ANALYTICAL DATABASE OF U.S. BUREAU OF MINES MINERAL LAND ASSESSMENTS OF WILDERNESS STUDY AREAS IN UTAH

by

Taylor Boden and Andrew Rupke

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INTRODUCTION

The accompanying database is a compilation of geochemical analytical data from Mineral Land Assessments (MLAs) prepared by the U.S. Bureau of Mines. These mineral assessments cover Wilderness Study Areas in Utah and were prepared from 1982 through 1992. The analytical data is primarily from rock samples, but the database also includes some stream sediment and pan concentrate samples. The database includes over 4200 analytical records. Users of this database should be aware that the quality of the analyses may be variable. The data are presented "as is"; potential low-quality data were not filtered out. The database is in spreadsheet (Microsoft Excel and csv) and geodatabase formats. The geodatabase version has fewer records (~3840) than the spreadsheet version because some of the analytical data had no associated location information. Figure 1 shows Wilderness Study Areas in Utah and locations of samples in the geodatabase.

A description of the database fields is given below, but all the fields are not necessarily applicable to every sample record. For many of the analytical fields, we included a text field (field ends in "Text" in the spreadsheet version or "_t" in the geodatabase version) and a numeric field. The intent was to preserve unique entries included within some of the analytical fields such as symbols or miscellaneous text. The numeric field allows for sorting by value. If an analytical field does not have a corresponding text field then no unique symbols or characters were present in the field and a text field was unnecessary. Sample locations were determined by scanning and georeferencing the plates from the MLA reports in ArcGIS, and the sample locations on the map were then digitized. Location quality is variable.

Scanned versions of the original MLA reports can be found in the Utah Geological Survey's Mineral Resources web map (https://geology.utah.gov/apps/blm_mineral/).

The database in its various forms can be downloaded from: https://ugspub.nr.utah.gov/publications/open_file_reports/ofr-747/ofr-747.zip.

Symbols used in database:

>, greater than (text fields)

<, less than (text fields)

nan, not analyzed (text fields)

nd, not detected (text fields)

-, less than (numeric fields)

Notes:

1. Additional symbols are used in the database that are unique to specific reports; they are typically defined in the comment fields.
2. In numeric fields, greater than symbols (>) are not preserved or indicated.

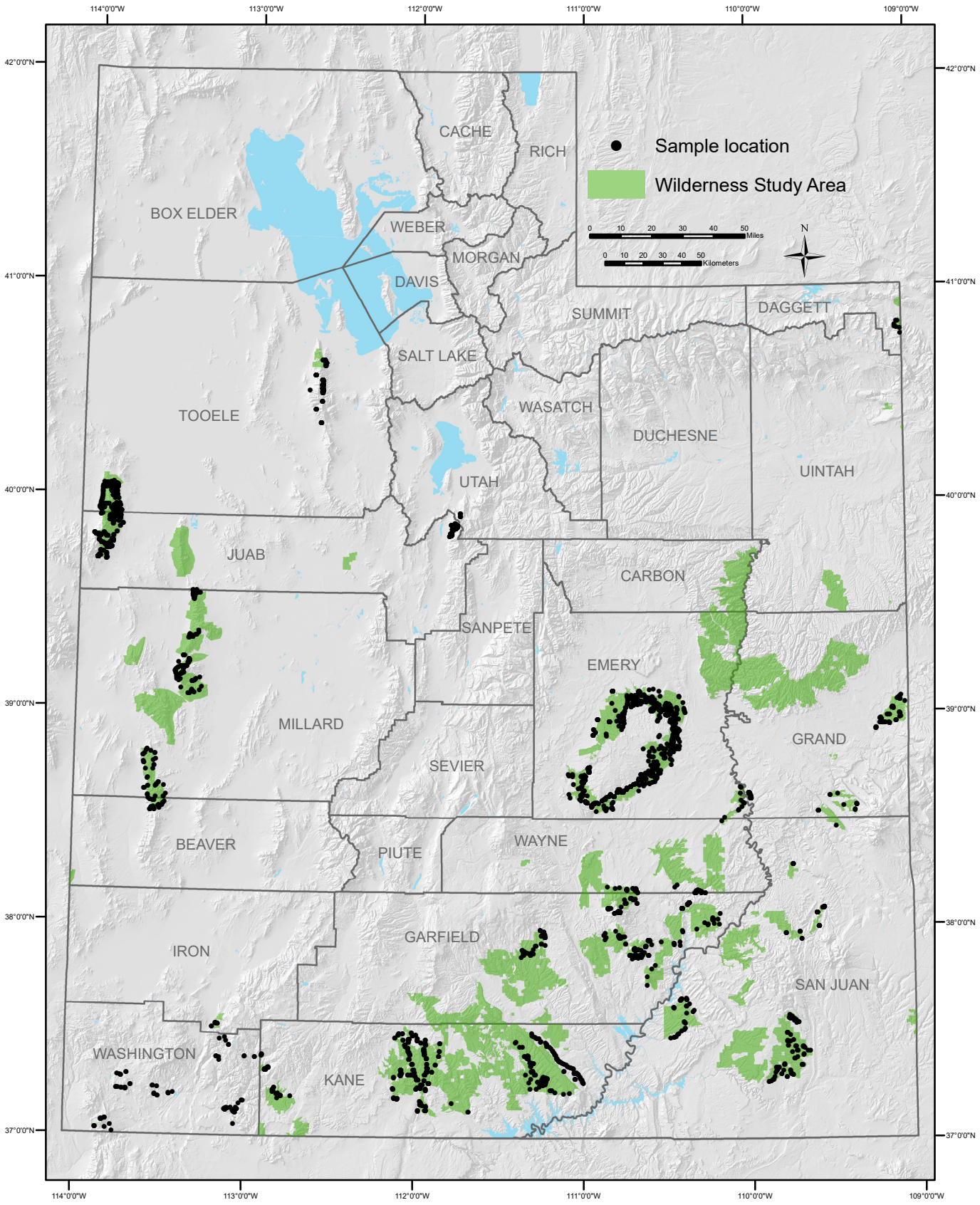

Figure 1. *Wilderness Study Areas in Utah and locations of samples in the U.S. Bureau of Mines Mineral Land Assessments analytical database.*

EXPLANATION OF DATABASE FIELDS

Note: the spreadsheet and csv headings are shown first with the geodatabase heading in parentheses.

Database Sample No. (db_sam_no) - unique sample number assigned for this compilation.

Report Sample No. (samp_no) - sample number assigned from original report.

Site Name (site_name) - name of area where sample was collected.

UTM Easting NAD83 (utme_83) - easting coordinate in meters; coordinate system is UTM Zone 12 NAD83.

UTM Northing NAD83 (utmn_83) - northing coordinate in meters; coordinate system is UTM Zone 12 NAD83.

Ag Text (Ag_ppm_t) - concentration of silver in parts per million (ppm). This column is in text format and includes special characters.

Ag (Ag_ppm) - concentration of silver in ppm. This column is a sortable numeric field.

Al Text (Al_ppm_t) - concentration of aluminum in ppm. This column is in text format and includes special characters.

Al (Al_ppm) - concentration of aluminum in ppm. This column is a sortable numeric field.

As Text (As_ppm_t) - concentration of arsenic in ppm. This column is in text format and includes special characters.

As (As_ppm) - concentration of arsenic in ppm. This column is a sortable numeric field.

Au Text (Au_ppm_t) - concentration of gold in ppm. This column is in text format and includes special characters.

Au (Au_ppm) - concentration of gold in ppm. This column is a sortable numeric field.

B Text (B_ppm_t) - concentration of boron in ppm. This column is in text format and includes special characters.

B (B_ppm) - concentration of boron in ppm. This column is a sortable numeric field.

Ba Text (Ba_ppm_t) - concentration of barium in ppm. This column is in text format and includes special characters.

Ba (Ba_ppm) - concentration of barium in ppm. This column is a sortable numeric field.

Be Text (Be_ppm_t) - concentration of beryllium in ppm. This column is in text format and includes special characters.

Be (Be_ppm) - concentration of beryllium in ppm. This column is a sortable numeric field.

Bi Text (Bi_ppm_t) - concentration of bismuth in ppm. This column is in text format and includes special characters.

Bi (Bi_ppm) - concentration of bismuth in ppm. This column is a sortable numeric field.

Br Text (Br_ppm_t) - concentration of bromine in ppm. This column is in text format and includes special characters.

Br (Br_ppm) - concentration of bromine in ppm. This column is a sortable numeric field.

Ca Text (Ca_ppm_t) - concentration of calcium in ppm. This column is in text format and includes special characters.

Ca (Ca_ppm) - concentration of calcium in ppm. This column is a sortable numeric field.

Cd Text (Cd_ppm_t) - concentration of cadmium in ppm. This column is in text format and includes special characters.

Cd (Cd_ppm) - concentration of cadmium in ppm. This column is a sortable numeric field.

Ce Text (Ce_ppm_t) - concentration of cerium in ppm. This column is in text format and includes special characters.

Ce (Ce_ppm) - concentration of cerium in ppm. This column is a sortable numeric field.

Co Text (Co_ppm_t) - concentration of cobalt in ppm. This column is in text format and includes special characters.

Co (Co_ppm) - concentration of cobalt in ppm. This column is a sortable numeric field.

Cr Text (Cr_ppm_t) - concentration of chromium in ppm. This column is in text format and includes special characters.

Cr (Cr_ppm) - concentration of chromium in ppm. This column is a sortable numeric field.

Cs Text (Cs_ppm_t) - concentration of cesium in ppm. This column is in text format and includes special characters.

Cs (Cs_ppm) - concentration of cesium in ppm. This column is a sortable numeric field.

Cu Text (Cu_ppm_t) - concentration of copper in ppm. This column is in text format and includes special characters.

Cu (Cu_ppm) - concentration of copper in ppm. This column is a sortable numeric field.

Dy Text (Dy_ppm_t) - concentration of dysprosium in ppm. This column is in text format and includes special characters.

Dy (Dy_ppm) - concentration of dysprosium in ppm. This column is a sortable numeric field.

Eu Text (Eu_ppm_t) - concentration of europium in ppm. This column is in text format and includes special characters.

Eu (Eu_ppm) - concentration of europium in ppm. This column is a sortable numeric field.

F Text (F_ppm_t) - concentration of fluorine in ppm. This column is in text format and includes special characters.

F (F_ppm) - concentration of fluorine in ppm. This column is a sortable numeric field.

Fe Text (Fe_ppm_t) - concentration of iron in ppm. This column is in text format and includes special characters.

Fe (Fe_ppm) - concentration of iron in ppm. This column is a sortable numeric field.

Ga Text (Ga_ppm_t) - concentration of gallium in ppm. This column is in text format and includes special characters.

Ga (Ga_ppm) - concentration of gallium in ppm. This column is a sortable numeric field.

Ge Text (Ge_ppm_t) - concentration of germanium in ppm. This column is in text format and includes special characters.

Ge (Ge_ppm) - concentration of germanium in ppm. This column is a sortable numeric field.

Hf Text (Hf_ppm_t) - concentration of hafnium in ppm. This column is in text format and includes special characters.

Hf (Hf_ppm) - concentration of hafnium in ppm. This column is a sortable numeric field.

Hg Text (Hg_ppm_t) - concentration of mercury in ppm. This column is in text format and includes special characters.

Hg (Hg_ppm) - concentration of mercury in ppm. This column is a sortable numeric field.

Ir Text (Ir_ppm_t) - concentration of iridium in ppm. This column is in text format and includes special characters.

Ir (Ir_ppm) - concentration of iridium in ppm. This column is a sortable numeric field.

K Text (K_ppm_t) - concentration of potassium in ppm. This column is in text format and includes special characters.

K (K_ppm) - concentration of potassium in ppm. This column is a sortable numeric field.

La Text (La_ppm_t) - concentration of lanthanum in ppm. This column is in text format and includes special characters.

La (La_ppm) - concentration of lanthanum in ppm. This column is a sortable numeric field.

Li Text (Li_ppm_t) - concentration of lithium in ppm. This column is in text format and includes special characters.

Li (Li_ppm) - concentration of lithium in ppm. This column is a sortable numeric field.

Lu Text (Lu_ppm_t) - concentration of lutetium in ppm. This column is in text format and includes special characters.

Lu (Lu_ppm) - concentration of lutetium in ppm. This column is a sortable numeric field.

Mg Text (Mg_ppm_t) - concentration of magnesium in ppm. This column is in text format and includes special characters.

Mg (Mg_ppm) - concentration of magnesium in ppm. This column is a sortable numeric field.

Mn Text (Mn_ppm_t) - concentration of manganese in ppm. This column is in text format and includes special characters.

Mn (Mn_ppm) - concentration of manganese in ppm. This column is a sortable numeric field.

Mo Text (Mo_ppm_t) - concentration of molybdenum in ppm. This column is in text format and includes special characters.

Mo (Mo_ppm) - concentration of molybdenum in ppm. This column is a sortable numeric field.

Na Text (Na_ppm_t) - concentration of sodium in ppm. This column is in text format and includes special characters.

Na (Na_ppm) - concentration of sodium in ppm. This column is a sortable numeric field.

Nb Text (Nb_ppm_t) - concentration of niobium in ppm. This column is in text format and includes special characters.

Nb (Nb_ppm) - concentration of niobium in ppm. This column is a sortable numeric field.

Ni Text (Ni_ppm_t) - concentration of nickel in ppm. This column is in text format and includes special characters.

Ni (Ni_ppm) - concentration of nickel in ppm. This column is a sortable numeric field.

P Text (P_ppm_t) - concentration of phosphorus in ppm. This column is in text format and includes special characters.

P (P_ppm) - concentration of phosphorus in ppm. This column is a sortable numeric field.

Pb Text (Pb_ppm_t) - concentration of lead in ppm. This column is in text format and includes special characters.

Pb (Pb_ppm) - concentration of lead in ppm. This column is a sortable numeric field.

Pd Text (Pd_ppm_t) - concentration of palladium in ppm. This column is in text format and includes special characters.

Pd (Pd_ppm) - concentration of palladium in ppm. This column is a sortable numeric field.

Pt Text (Pt_ppm_t) - concentration of platinum in ppm. This column is in text format and includes special characters.

Pt (Pt_ppm) - concentration of platinum in ppm. This column is a sortable numeric field.

Rb Text (Rb_ppm_t) - concentration of rubidium in ppm. This column is in text format and includes special characters.

Rb (Rb_ppm) - concentration of rubidium in ppm. This column is a sortable numeric field.

Re Text (Re_ppm_t) - concentration of rhenium in ppm. This column is in text format and includes special characters.

Re (Re_ppm) - concentration of rhenium in ppm. This column is a sortable numeric field.

Sb Text (Sb_ppm_t) - concentration of antimony in ppm. This column is in text format and includes special characters.

Sb (Sb_ppm) - concentration of antimony in ppm. This column is a sortable numeric field.

Sc Text (Sc_ppm_t) - concentration of scandium in ppm. This column is in text format and includes special characters.

Sc (Sc_ppm) - concentration of scandium in ppm. This column is a sortable numeric field.

Se Text (Se_ppm_t) - concentration of selenium in ppm. This column is in text format and includes special characters.

Se (Se_ppm) - concentration of selenium in ppm. This column is a sortable numeric field.

Si Text (Si_ppm_t) - concentration of silicon in ppm. This column is in text format and includes special characters.

Si (Si_ppm) - concentration of silicon in ppm. This column is a sortable numeric field.

Sm Text (Sm_ppm_t) - concentration of samarium in ppm. This column is in text format and includes special characters.

Sm (Sm_ppm) - concentration of samarium in ppm. This column is a sortable numeric field.

Sn Text (Sn_ppm_t) - concentration of tin in ppm. This column is in text format and includes special characters.

Sn (Sn_ppm) - concentration of tin in ppm. This column is a sortable numeric field.

Sr Text (Sr_ppm_t) - concentration of strontium in ppm. This column is in text format and includes special characters.

Sr (Sr_ppm) - concentration of strontium in ppm. This column is a sortable numeric field.

Ta Text (Ta_ppm_t) - concentration of tantalum in ppm. This column is in text format and includes special characters.

Ta (Ta_ppm) - concentration of tantalum in ppm. This column is a sortable numeric field.

Tb Text (Tb_ppm_t) - concentration of terbium in ppm. This column is in text format and includes special characters.

Tb (Tb_ppm) - concentration of terbium in ppm. This column is a sortable numeric field.

Te Text (Te_ppm_t) - concentration of tellurium in ppm. This column is in text format and includes special characters.

Te (Te_ppm) - concentration of tellurium in ppm. This column is a sortable numeric field.

Th Text (Th_ppm_t) - concentration of thorium in ppm. This column is in text format and includes special characters.

Th (Th_ppm) - concentration of thorium in ppm. This column is a sortable numeric field.

Ti Text (Ti_ppm_t) - concentration of titanium in ppm. This column is in text format and includes special characters.

Ti (Ti_ppm) - concentration of titanium in ppm. This column is a sortable numeric field.

Tl Text (Tl_ppm_t) - concentration of thallium in ppm. This column is in text format and includes special characters.

Tl (Tl_ppm) - concentration of thallium in ppm. This column is a sortable numeric field.

U Text (U_ppm_t) - concentration of uranium in ppm. This column is in text format and includes special characters.

U (U_ppm) - concentration of uranium in ppm. This column is a sortable numeric field.

V Text (V_ppm_t) - concentration of vanadium in ppm. This column is in text format and includes special characters.

V (V_ppm) - concentration of vanadium in ppm. This column is a sortable numeric field.

W Text (W_ppm_t) - concentration of tungsten in ppm. This column is in text format and includes special characters.

W (W_ppm) - concentration of tungsten in ppm. This column is a sortable numeric field.

Y Text (Y_ppm_t) - concentration of yttrium in ppm. This column is in text format and includes special characters.

Y (Y_ppm) - concentration of yttrium in ppm. This column is a sortable numeric field.

Yb Text (Yb_ppm_t) - concentration of ytterbium in ppm. This column is in text format and includes special characters.

Yb (Yb_ppm) - concentration of ytterbium in ppm. This column is a sortable numeric field.

Zn Text (Zn_ppm_t) - concentration of zinc in ppm. This column is in text format and includes special characters.

Zn (Zn_ppm) - concentration of zinc in ppm. This column is a sortable numeric field.

Zr Text (Zr_ppm_t) - concentration of zirconium in ppm. This column is in text format and includes special characters.

Zr (Zr_ppm) - concentration of zirconium in ppm. This column is a sortable numeric field.

Al_2O_3 Text (Al2O3_t) - Al_2O_3 content in weight percent. This column is in text format and includes special characters.

Al_2O_3 (Al2O3) - Al_2O_3 content in weight percent. This column is a sortable numeric field.

CaO Text (CaO_t) - CaO content in weight percent. This column is in text format and includes special characters.

CaO (CaO) - CaO content in weight percent. This column is a sortable numeric field.

CO_2 (CO_2) - CO_2 content in weight percent. This column is a sortable numeric field.

$CaCO_3$ Text ($CaCO_3$_t) - $CaCO_3$ content in weight percent. This column is in text format and includes special characters.

$CaCO_3$ ($CaCO_3$) - $CaCO_3$ content in weight percent. This column is a sortable numeric field.

$CaSO_4$ ($CaSO_4$) - $CaSO_4$ content in weight percent. This column is a sortable numeric field.

$CaSO_4.2H_2O$ ($CaSO_4$_2H2O) - $CaSO_4 \cdot 2H_2O$ content in weight percent. This column is a sortable numeric field.

Fe_2O_3 Text (Fe_2O_3_t) - Fe_2O_3 content in weight percent. This column is in text format and includes special characters.

Fe_2O_3 (Fe_2O_3) - Fe_2O_3 content in weight percent. This column is a sortable numeric field.

K_2O Text (K_2O_t) - K_2O content in weight percent. This column is in text format and includes special characters.

K_2O (K_2O) - K_2O content in weight percent. This column is a sortable numeric field.

MgO Text (MgO_t) - MgO content in weight percent. This column is in text format and includes special characters.

MgO (MgO) - MgO content in weight percent. This column is a sortable numeric field.

$MgCO_3$ ($MgCO_3$) - $MgCO_3$ content in weight percent. This column is a sortable numeric field.

MnO Text (MnO_t) - MnO content in weight percent. This column is in text format and includes special characters.

MnO (MnO) - MnO content in weight percent. This column is a sortable numeric field.

Na_2O Text (Na_2O_t) - Na_2O content in weight percent. This column is in text format and includes special characters.

Na_2O (Na_2O) - Na_2O content in weight percent. This column is a sortable numeric field.

P_2O_5 Text (P_2O_5_t) - P_2O_5 content in weight percent. This column is in text format and includes special characters.

P_2O_5 (P_2O_5) - P_2O_5 content in weight percent. This column is a sortable numeric field.

S Text (S_t) - sulfur content in weight percent. This column is in text format and includes special characters.

S (S) - sulfur content in weight percent. This column is a sortable numeric field.

SiO_2 Text (SiO_2_t) - SiO_2 content in weight percent. This column is in text format and includes special characters.

SiO_2 (SiO_2) - SiO_2 content in weight percent. This column is a sortable numeric field.

TiO_2 Text (TiO_2_t) - TiO_2 content in weight percent. This column is in text format and includes special characters.

TiO_2 (TiO_2) - TiO_2 content in weight percent. This column is a sortable numeric field.

U_3O_8 Text (U_3O_8_ppm_t) - concentration of U_3O_8 in ppm. This column is in text format and includes special characters.

U_3O_8 (U_3O_8_ppm) - concentration of U_3O_8 in ppm. This column is a sortable numeric field.

V_2O_5 Text (V_2O_5_ppm_t) - concentration of V_2O_5 in ppm. This column is in text format and includes special characters.

V_2O_5 (V_2O_5_ppm) - concentration of V_2O_5 in ppm. This column is a sortable numeric field.

LOI (loi) - loss on ignition; weight percent of material released when sample is heated. LOI is often an indication of CO_2 or organic carbon content.

Moisture (moisture) - moisture content in weight percent. This column is a sortable numeric field.

Ammonia Acetate Impurities (aa_imp) - weight percent of insoluble residue from dissolving gypsum in ammonia acetate.

Free Water Text (free_wat_t) - free water content in weight percent. Although not defined in the MLAs, this is typically a measure of water that is not chemically bound in a sample. This column is in text format and includes special characters.

Free Water (free_wat) - free water content in weight percent. Although not defined in the MLAs, this is typically a measure of water that is not chemically bound in a sample. This column is a sortable numeric field.

Au Oz Text (Au_oz_st_t) - gold content in troy ounces per short ton. This column is in text format and includes special characters.

Au Oz (Au_oz_st) - gold content in troy ounces per short ton. This column is a sortable numeric field.

Ag Oz Text (Ag_oz_st_t) - silver content in troy ounces per short ton. This column is in text format and includes special characters.

Ag Oz (Ag_oz_st) - silver content in troy ounces per short ton. This column is a sortable numeric field.

Thickness (thick_ft) - thickness of unit represented by the sample, in feet. This column is a sortable numeric field.

Hydrocarbon (hc_gal_st) - hydrocarbon content in gallons per short ton. This column is a sortable numeric field.

Comment (comment) - general comments for sample record.

Comment 2 (comm_2) - additional general comments for sample record.

Formation or Member (geol_fm) - geologic unit sampled according to original data source.

Sample Type (samp_typ) - type of sample material taken such as rock, stream sediment, or panned concentrate.

Sample Type 2 (samp_typ2) - type of sample taken such as outcrop chip sample, select sample, or grab sample, species unit in inches (in) or feet (ft) for “Sample Length” field.

Sample Length (samp_lgth) - length of sample taken in inches (in) or feet (ft) as specified by “Sample Type 2” field.

Short Reference (ref_short) - abbreviated reference for sample data source.

Long Reference (ref_long) - full reference for sample data source.

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