WYOMING STATE GEOLOGICAL SURVEY
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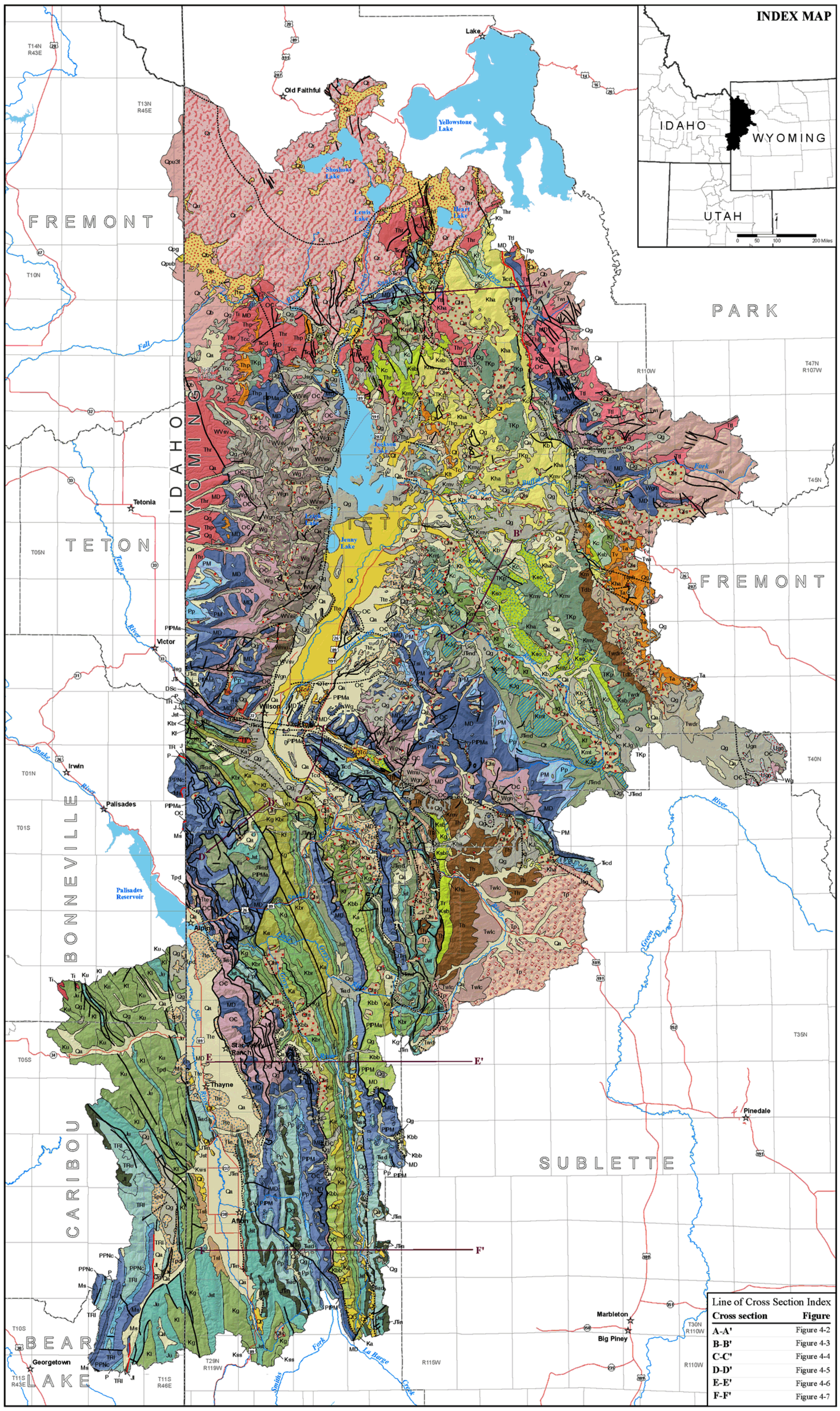
Geology - Interpreting the past - providing for the future

Snake/Salt River Basin Plan II - Available Groundwater Determination Technical Memorandum

Plate I
Bedrock Geology - Snake/Salt River Basin

Bedrock Geology - Snake/Salt River Basin Wyoming and Idaho

compiled by
Seth J. Wittke, James E. Stafford, and Tomas Gracias



Line of Cross Section Index

Cross section	Figure
A-A'	Figure 4-2
B-B'	Figure 4-3
C-C'	Figure 4-4
D-D'	Figure 4-5
E-E'	Figure 4-6
F-F'	Figure 4-7

Magnetic Declination = 11° 49' E
at center of map
(March 7, 2013)

0 5 10 15 20 25 30 Miles

Scale 1:400,000

Explanation

- U.S. highway
- State highway
- A—A' Line of cross section
- Normal fault—dotted where concealed; ball & bar on downthrown block
- Thrust fault—dotted where concealed; sawteeth on upper (tectonically higher) plate
- City or town
- Township boundary
- County boundary
- State boundary
- Lake or reservoir
- River or creek

Bedrock Geology

Wyoming Geologic Units

CENOZOIC

Quaternary

- Qa Alluvium & colluvium
- Ql Gravel, pediment, and fan deposits — may include some glacial deposits and Tertiary gravels
- Qg Glacial deposits
- Qls Landslide deposits
- Qu Undivided surficial deposits
- Qb Basalt flows and intrusive igneous rocks
- Qr Rhyolite flows, tuff, and intrusive igneous rocks

Quaternary and Tertiary

- QTc Conglomerate (Pleistocene or Pliocene)

Tertiary

- Thr Huckleberry Ridge Tuff of Yellowstone Group
- Ti Intrusive and extrusive igneous rocks
- Thl Heart Lake Conglomerate
- Tsl Salt Lake Formation
- Tsi Shooting Iron Formation
- Tcc Conant Creek Tuff
- Tte Teewinot Formation
- Tr Red conglomerate on top of Hoback and Wyoming Ranges
- Tcd Camp Davis Formation
- Tc Colter Formation
- Ti Intrusive igneous rocks

Absaroka Volcanic Supergroup

Thorofare Creek Group

- Twi Wiggins Formation
- Ttl Two Ocean and Langford Formations
- Ta Aycross Formation

Thorofare Creek and Sunlight Groups

- Ttp Trout Peak Trachyandesite
- Tts Two Ocean, Langford, Trout Peak, and Wapati Formations
- Thp Hominy Peak Formation
- Tv Volcanic conglomerate
- Tcs Conglomerate of Sublette Range
- Twd Diamictite and sandstone in the Wasatch Formation
- Twdr Wind River Formation
- Twlc La Barge and Chappo Members of Wasatch Formation
- Tpd Pass Peak Formation and equivalents
- Tdb Devils Basin Formation
- Th Hoback Formation

CENOZOIC AND MESOZOIC

Tertiary and Cretaceous

- TKp Hoback Formation

MESOZOIC

Cretaceous

- Kha Harebell Formation
- Km Meeteetse Formation
- Kmv Mesaverde Formation
- Kso Sohare Formation
- Ksb Sohare Formation and Bacon Ridge Sandstone
- Kb Bacon Ridge Sandstone
- Kc Cody Shale
- Kbb Blind Bull Formation
- Kf Frontier Formation
- Kfr Frontier Formation, and Mowry and Thermopolis Shales
- Kmt Mowry and Thermopolis Shales
- Kss Sage Junction, Quealy, Cokeville, Thomas Fork, and Smiths Formations
- Kws Wayan and Smiths Formations
- Ka Aspen Shale
- Kbr Bear River Formation
- Kg Gannett Group

Cretaceous and Jurassic

- KJ Cloverly and Morrison Formations
- KJg Cloverly, Morrison, Sundance, and Gypsum Spring Formations

Jurassic

- Jst Stump Formation, Preuss Sandstone or Redbeds, and Twin Creek Limestone
- Jsg Sundance and Gypsum Spring Formations

Jurassic and Triassic

- JTr Sundance and Gypsum Spring Formations, and Nugget Sandstone
- JTrn Nugget Sandstone
- JTrnd Nugget Sandstone, and Chugwater and Dinwoody Formations

Triassic

- Tad Ankareh Formation, Thaynes Limestone, Woodside Shale, and Dinwoody Formation
- Tcd Chugwater and Dinwoody Formations

PALEOZOIC

Permian

- Pp Phosphoria Formation

Permian, Pennsylvanian, and Mississippian

- PPMa Phosphoria, Wells, and Amsden Formations
- PPM Wells and Amsden Formations
- PM Tensleep Sandstone and Amsden Formation

Mississippian and Devonian

- MD Madison Limestone and Darby Formation

Ordovician

- OC Bighorn Dolomite, Gallatin Limestone, Flathead Sandstone, and Gros Ventre Formation

PRECAMBRIAN

Archean

- Wgn Granite gneiss
- WVsv Metasedimentary and metavolcanic rocks
- Wg Granitic rocks
- Wmu Metasedimentary and metavolcanic rocks
- Ugn Oldest gneiss complex

Idaho Geologic Units

CENOZOIC

Quaternary

- Qa Quaternary alluvium; may contain some glacial deposits and colluvium in upland
- Qg Quaternary colluvium, fanglomerate, and talus plus some glacial debris in upland valleys
- Qpg Pleistocene outwash, fanglomerate, flood and terrace gravels
- Qpu3f Upper Pleistocene silicic volcanic units
- Qpub Upper Pleistocene Snake Plain lava flows

Tertiary

- Tpd Pliocene stream and lake deposits
- Ti Tertiary intrusive rock

MESOZOIC

Cretaceous

- Ku Upper Cretaceous thick detrital and fresh-water limestone beds of southeastern Idaho
- Kl Lower Cretaceous shale, siltstone, red-bed sandstone and fresh-water limestone

Jurassic

- J Jurassic shallow-marine to non-marine sediments in eastern Idaho
- Ju Upper Jurassic glauconitic and variegated sandstone, siltstone, and oolitic limestone
- Jl Lower Jurassic shaley, sandy limestone overlying red crossbedded sandstone

Triassic

- TR Triassic shallow-marine to non-marine sediments of eastern Idaho
- TRu Upper Triassic oxidized shale, siltstone, limestone, and conglomeratic sandstone
- TRl Lower Triassic limestone and chert above shaley sandstone, siltstone, and limestone

PALEOZOIC

Permian

- P Permian phosphatic sandstone, mudstone, and chert of eastern Idaho

Permian, Pennsylvanian, and Mississippian

- PPNc Lower Permian to Middle Pennsylvanian thrusted, marine detritus of central Idaho

Mississippian

- Ms Mississippian shallow-water coralline limestone interval of southern Idaho

Devonian and Silurian

- DSc Devonian and Silurian thrusted, deep-water argillite and beds east-central Idaho

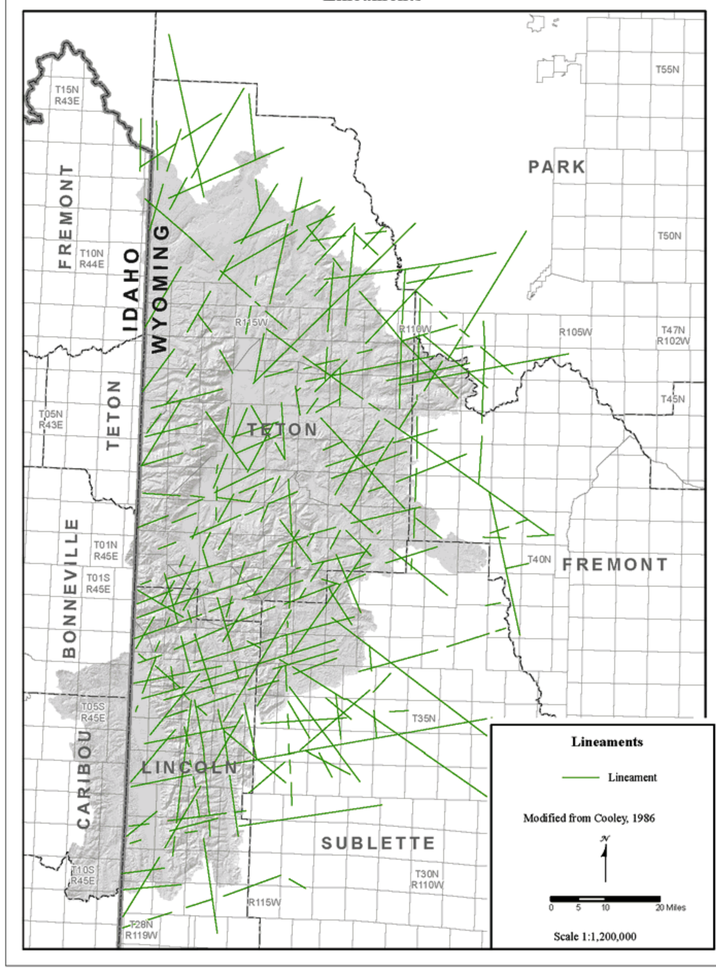
Ordovician and Cambrian

- OC Odrovician, commonly Lower, and Cambrian marine sediments of Eastern and Southern Idaho

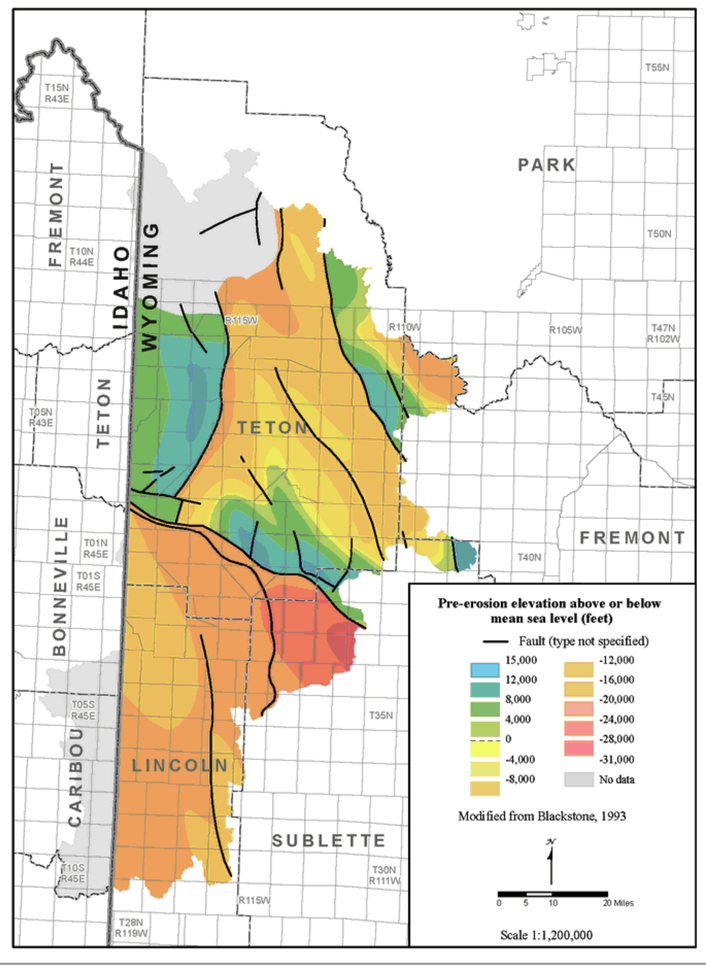
Map Projection: Universal Transverse Mercator (UTM), zone 12
False Easting: 500000, False Northing: 0
Central Meridian: -111.0 degrees West
Linear Unit: Meter
Horizontal Datum: North American Datum of 1983 (NAD 83)

Map layout by Tomas Gracias
Map editing by Suzanne C. Luhr

Lineaments



Precambrian Basement Structure



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