SCHOOL AND INSTITUTIONAL TRUST LANDS ADMINISTRATION
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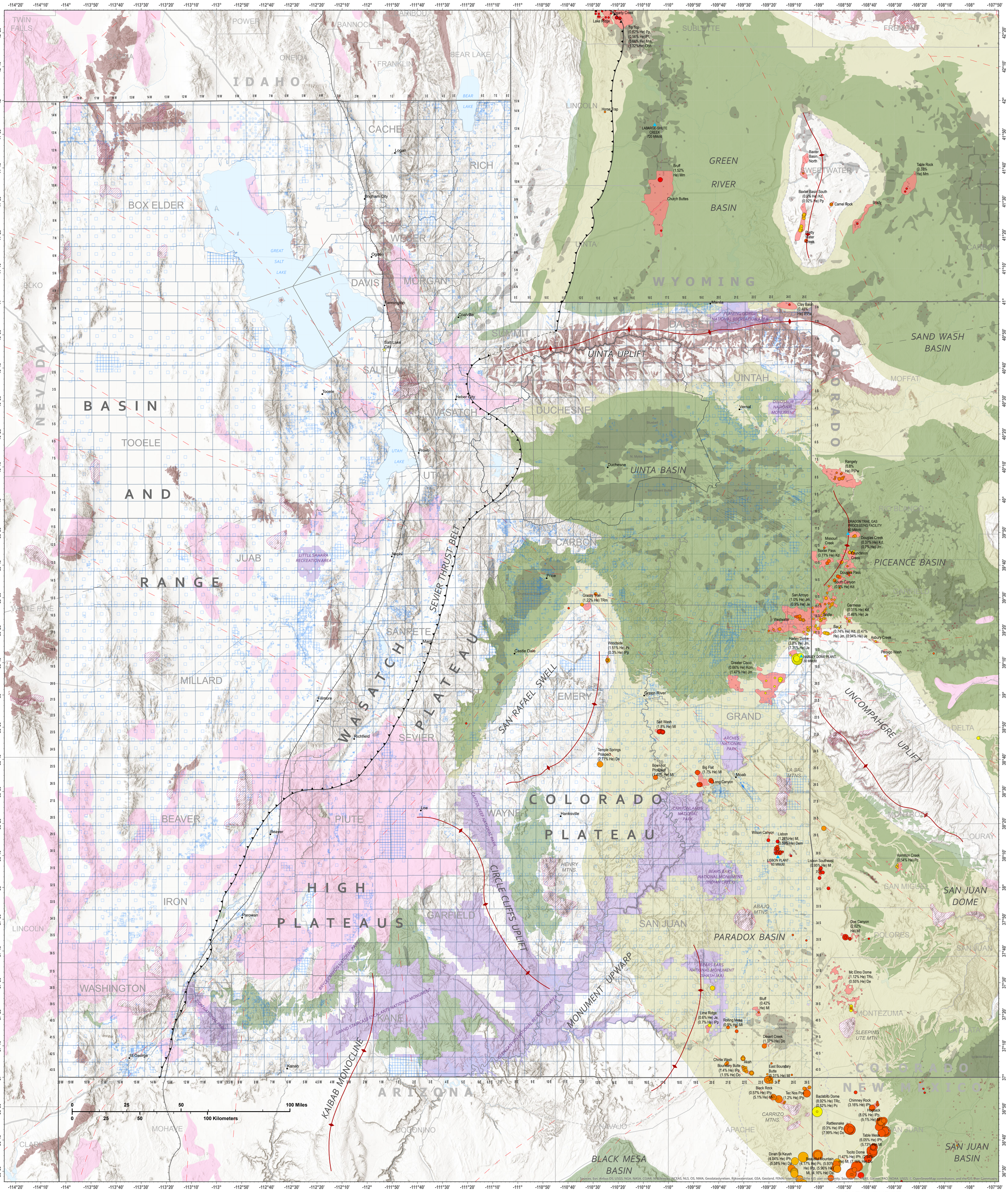
UTAH GEOLOGICAL SURVEY
Utah Department of Natural Resources

Plate 1
Utah Geological Survey Miscellaneous Publication 174
Proven and Hypothetical Helium Resources in Utah



HELIUM-RICH NATURAL GAS FIELDS OF UTAH AND VICINITY

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Scale: 1:850,000

APPLICATION OF DATA

Prospective helium fields and helium spot samples are defined using data current through 2018. The most prolific aggregator of helium well data for this map has been the U.S. Bureau of Mines (USBM), succeeded by the Bureau of Land Management (BLM), which since 1917 has solicited gas samples from production and wildcat wells drilled in helium-prospective play areas as part of the strategic Federal Helium Program. In 2015, helium analyses obtained by the USBM were digitized and included in the publicly available U.S. Geological Survey (USGS) energy geochemistry database. In 2018, the USGS created a separate and condensed database specifically for United States helium analyses. Subeconomic helium samples are those found below 0.30 mole%. Areas dominated by subeconomic helium shows do not necessarily infer a non-existent helium system, but rather a neglect to test deeper helium-bearing formations in search for stratigraphically higher combustible hydrocarbons.

Helium (mol%)
- ≤ 0.7%
- ≤ 1.2%
- ≤ 2.5%
- ≤ 4.0%
- ≤ 7.5%
- ≤ 10.0%

Sample depth (feet)
- 8–1,000
- 1,000–10,000
- 10,000–18,400
- Subeconomic helium show

HELIUM RESERVOIR ROCKS

UPPER-LOWER CRETACEOUS	
Kd	Dakota Sandstone
Kcm	Cedar Mountain Formation
JURASSIC	
Jm	Morrison Formation
Je	Entrada Sandstone
TRIASSIC	
TRc	Chinle Formation
TRm	Moenkopi Formation
PERMIAN	
Pp	Phosphoria Formation (WY)
Pk	Kaibab Formation
Pc	Cutler Group
PIPw	Weber Sandstone
PENNSYLVANIAN	
IPt	Tensleep Formation (WY)
IPp	Paradox Formation
IPh	Hermosa Group
MISSISSIPPIAN	
Ml	Leadville Limestone
Mm	Madison Limestone (WY)
DEVONIAN	
Do	Ouray Limestone
De	Elbert Formation
Dem	McCracken Sandstone Member
Da	Aneth Formation
ORDOVICIAN	
Obh	Bighorn Dolomite (WY)

SUBSURFACE FEATURES

- Documented helium reservoir
- Proven oil and/or gas field
- Coal and hydrocarbon productive region
- Major sedimentary basin
- Precambrian basement-involved thrust fault
- Precambrian basement-involved high-angle fault

SURFICIAL GEOLOGIC FEATURES

- Leading edge of Basin and Range extension
- Leading edge of Sevier thrust belt
- Major anticline or monocline
- Volcanic dike
- Gilsonite vein
- Uplift boundary
- Tertiary/Quaternary volcanic rocks
- Tertiary/Quaternary plutonic rocks
- Undifferentiated Precambrian outcrop

OTHER SYMBOLS AND DESIGNATIONS

- State capitol
- City
- Natural gas processing plant with helium recovery unit
- County boundary
- State boundary
- Uintah Special Meridian (USM) boundary
- PLSS Township/Range
- Utah Trust Lands mineral ownership
- National Park, Monument, or Recreation Area

DATA SOURCES

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