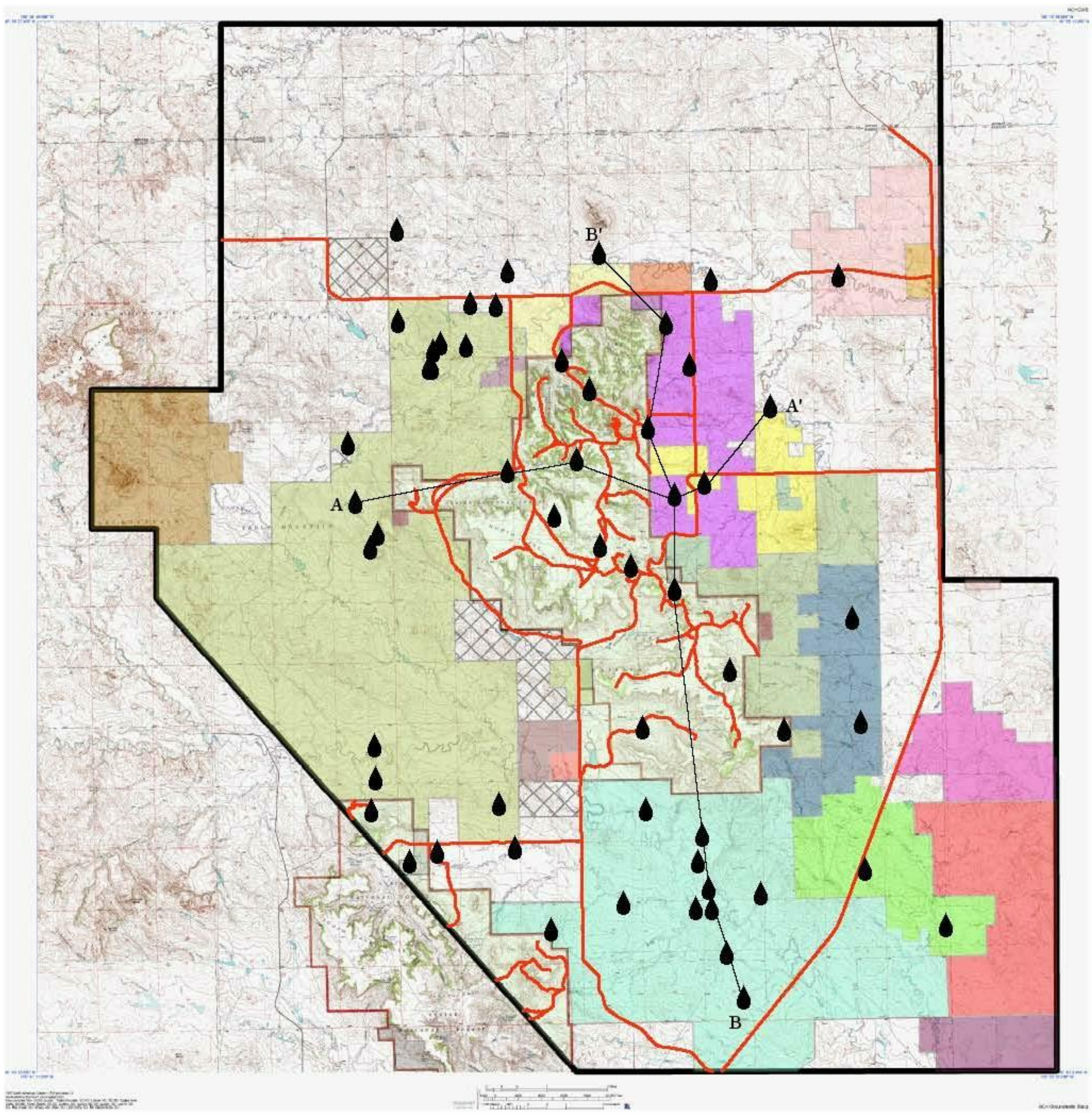

Figure 2.4: Oil well locations utilized in construction of stratigraphic cross-sections A-A' (W-E) and B-B' (S-N).

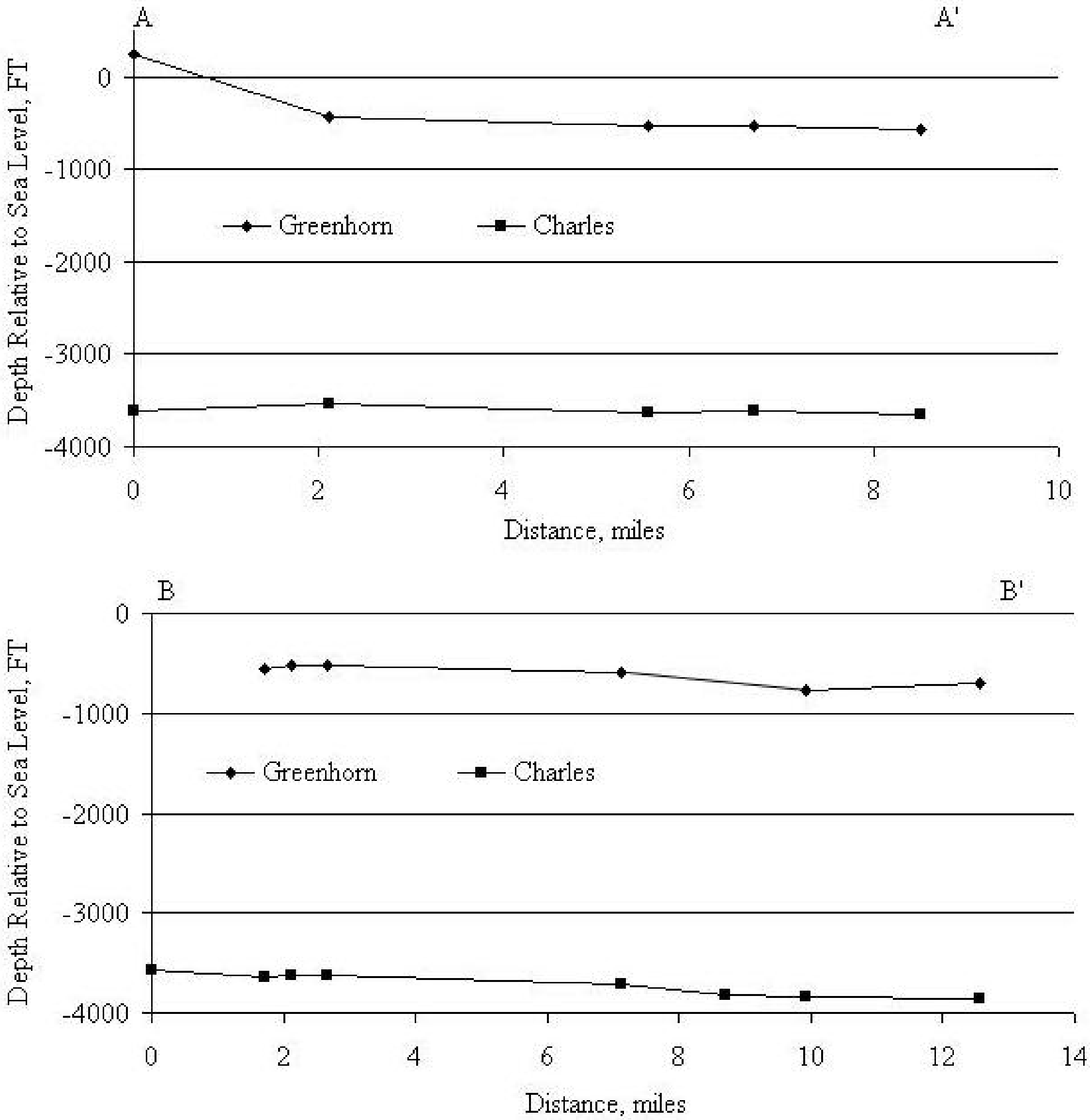

Figure 2.5: Resultant dip gradients drawn on the top of the Greenhorn and Charles formations for cross-section A-A' and B-B' shown on Figure 2.4. Resultant dip is 30 feet/mi to the NE.

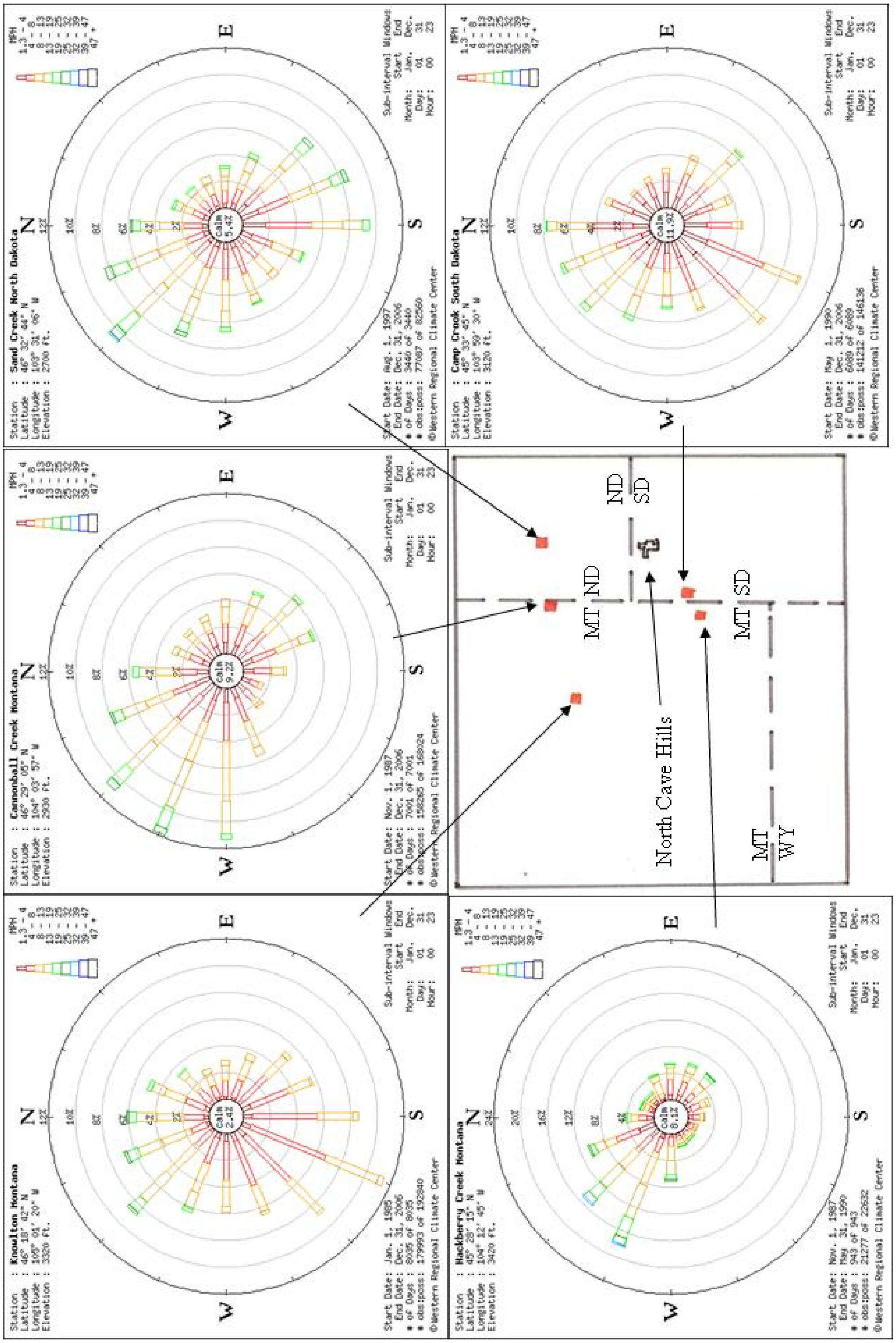

Figure 2.6: Wind roses and site locations of the 5 climate stations used to analyze wind speed and direction data for the North Cave Hills

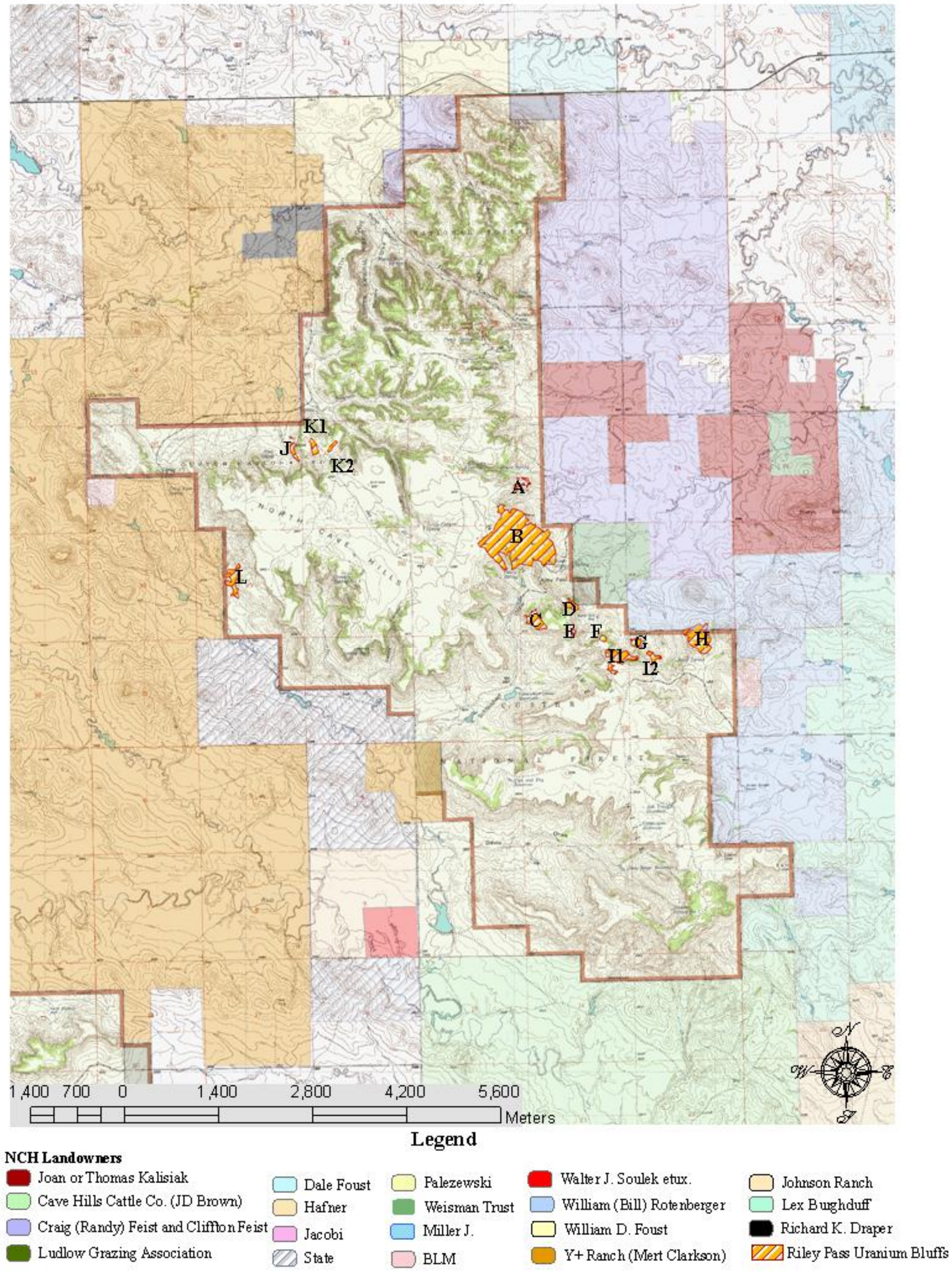

Figure 3.1: Location of mined Bluffs Private landownership surrounding the North Cave Hills is indicated by different color shading.

Figure 3.2: Historical photograph of overburden disposal at Bluff G (from USDA-USFS impact report, 1964).

Figure 3.3: Current Bluff B overburden.

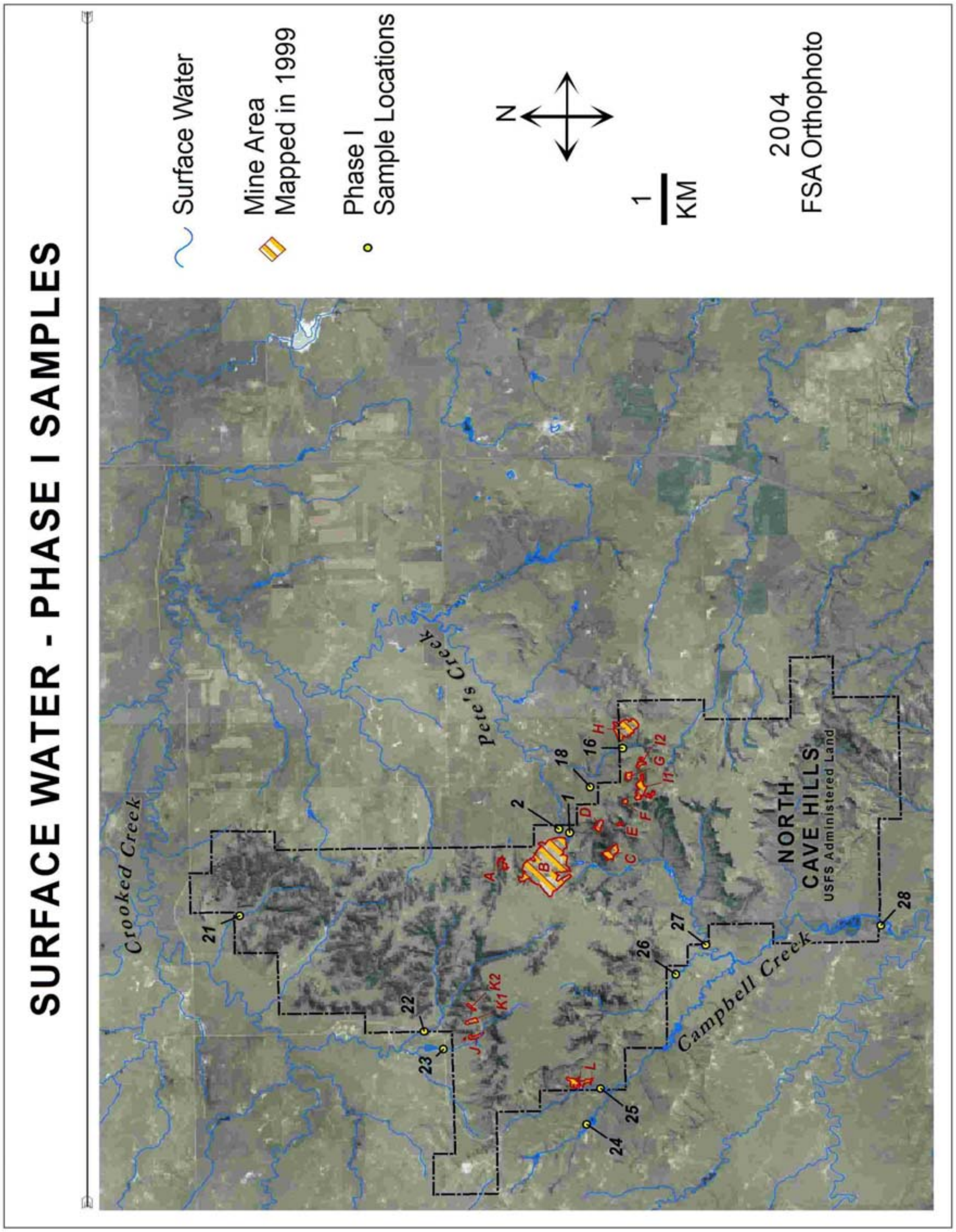

Figure 6.1: North Cave Hills Phase I surface water sampling locations

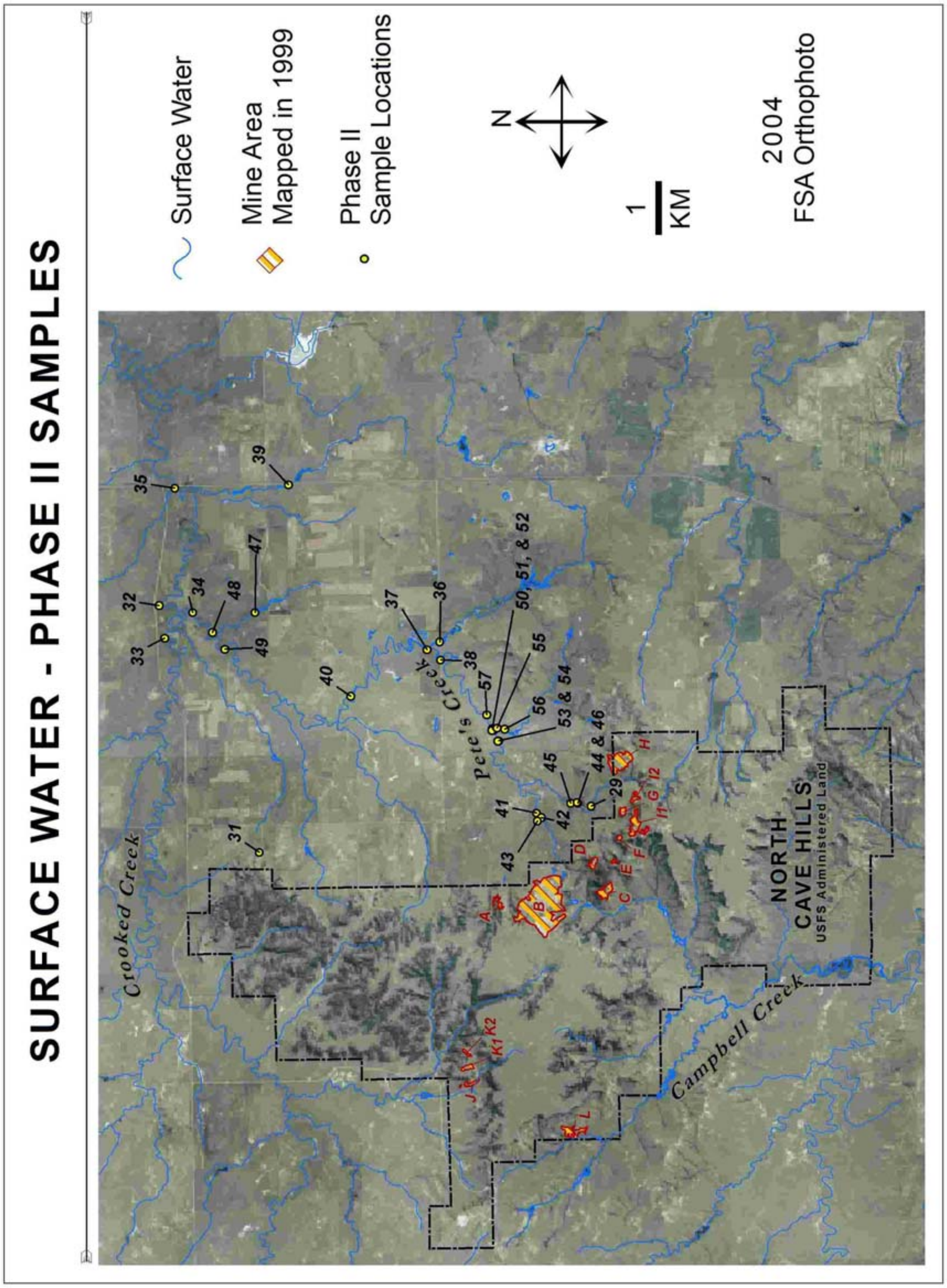

Figure 6.2: North Cave Hills Phase II surface water sampling locations

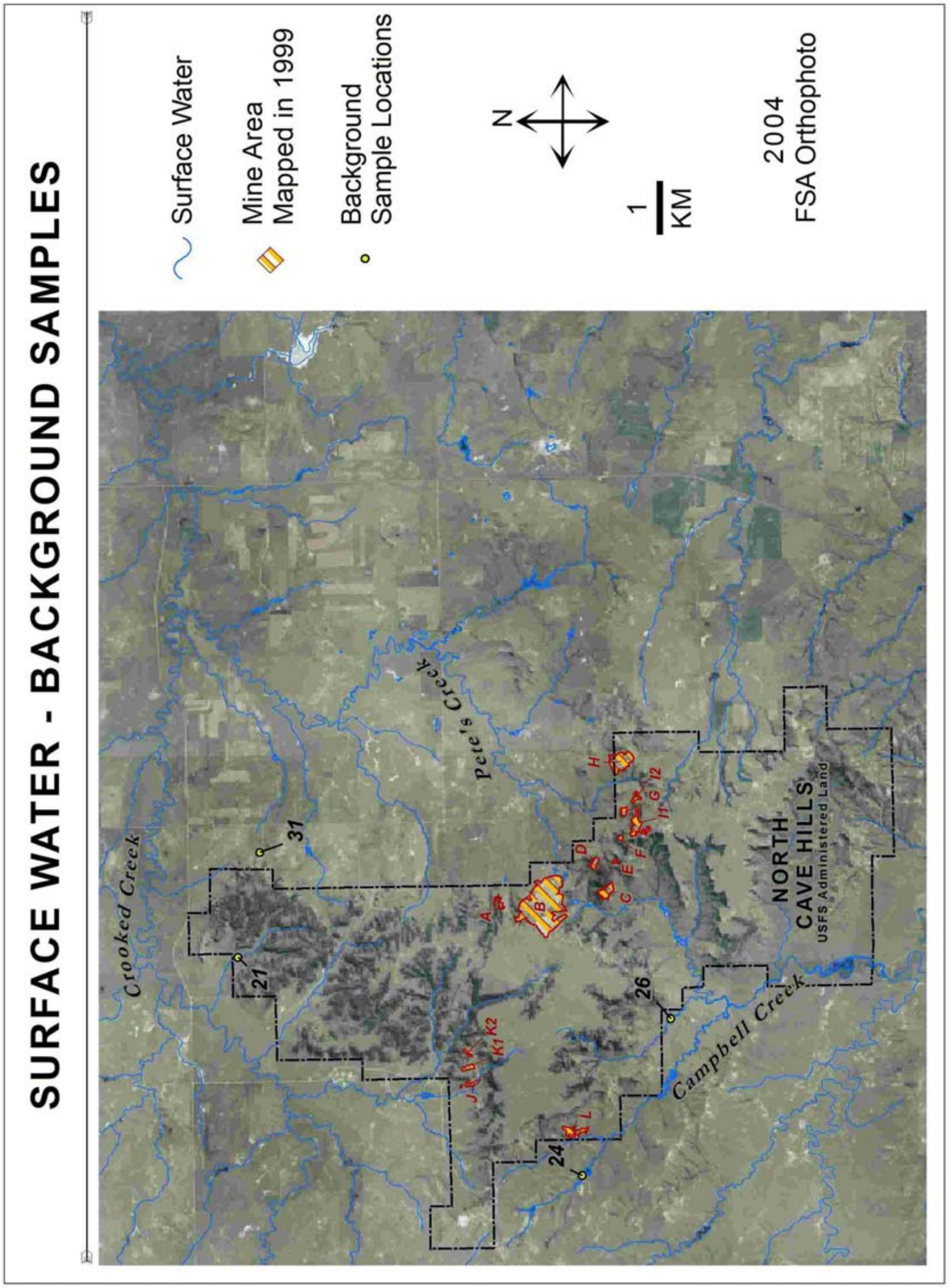

Figure 6.3: North Cave Hills surface water background sampling locations.

Figure 6.4: Bluff B sediment and spoil areas within the upper reaches of Pete's Creek.

Figure 6.5: NCH SW 27 sampling location located near the terminus of Schleichart Draw as it crosses the USFS road onto private land.

Figure 6.6: NCH SW 28 sampling location below an existing stock dam within the Campbell Creek watershed

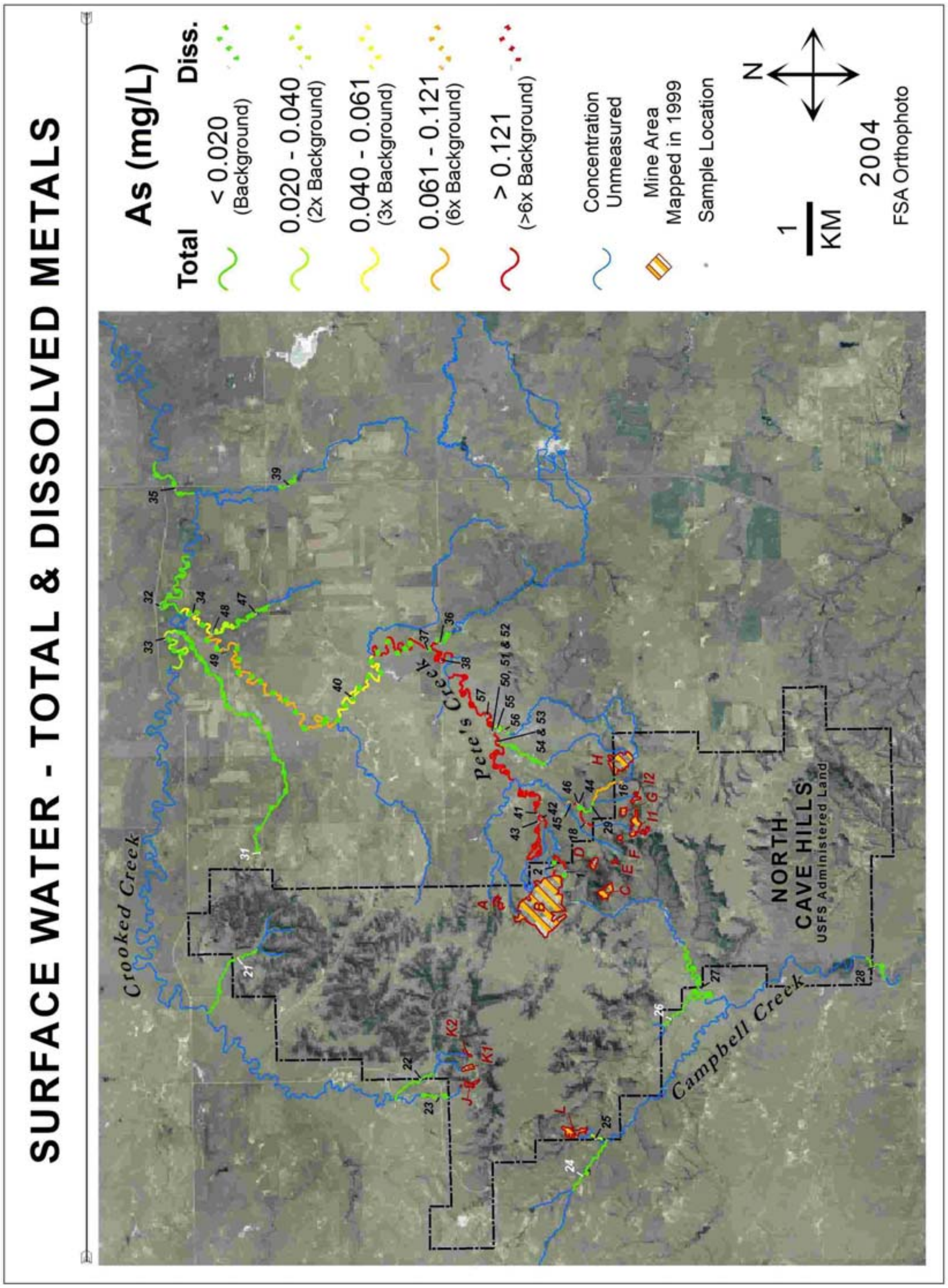

Figure 6.7: North Cave Hills surface water results for total and dissolved arsenic.

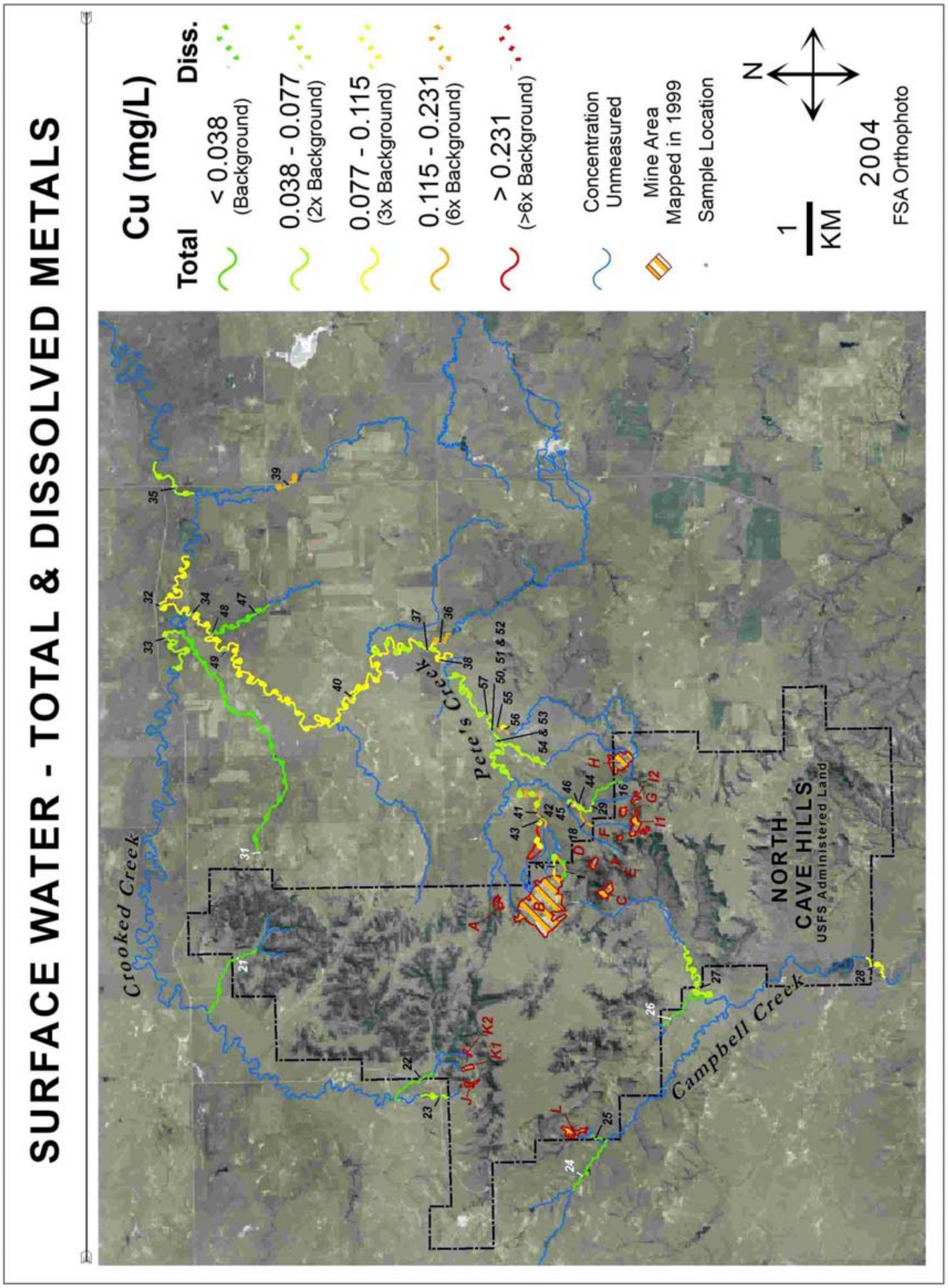

Figure 6.8: North Cave Hills surface water results for total and dissolved copper.

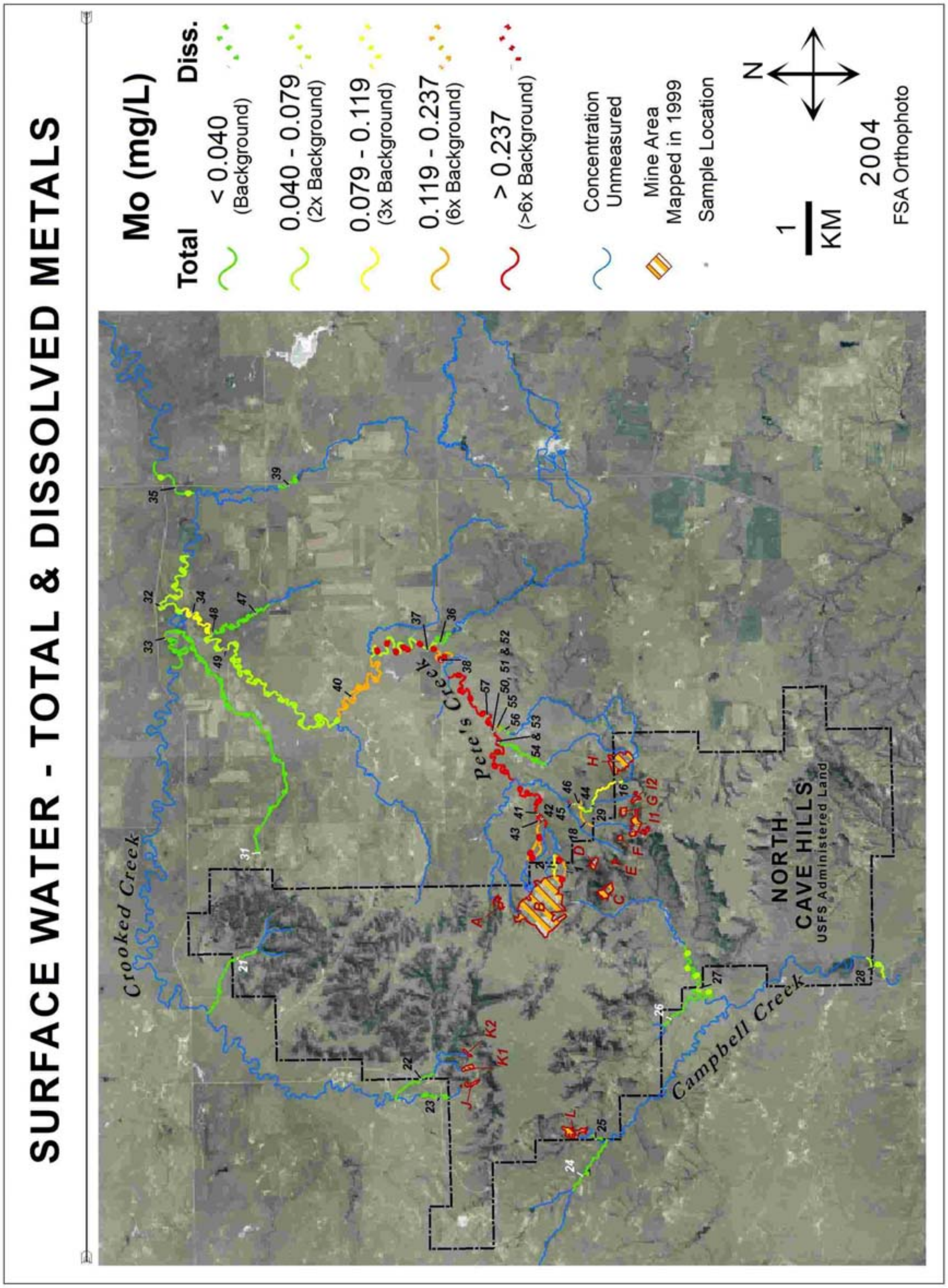

Figure 6.9: North Cave Hills surface water results for total and dissolved molybdenum.

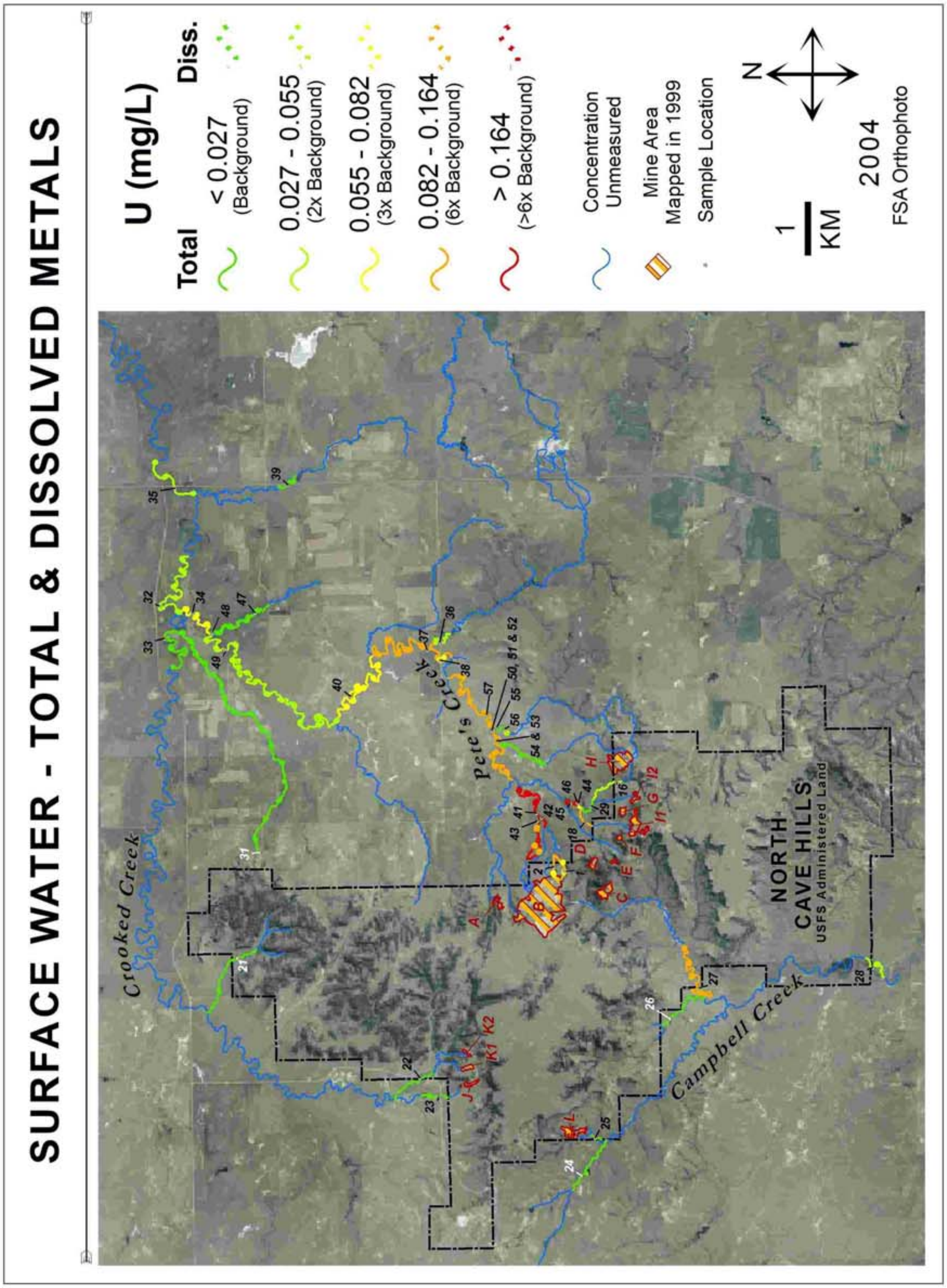

Figure 6.10: North Cave Hills surface water results for total and dissolved uranium.

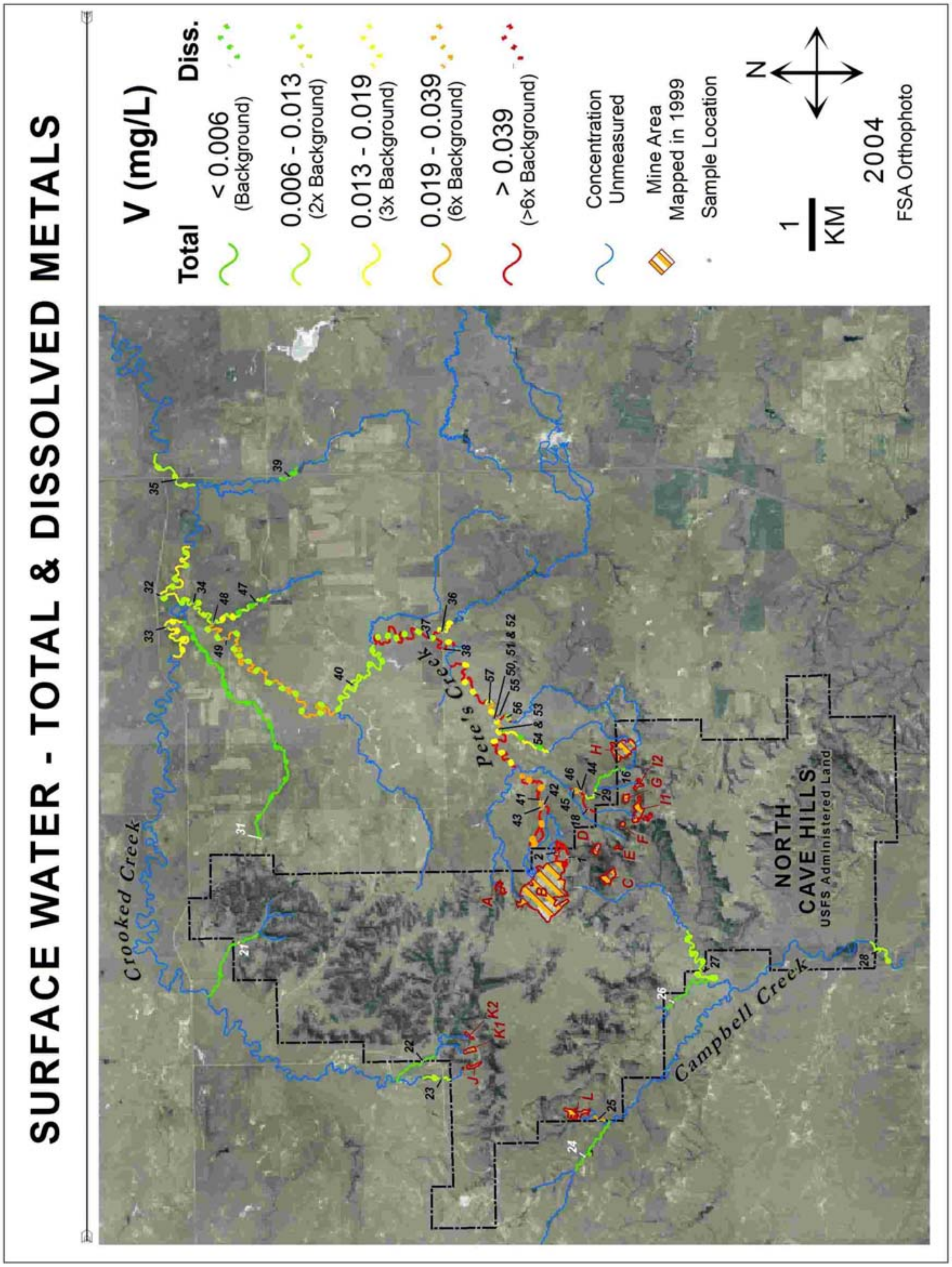

Figure 6.11: North Cave Hills surface water results for total and dissolved vanadium.

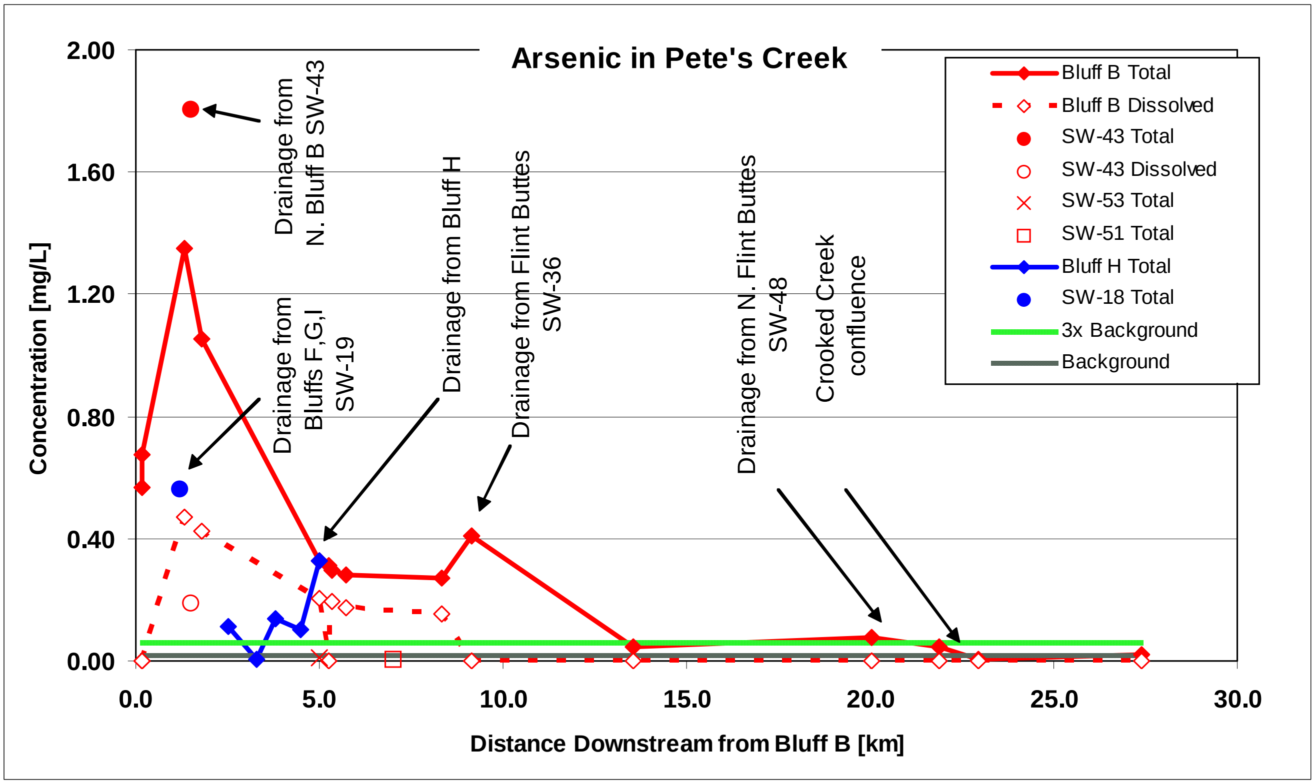

Figure 6.12: Arsenic concentrations as a function of stream distance from Bluff B.

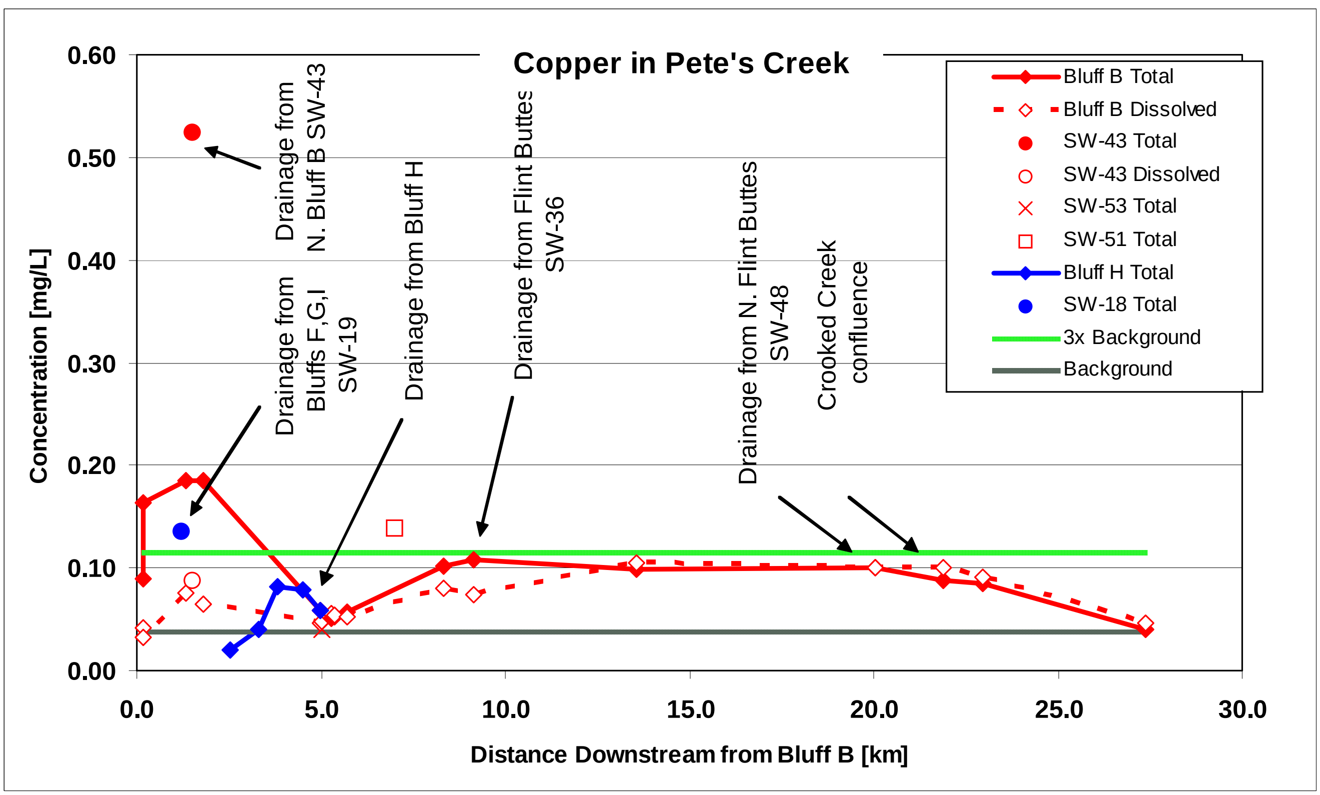

Figure 6.13: Copper concentrations as a function of stream distance from Bluff B.

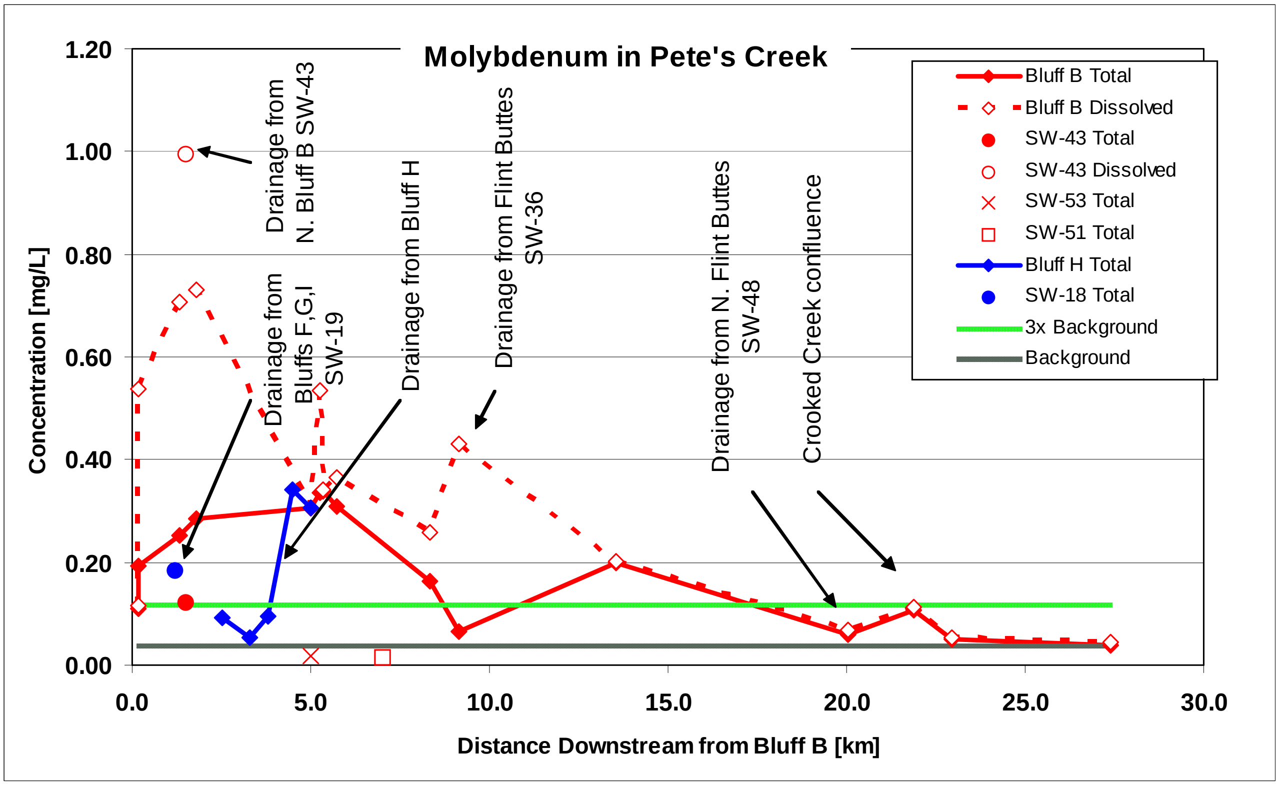

Figure 6.14: Molybdenum concentrations as a function of stream distance from Bluff B.

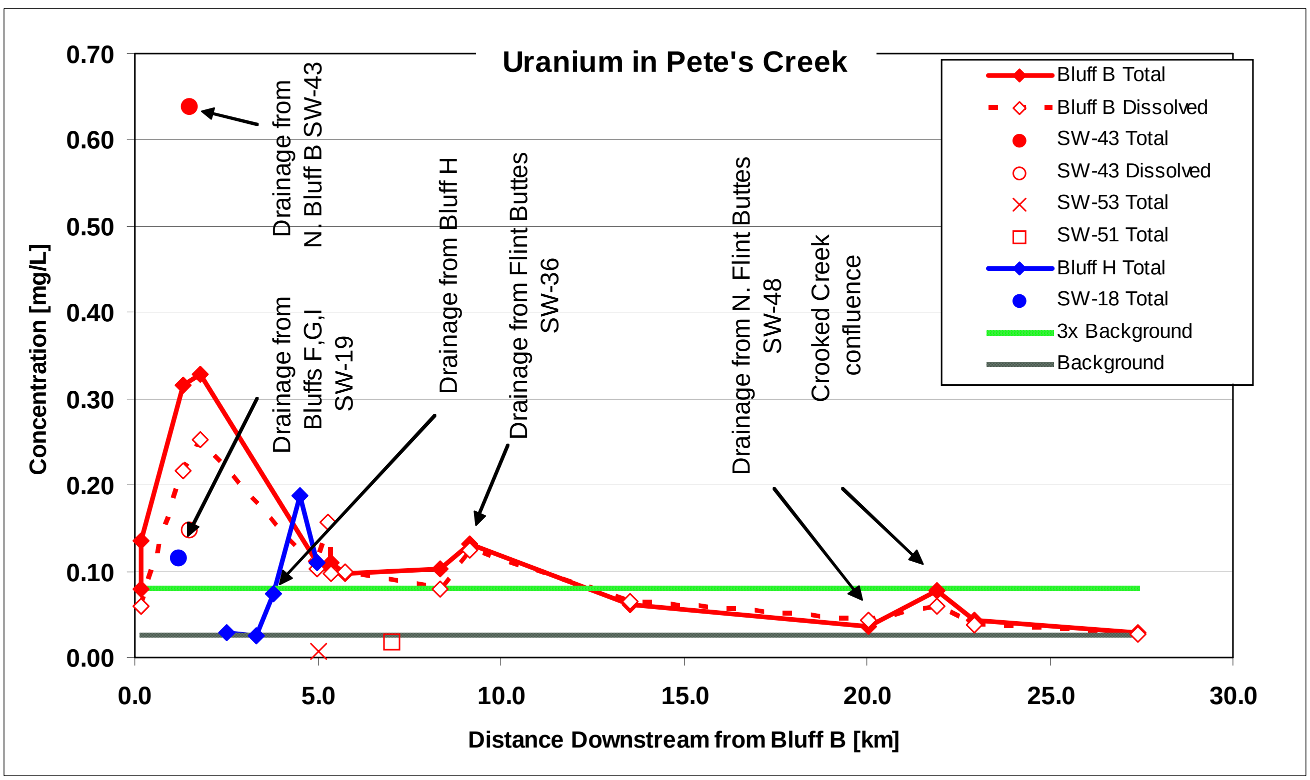

Figure 6.15: Uranium concentrations as a function of stream distance from Bluff B.

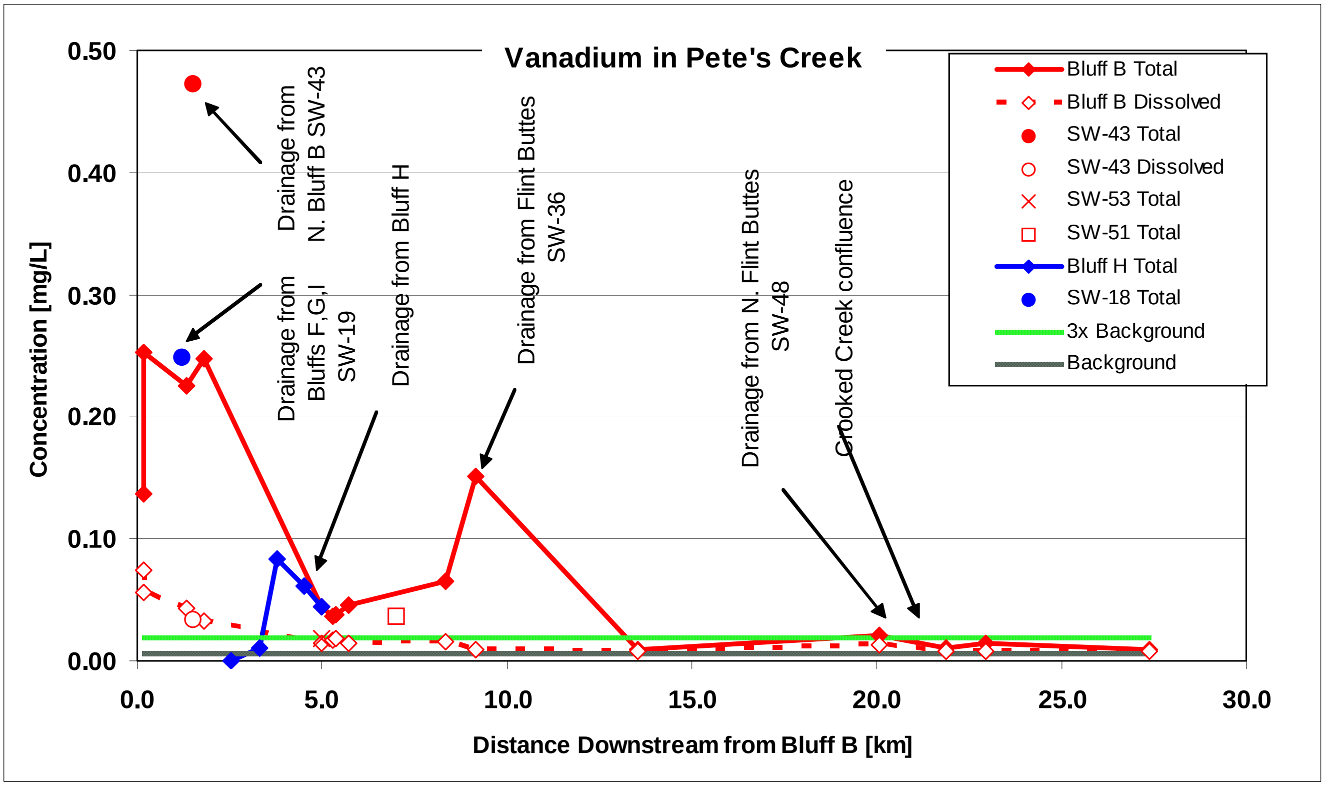

Figure 6.16: Vanadium concentrations as a function of stream distance from Bluff B.

Figure 6.17: Bluff H spoils located up-gradient of site NCH SW 16

Figure 6.18: NCH SW 29 sampling location immediately downstream of a lignite spring discharge.

Figure 6.19: Area of significant sedimentation within the lower reaches of an unnamed tributary of Pete's Creek near NCH SW 43 sampling location.

Figure 6.20: Close-up showing extent of sedimentation within the unnamed tributary of Pete's Creek near NCH SW 43.

Figure 6.21: Sampling site NCH SW 57 located below a lignite outcropping within upper Pete's Creek.

Figure 6.22: Slaba "Flat Top" abandoned uranium minesite located northeast of Ludlow on private property.

Figure 6.23: NCH SW 35 sampling site within Crooked Creek, west of the South Dakota State Route 85 overpass.

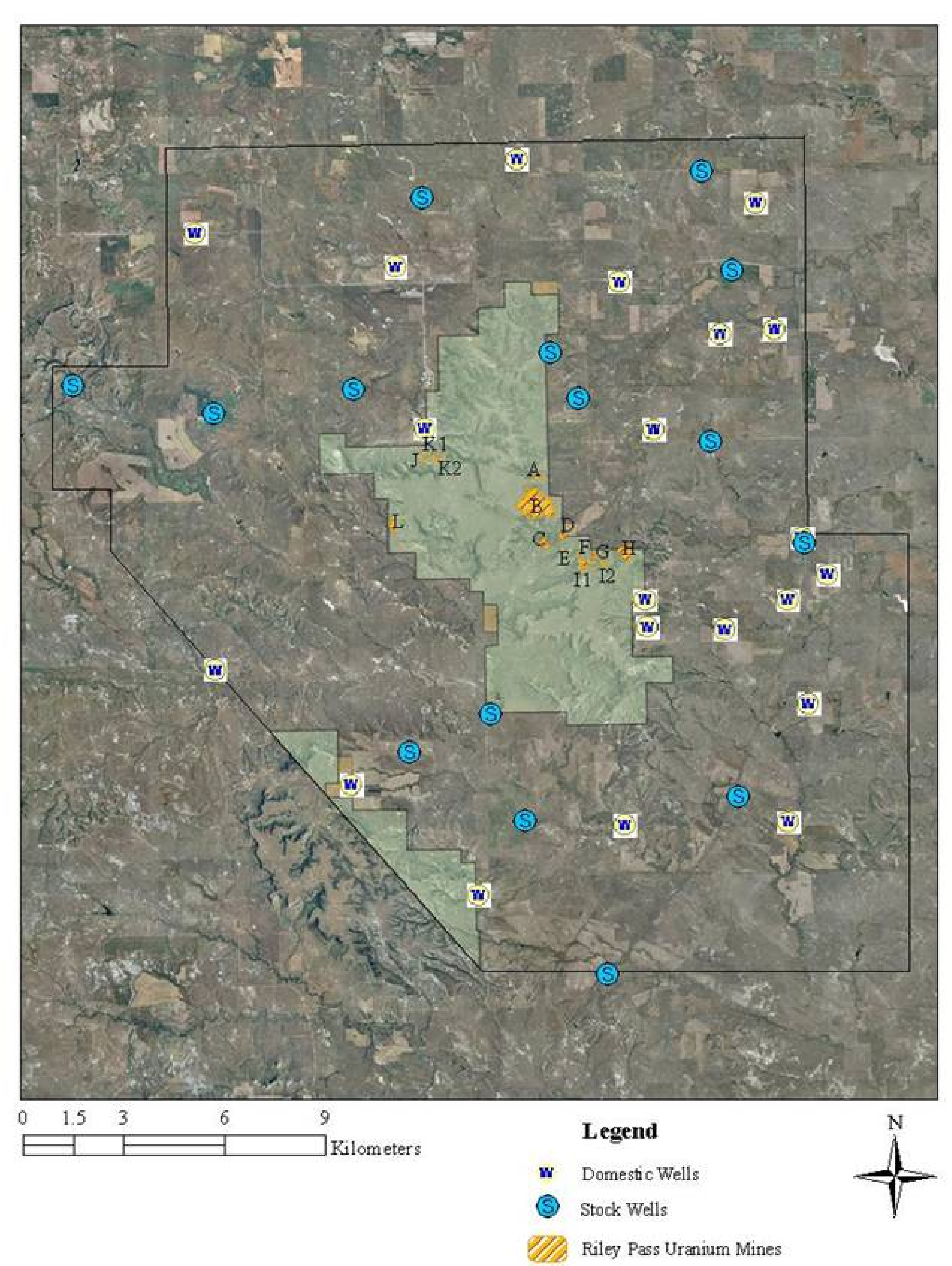

Figure 7.1: Final groundwater sampling locations. Domestic and stock wells are designated by symbol.

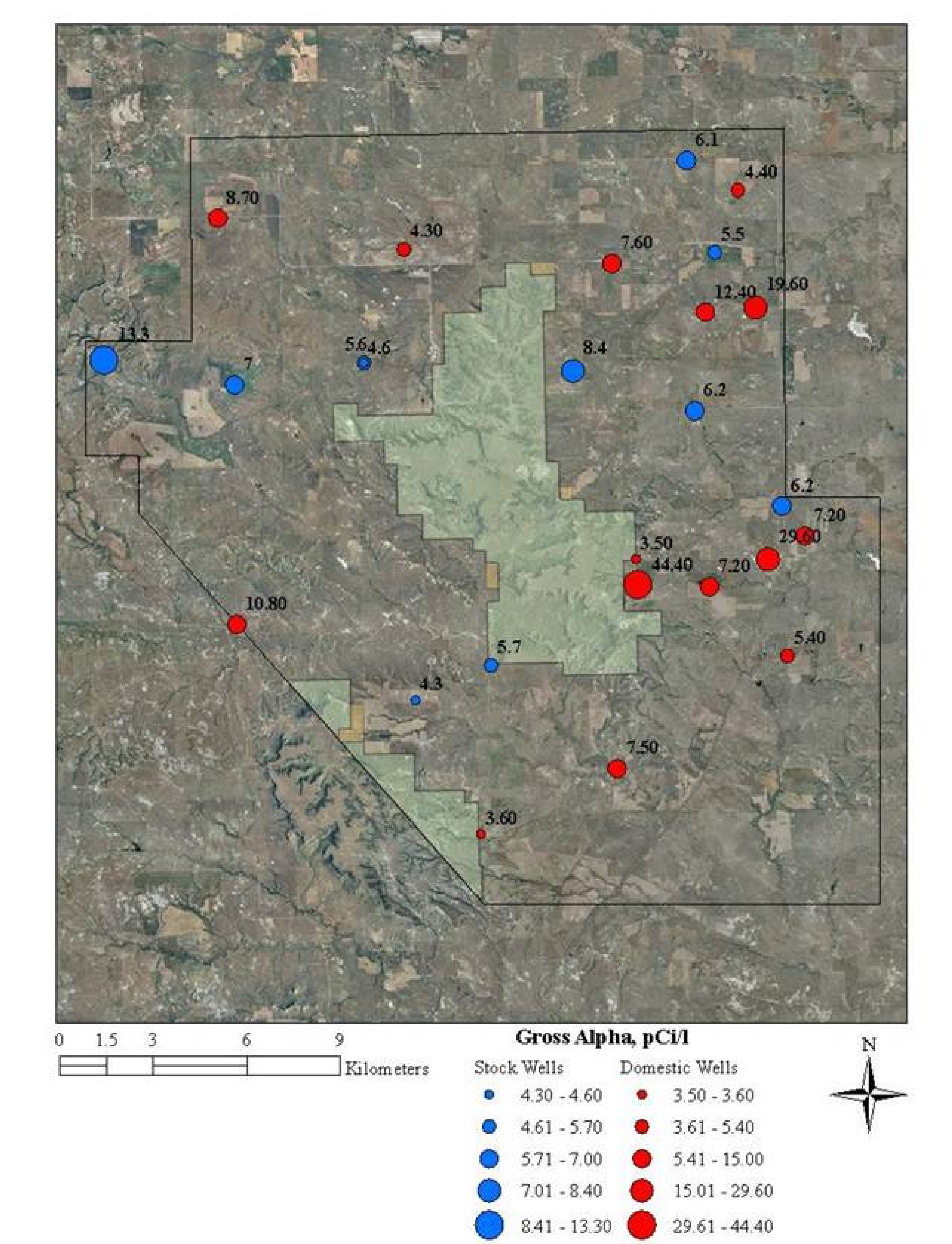

Figure 7.2: Distribution of gross alpha contamination and occurrence in the groundwater system. Three wells exceeded the MCL of 15 pCi/L.

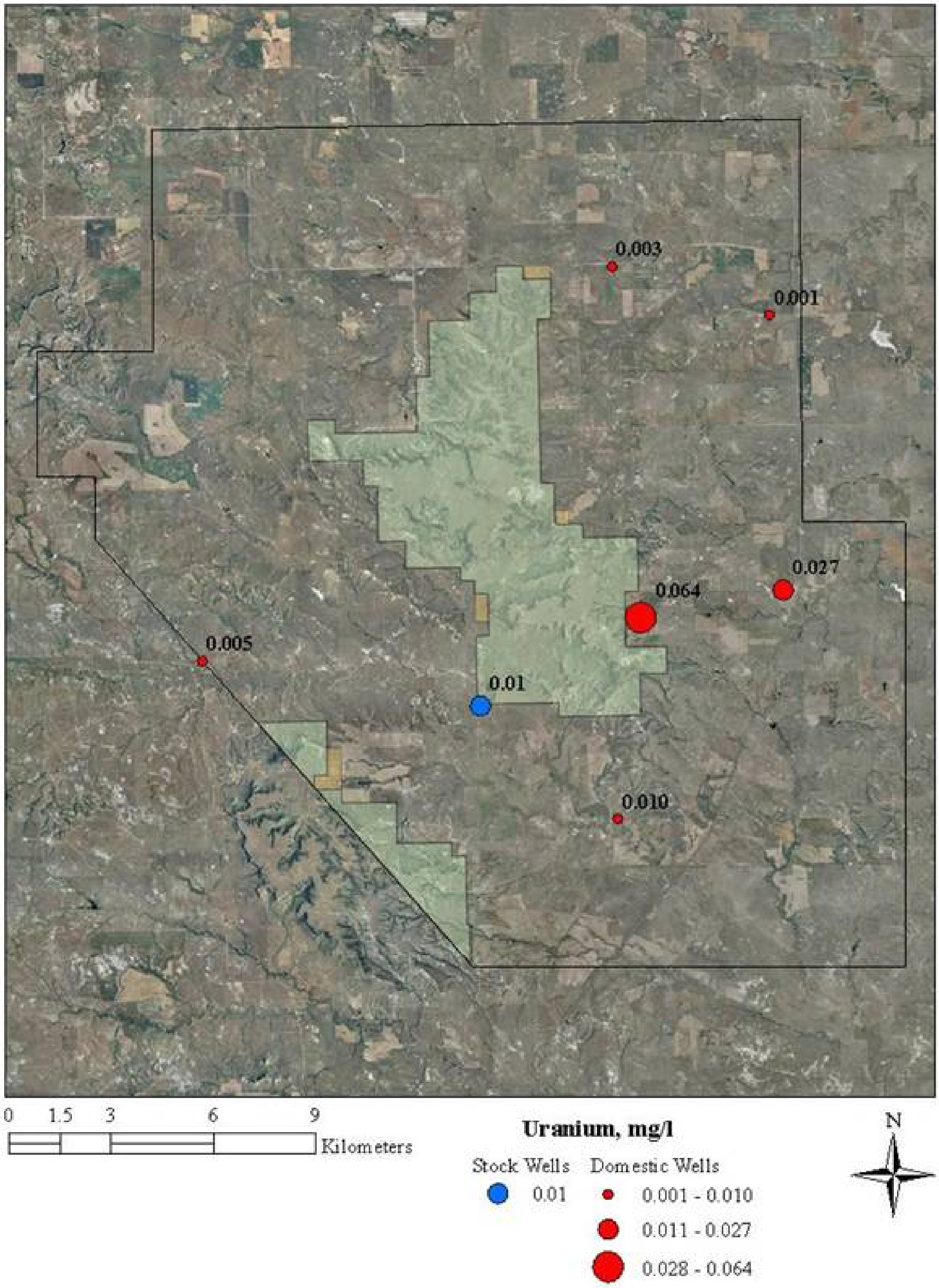

Figure 7.3: Uranium distribution and occurrence in the groundwater system. One well exceeded the MCL of 0.03 mg/L.

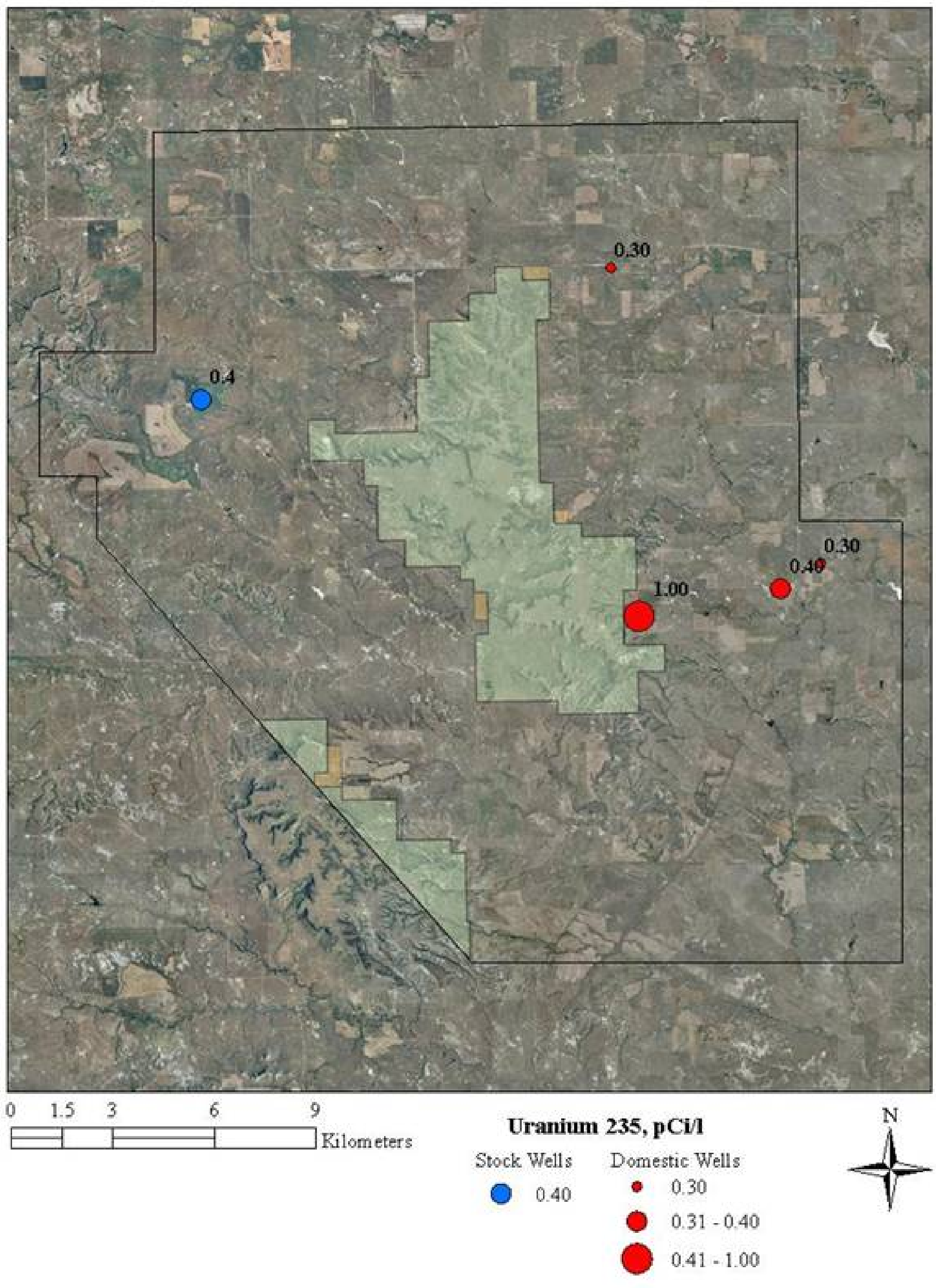

Figure 7.4: Uranium 235 distribution and occurrence in the groundwater system. There is not an established MCL for uranium 235.

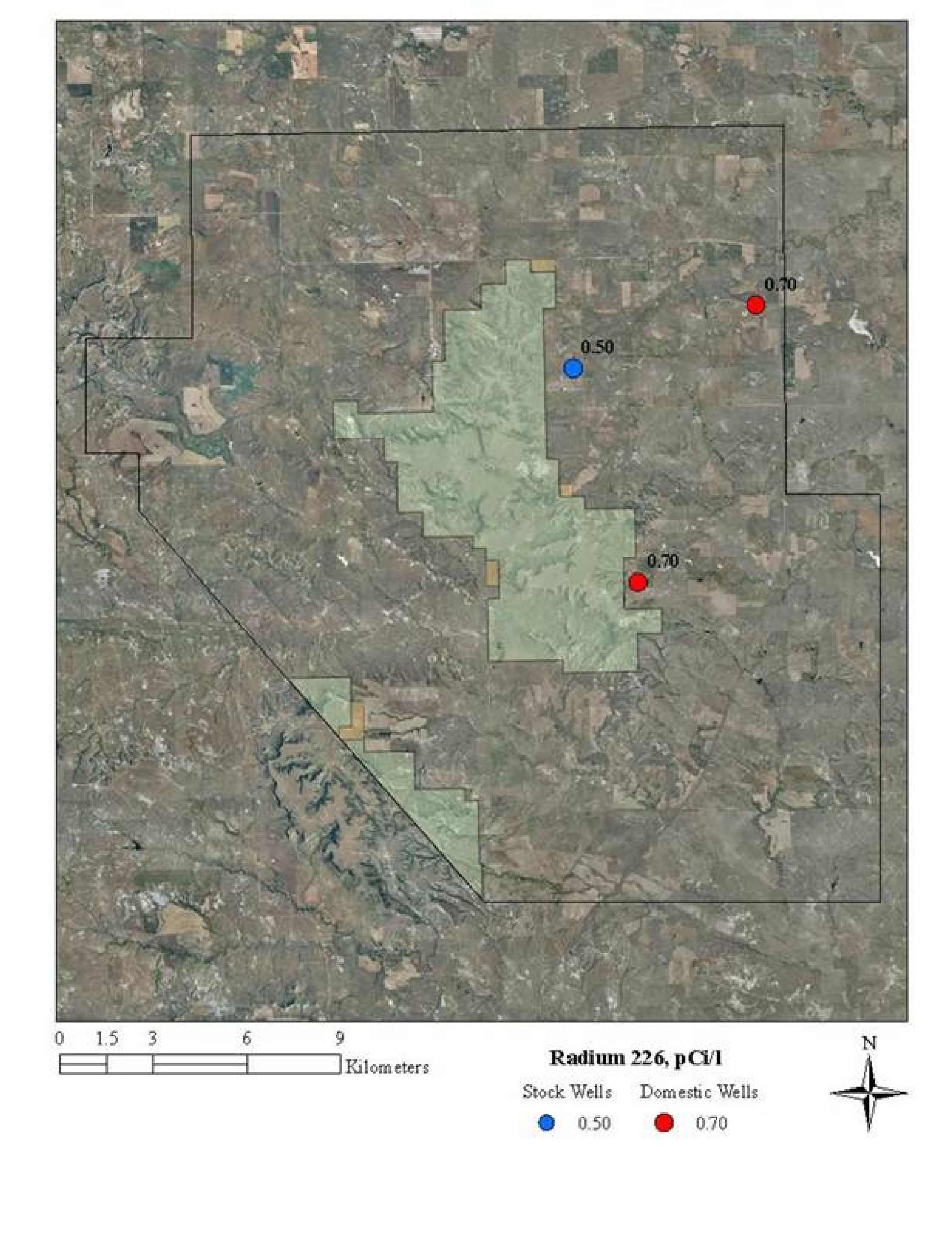

Figure 7.5: Radium 226 distribution and occurrence in the groundwater system. There is not an established MCL for radium 226.

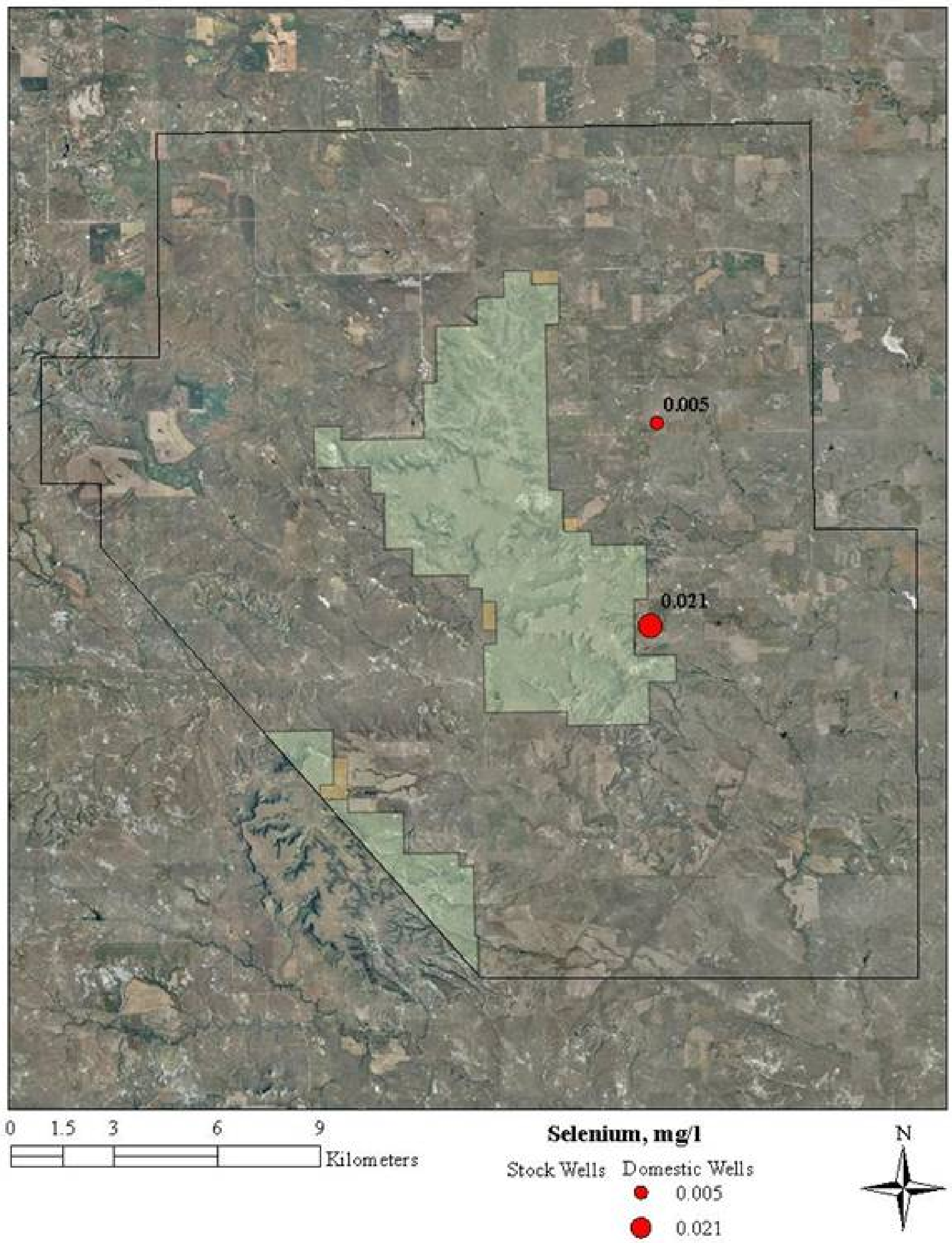

Figure 7.6: Selenium distribution and occurrence in the groundwater system. No well exceeded the MCL of 0.5 mg/L.

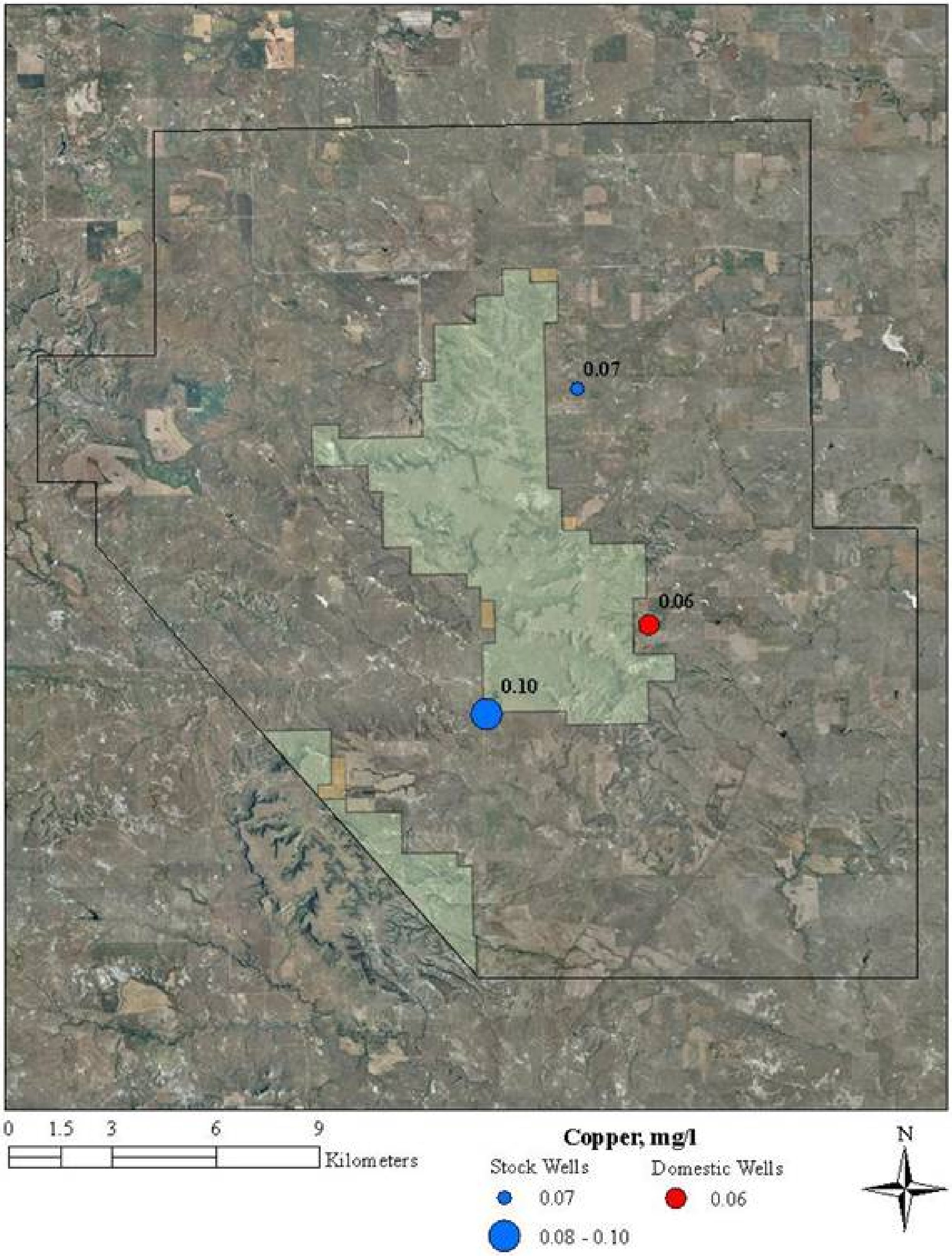

Figure 7.7: Copper distribution and occurrence in the groundwater system. No well exceeded the MCL of 1.3 mg/L. Copper was not detected in any domestic wells.

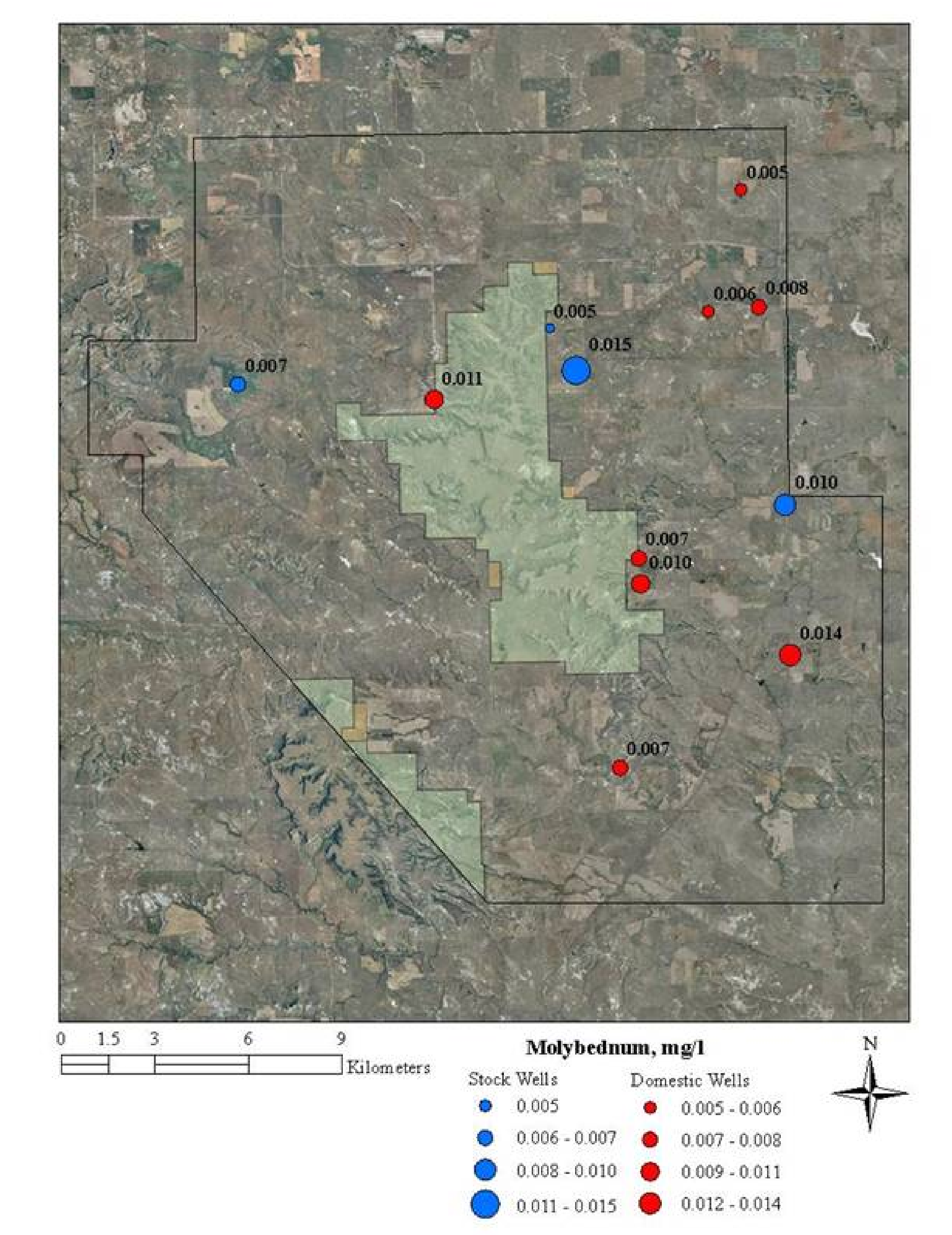

Figure 7.8: Molybdenum distribution and occurrence in the groundwater system. There is no MCL for molybdenum.

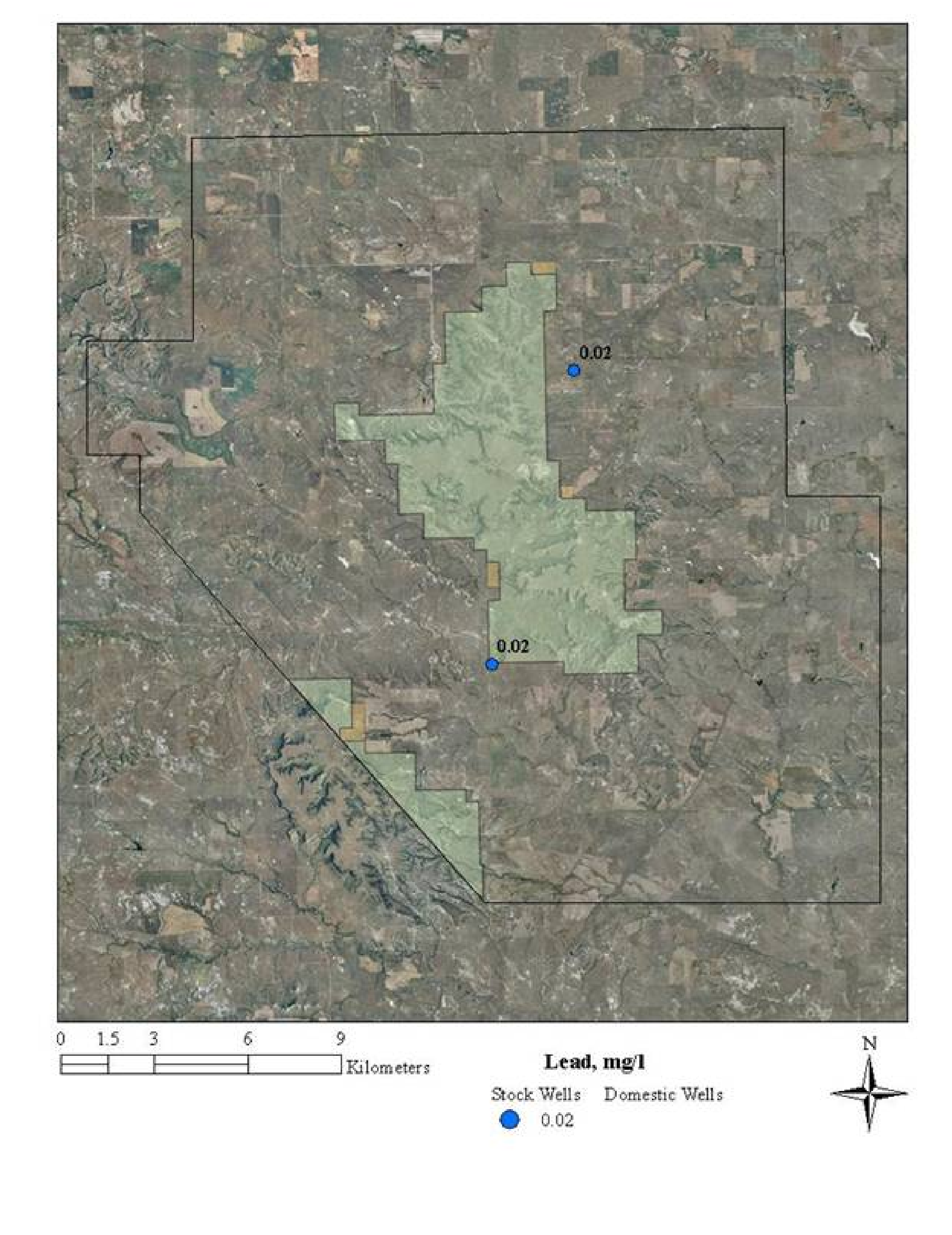

Figure 7.9: Lead distribution and occurrence in the groundwater system. There was no detection of lead in domestic wells. Both lead occurrences were above the MCL of 0.015 mg/L.

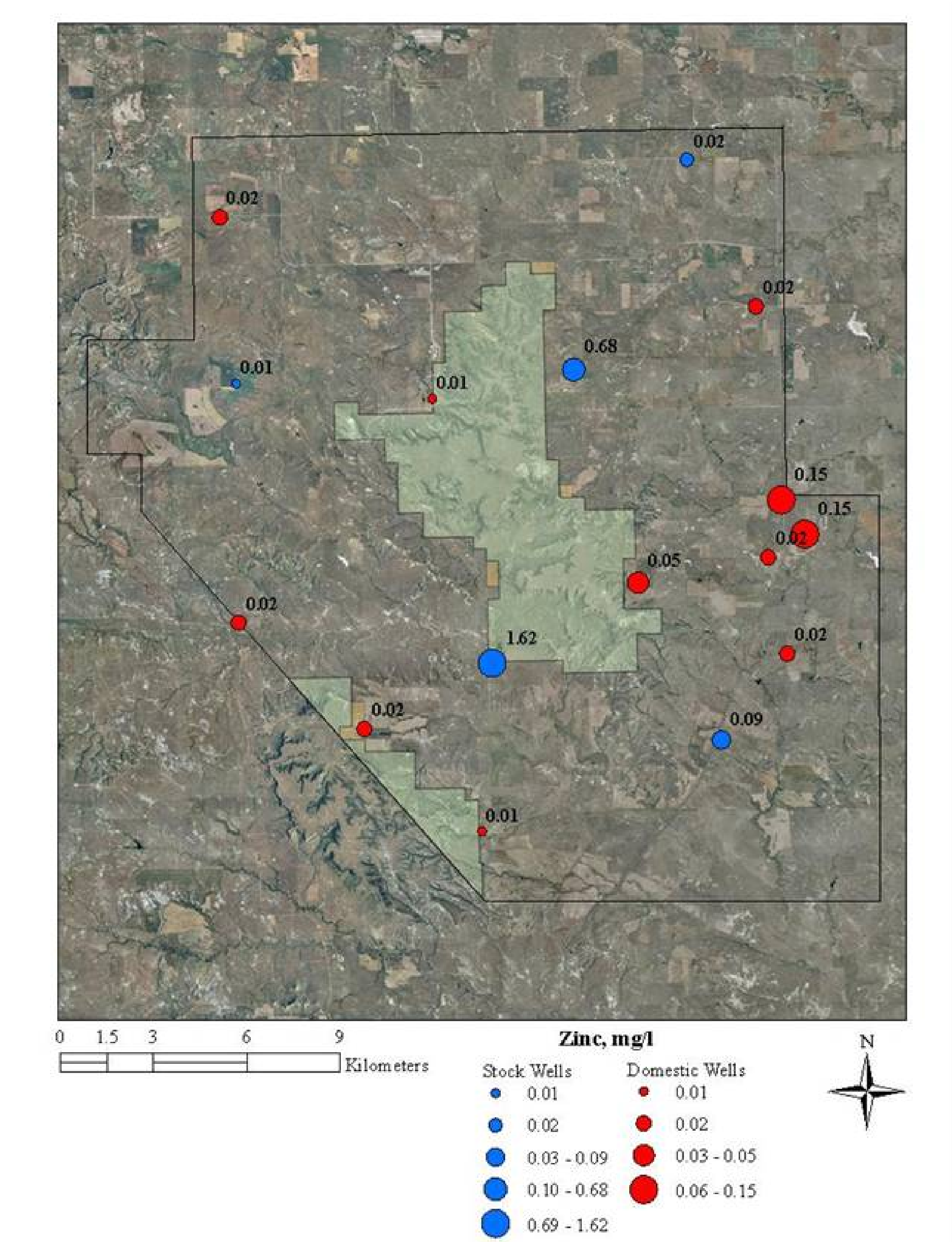

Figure 7.10: Zinc distribution and occurrence in the groundwater system. There is no MCL for zinc.

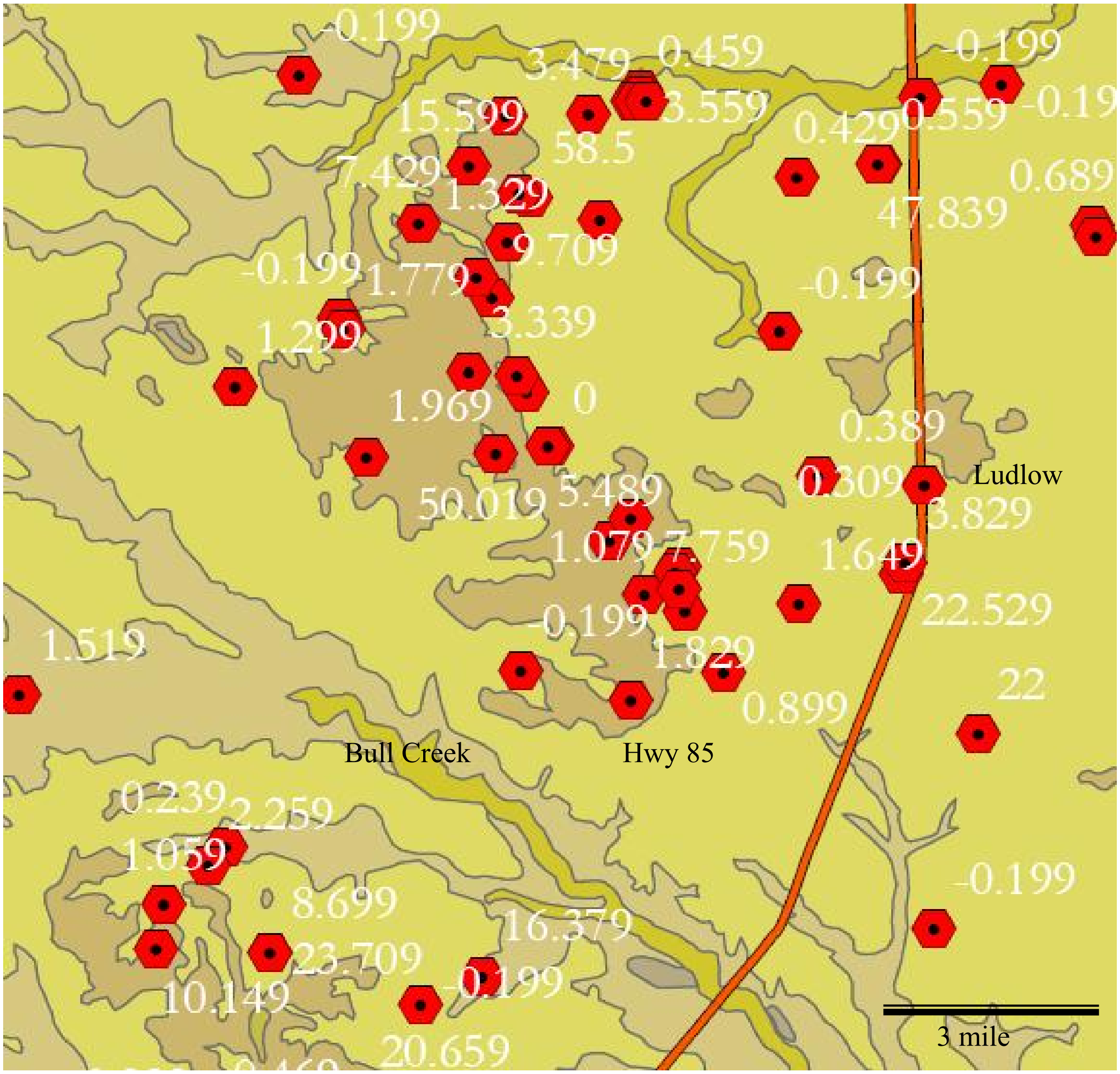

Figure 7.11: NURE study results of uranium in ppb. High values are shown in the same areas as the highest gross alpha and uranium values detected in this study and occur between Ludlow and the Forest Service boundary to the west and to the north of Ludlow.

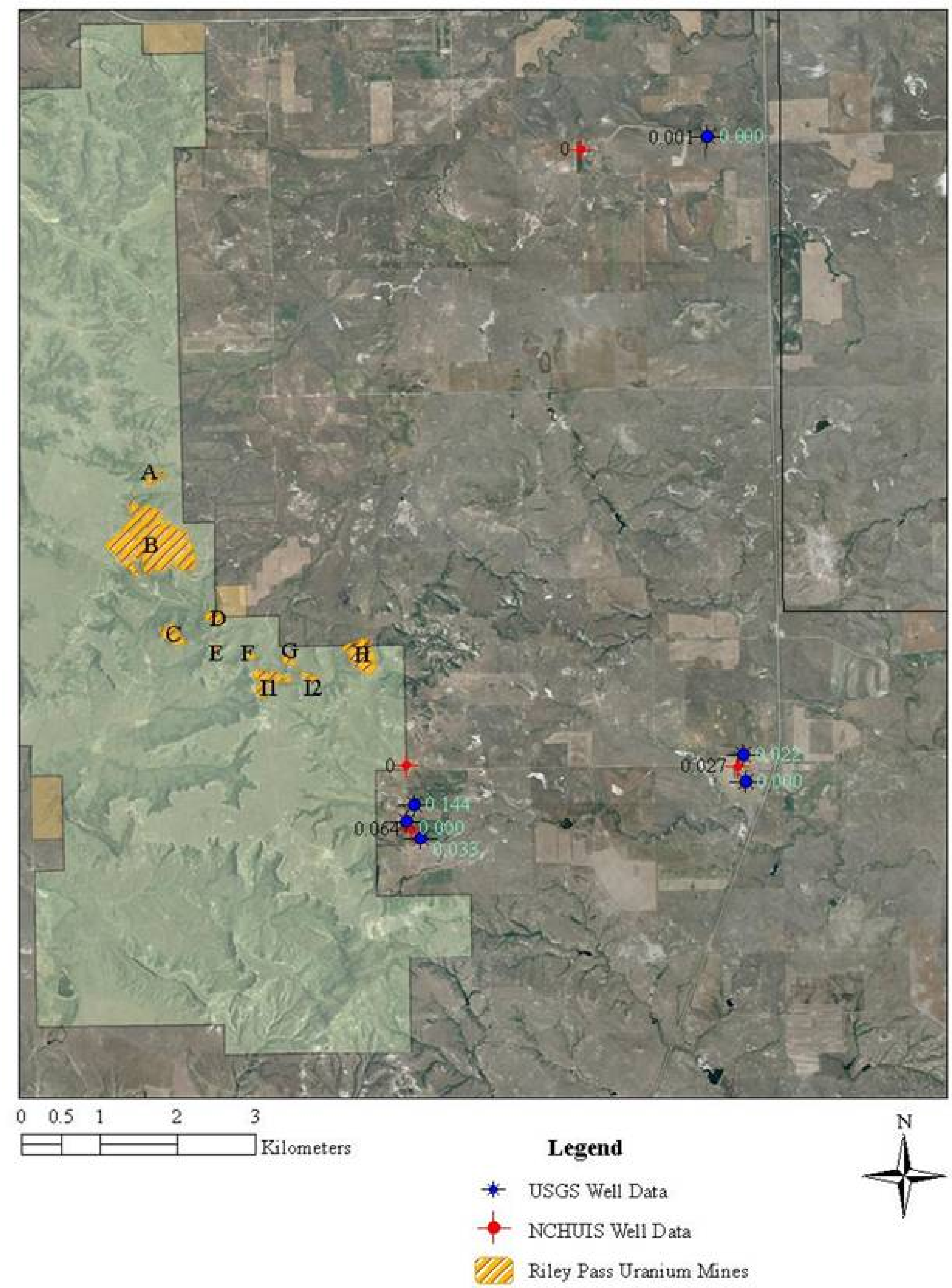

Figure 7.12: Comparison of uranium (mg/L) concentrations between USGS and this study. The wells labeled USGS are from the NWIS data set and those labeled NCHUIS are results obtained from the present study. Labeled values are uranium concentration in mg/L, the blue is the USGS data and the black is this study.

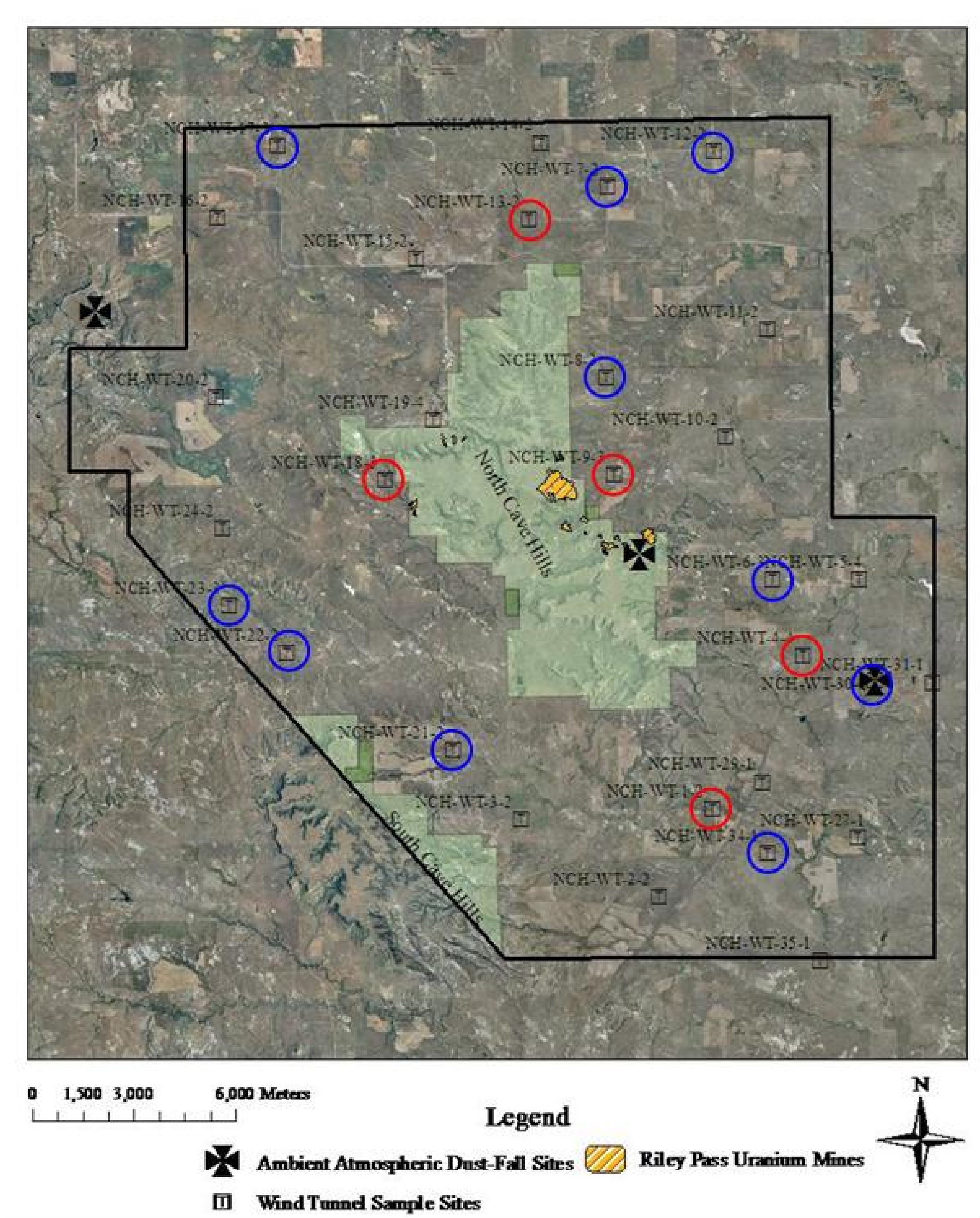

Figure 8.1: Sampling sites for phase I and II of the surface dusts and ambient atmospheric dust-fall sites. Ambient sites are numbered 1 to 3 from an upwind to downwind direction. Red circles are the coarsest soils and blue circles are the finest soils as defined in the text.

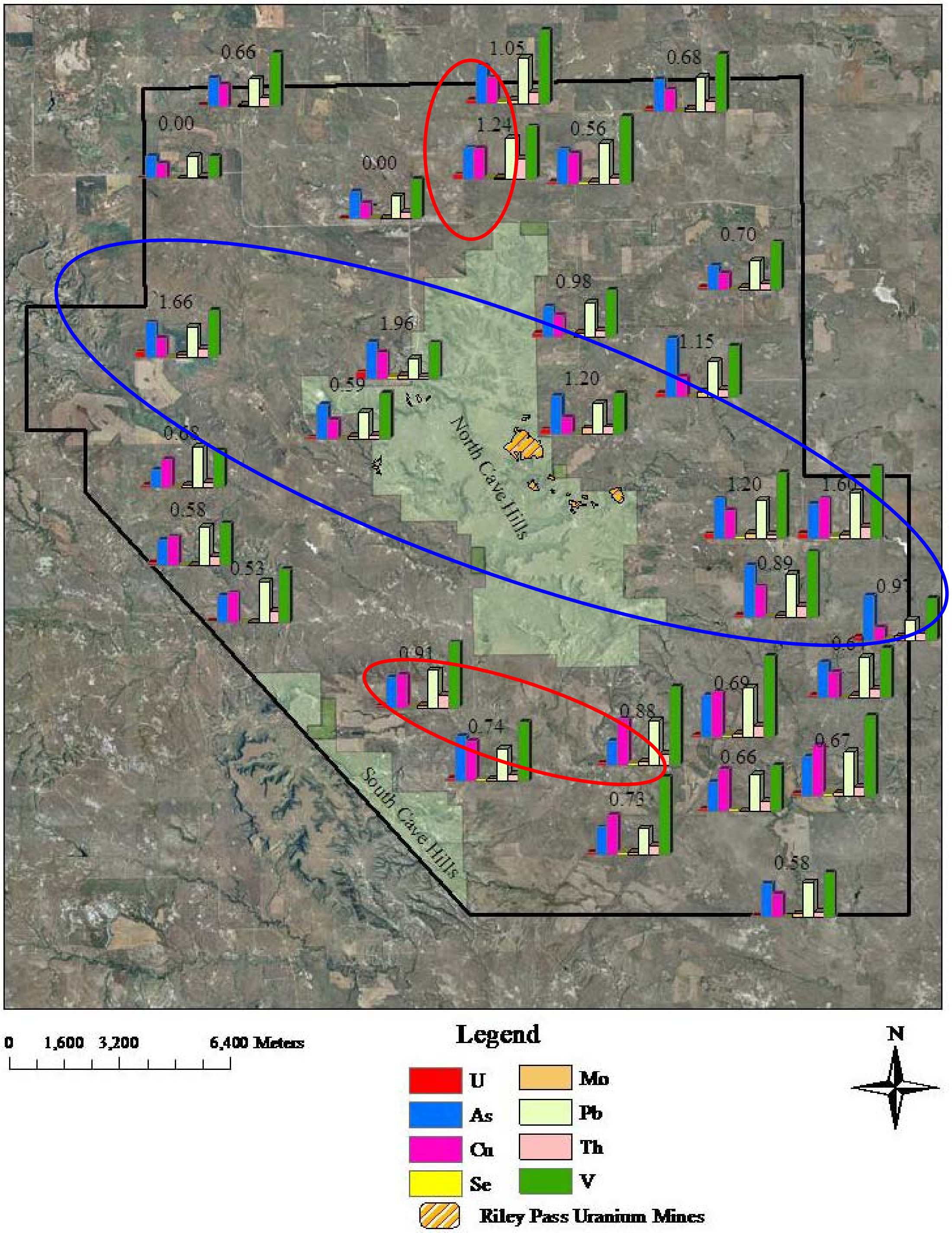

Figure 8.2: Site-composite analytical results for surface dust samples. Color bars represent metal species, height represents concentration. Value above chart specifies uranium concentration in mg/kg. Blue circle encloses the major uranium concentration plume and the red circles define the other areas of above-background uranium concentrations.

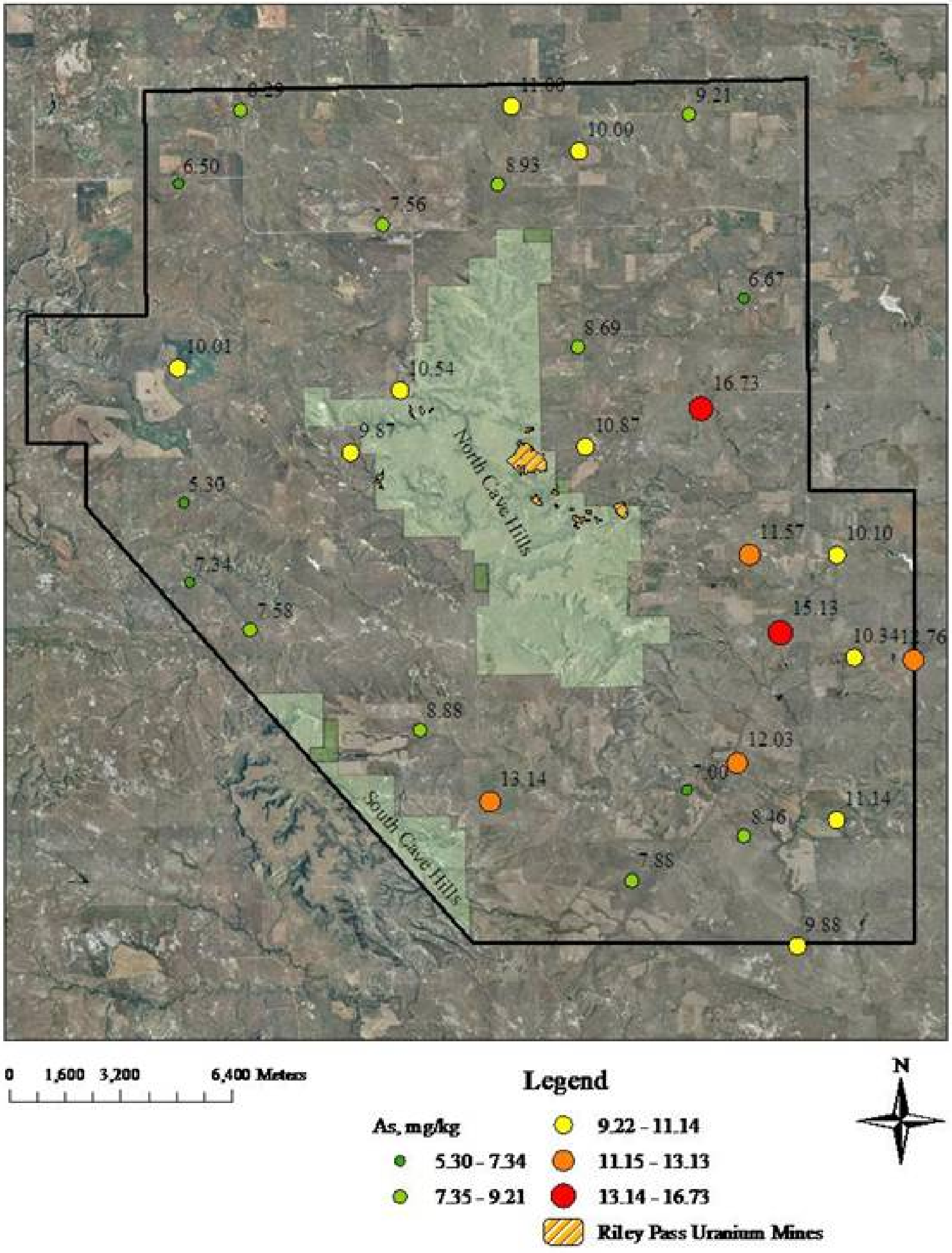

Figure 8.3: Arsenic distribution from soil dust analysis.

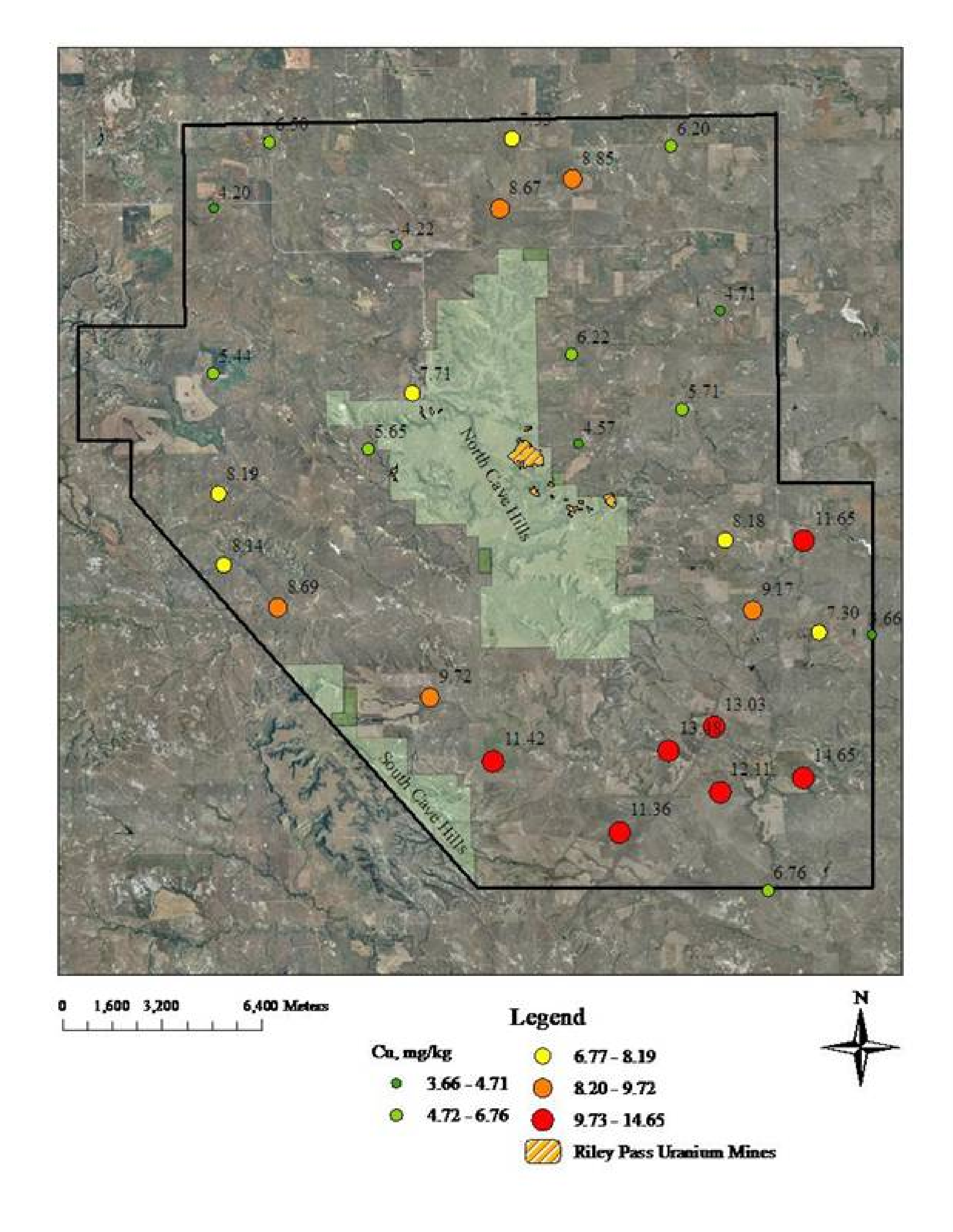

Figure 8.4: Copper distribution from soil dust analysis.

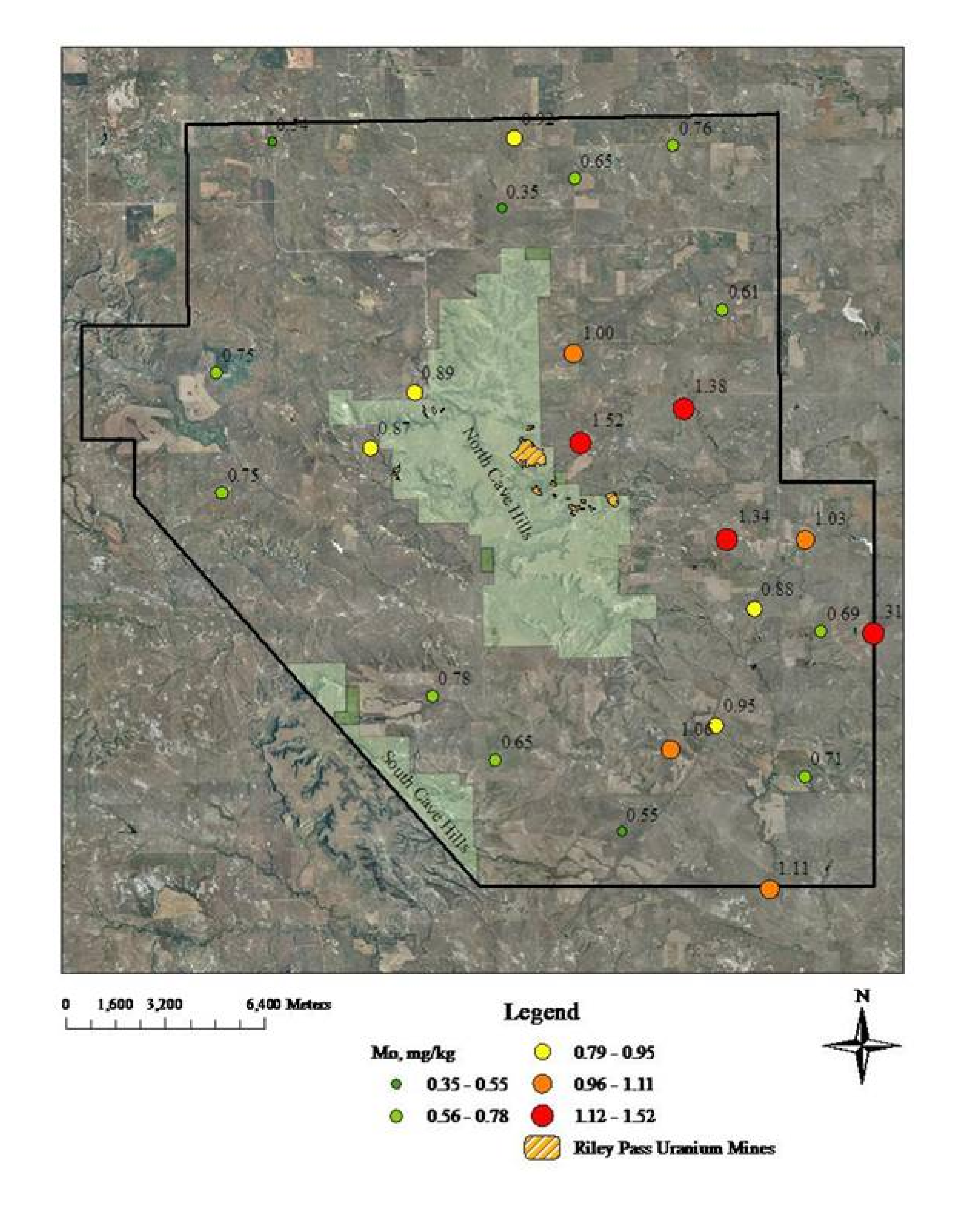

Figure 8.5: Molybdenum distribution from soil dust analysis.

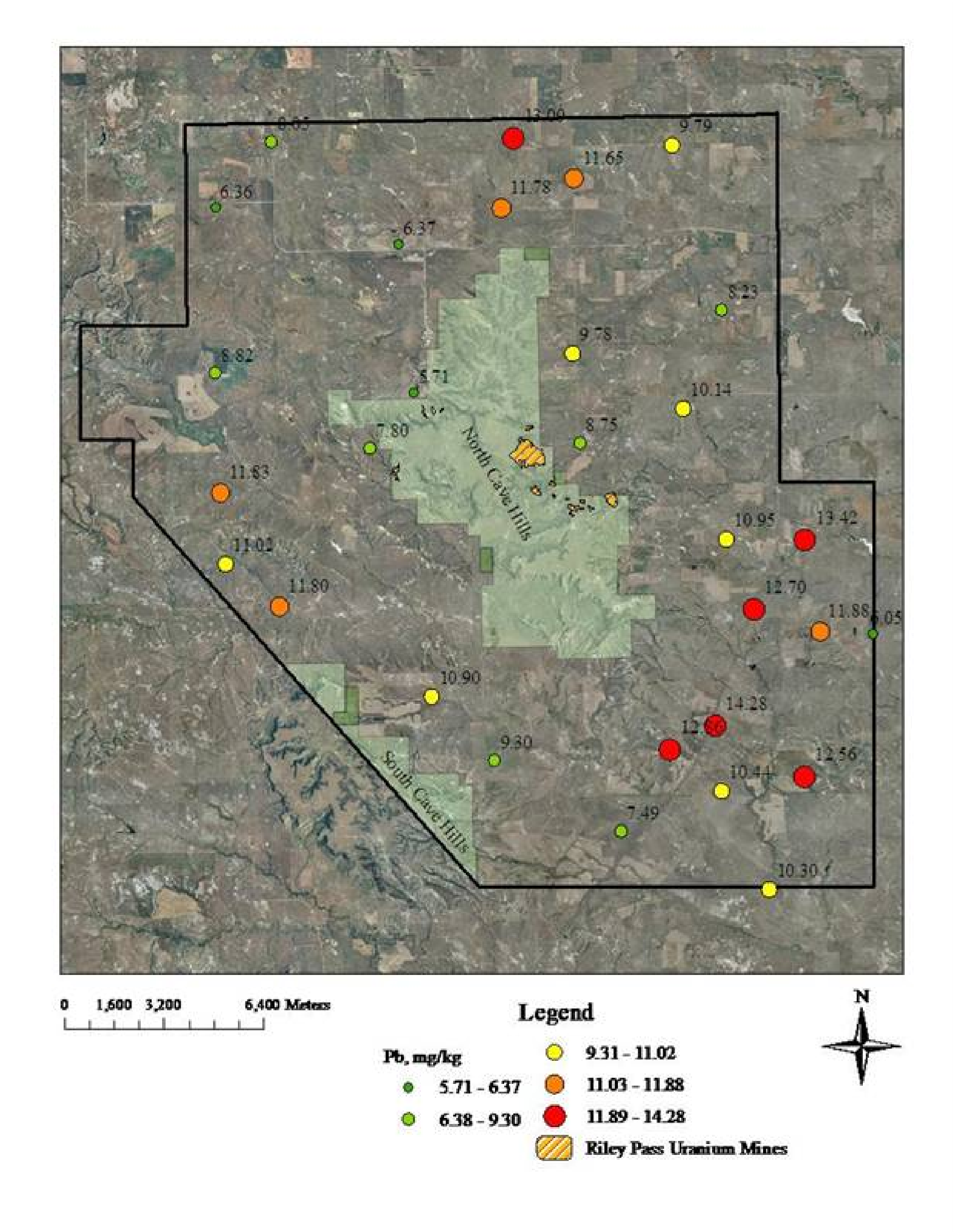

Figure 8.6: Lead distribution from soil dust analysis.

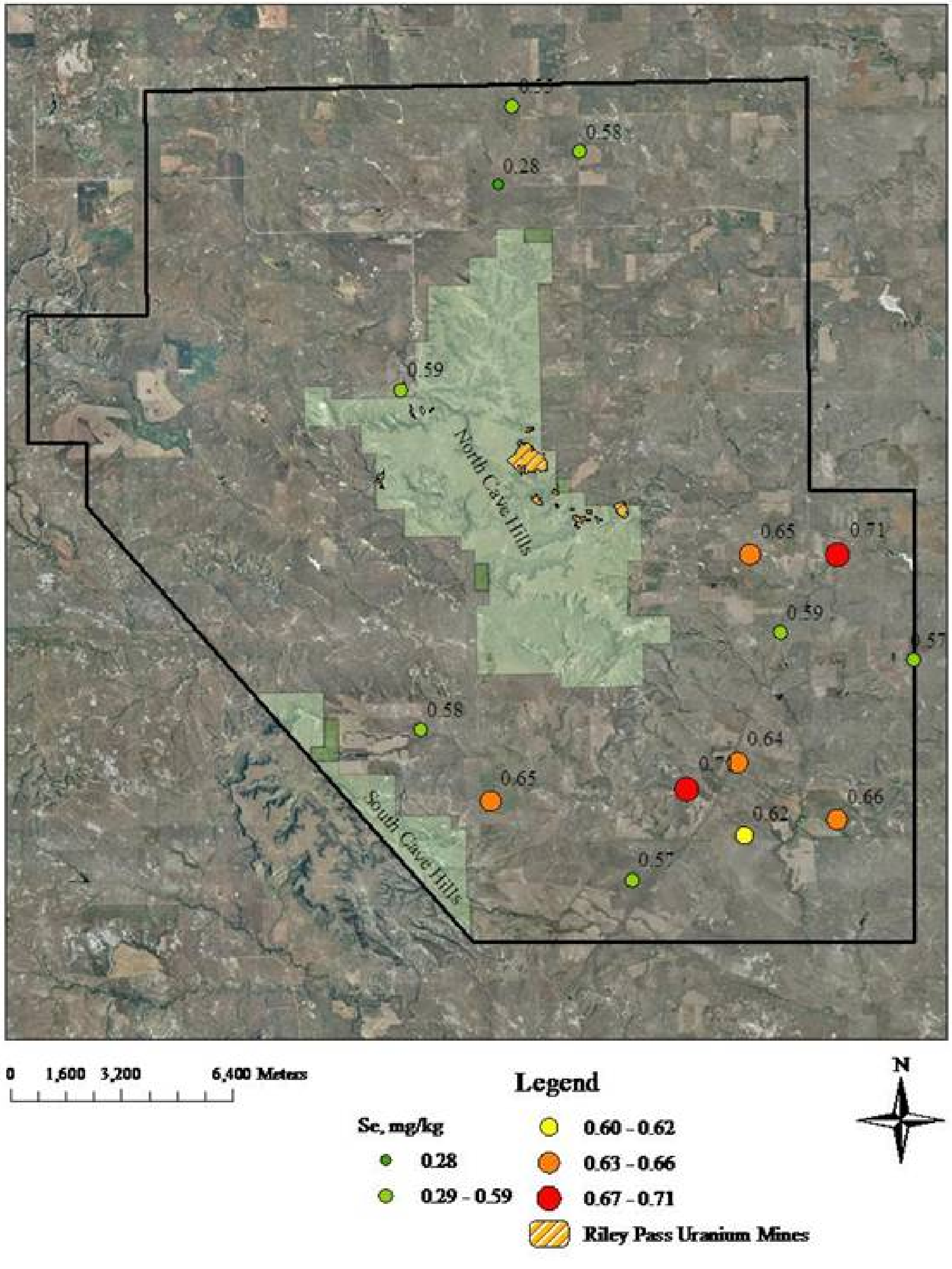

Figure 8.7: Selenium distribution from soil dust analysis.

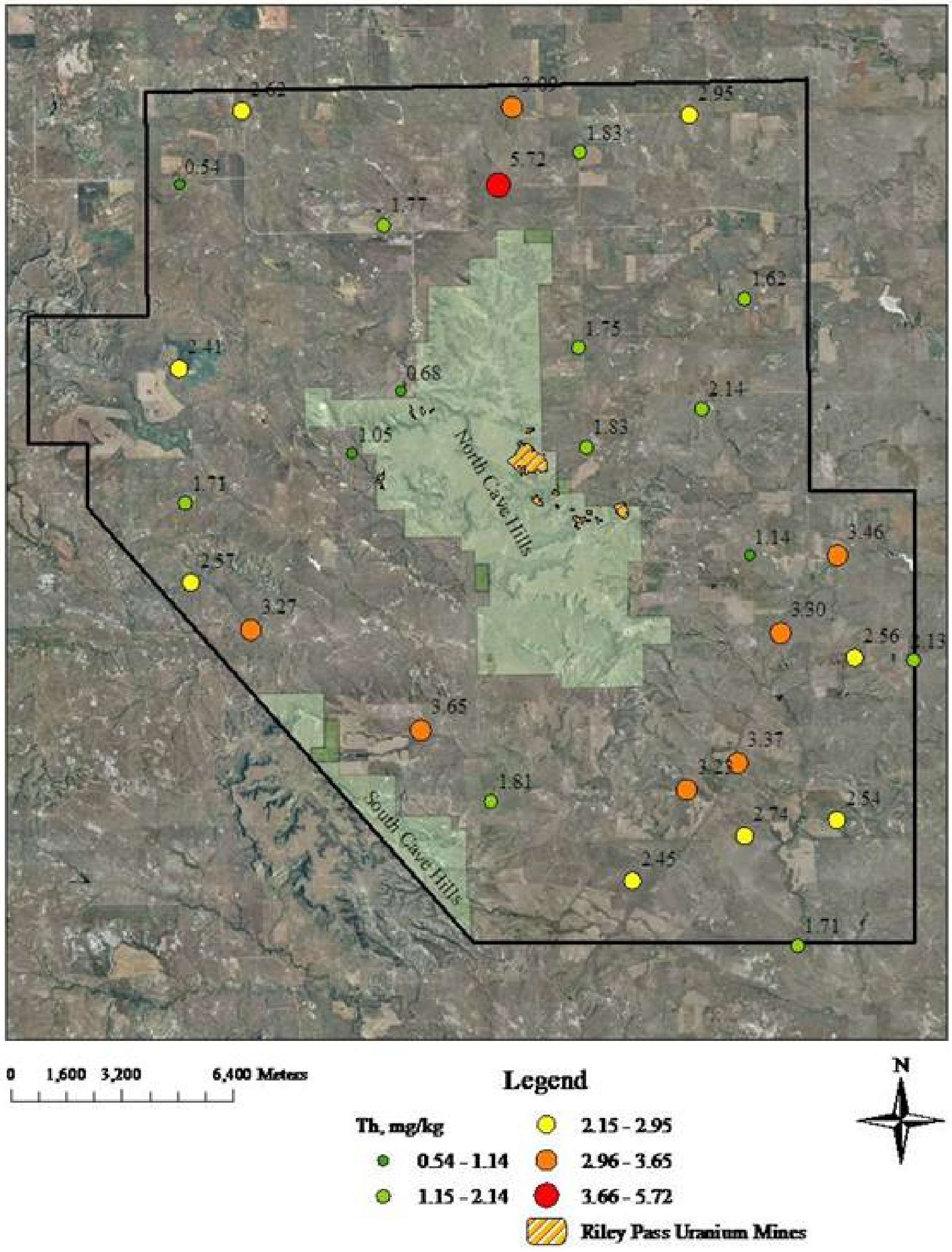

Figure 8.8: Thorium distribution from soil dust analysis.

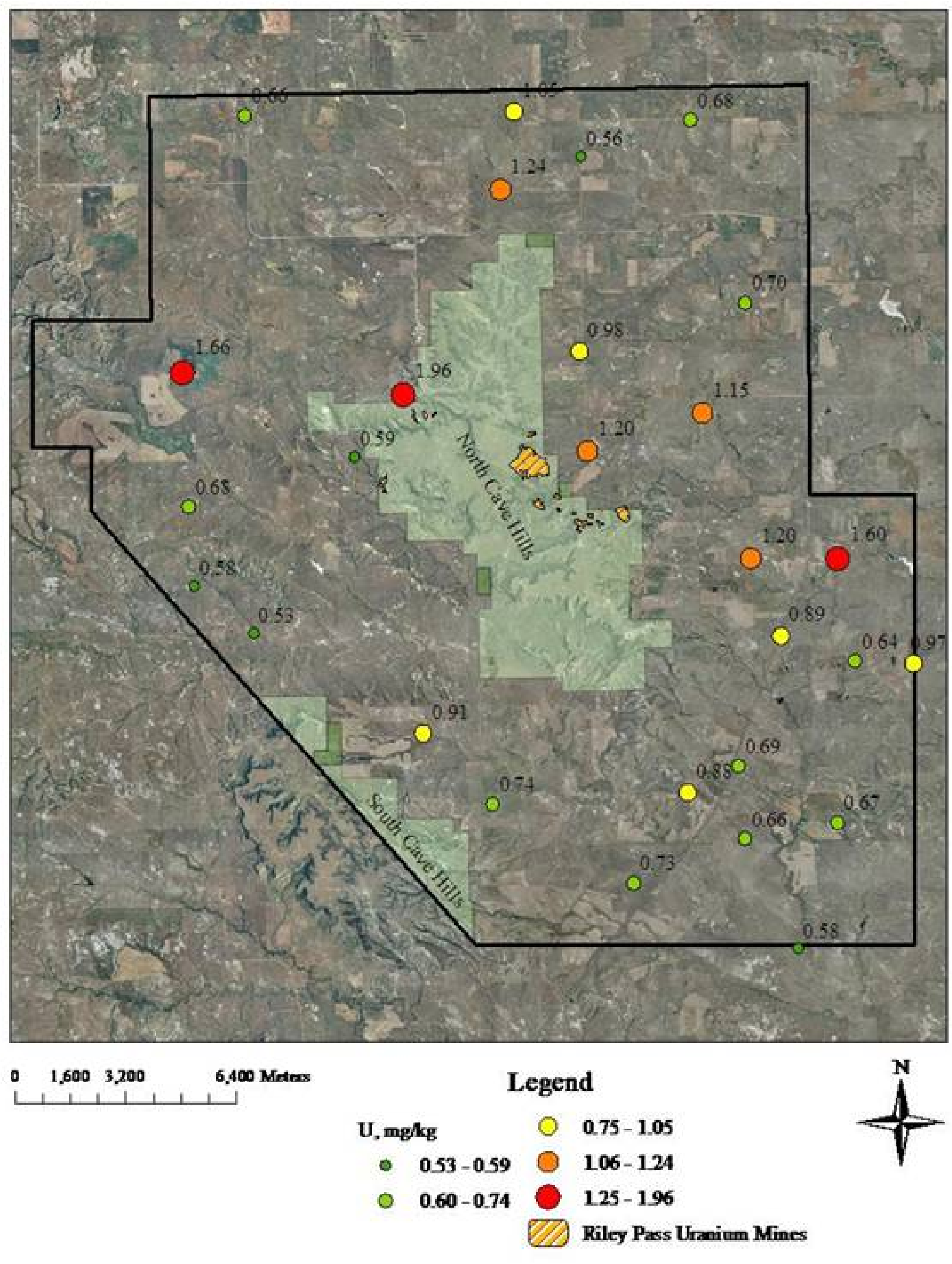

Figure 8.9: Uranium distribution from soil dust analysis.

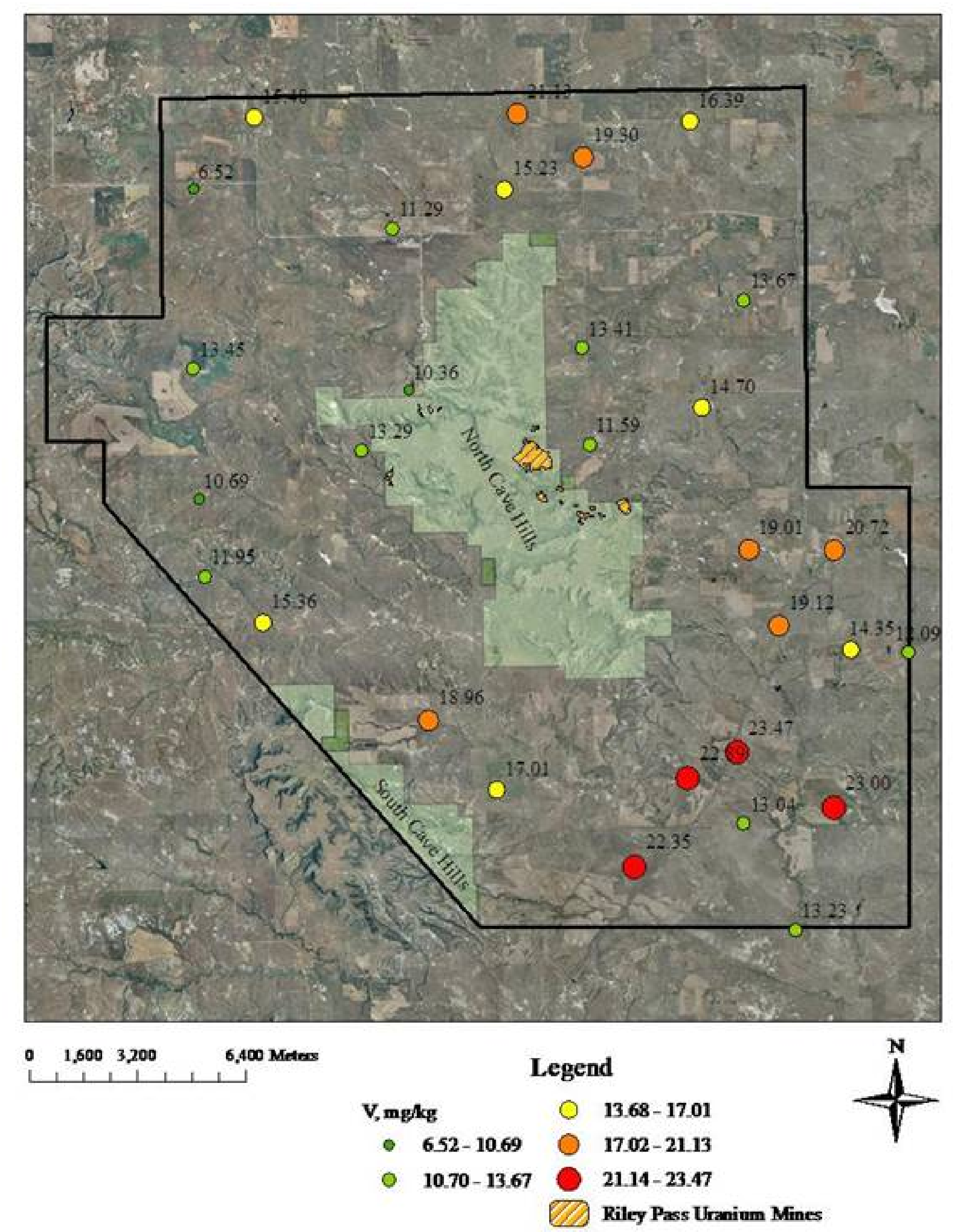

Figure 8.10: Vanadium distribution from soil dust analysis.