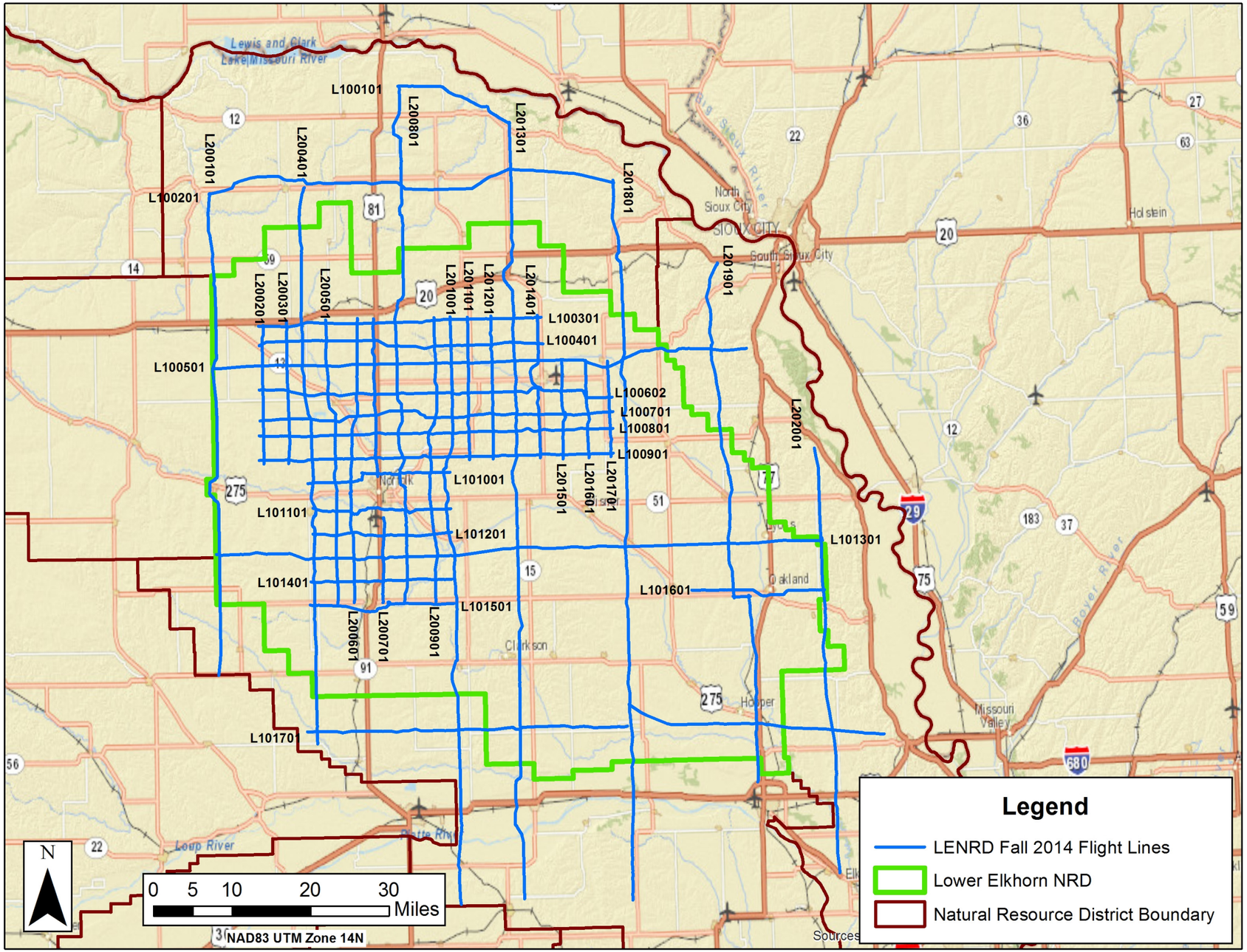
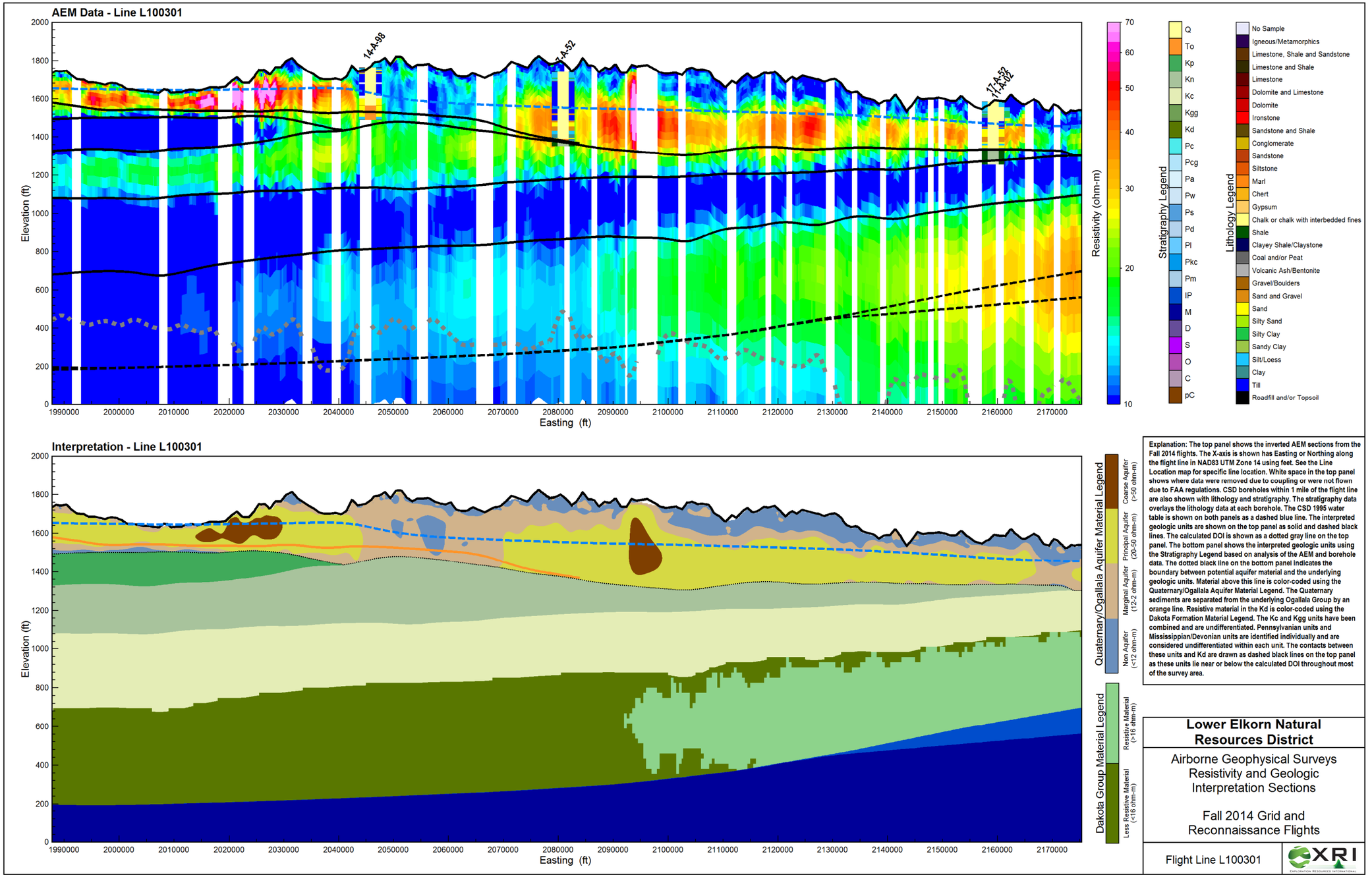
APPENDIX 1 – AEM Resistivity and Interpretative Profiles

NOTE - The profiles presented in Appendix 1 only contain those flight lines contained within the Lower Elkhorn NRD boundary as indicated by the green line on the flight line map on page A1-2.


Lewis and Clark Lake/Missouri River
Big Sioux River
North Sioux City
SIOUX CITY
South Sioux City
Hol stein
Oakland
Clarkson
Hooper
Missouri Valley
Boyer River
Loup River
L100101
L100201
L100301
L100401
L100501
L100602
L100701
L100801
L100901
L101001
L101101
L101201
L101301
L101401
L101501
L101601
L10170
L200101
L200201
L200301
L200401
L200501
L200601
L200701
L200801
L200901
L201001
L201101
L201201
L201301
L201401
L201501
L201601
L201701
L201801
L201901
L202001
N
0 5 10 20 30
Miles
NAD83 UTM Zone 14N
Legend
LENRD Fall 2014 Flight Lines
Lower Elkhorn NRD
Natural Resource District Boundary



Explanation: The top panel shows the inverted AEM sections from the Fall 2014 flights. The X-axis is shown has Easting or Northing along the flight line in NAD83 UTM Zone 14 using feet. See the Line Location map for specific line location. White space in the top panel shows where data were removed due to coupling or were not flown due to FAA regulations. CSD boreholes within 1 mile of the flight line are also shown with lithology and stratigraphy. The stratigraphy data overlays the lithology data at each borehole. The CSD 1995 water table is shown on both panels as a dashed blue line. The interpreted geologic units are shown on the top panel as solid and dashed black lines. The calculated DOI is shown as a dotted gray line on the top panel. The bottom panel shows the interpreted geologic units using the Stratigraphy Legend based on analysis of the AEM and borehole data. The dotted black line on the bottom panel indicates the boundary between potential aquifer material and the underlying geologic units. Material above this line is color-coded using the Quaternary/Ogallala Aquifer Material Legend. The Quaternary sediments are separated from the underlying Ogallala Group by an orange line. Resistive material in the Kd is color-coded using the Dakota Formation Material Legend. The Kc and Kgg units have been combined and are undifferentiated. Pennsylvanian units and Mississippian/Devonian units are identified individually and are considered undifferentiated within each unit. The contacts between these units and Kd are drawn as dashed black lines on the top panel as these units lie near or below the calculated DOI throughout most of the survey area.

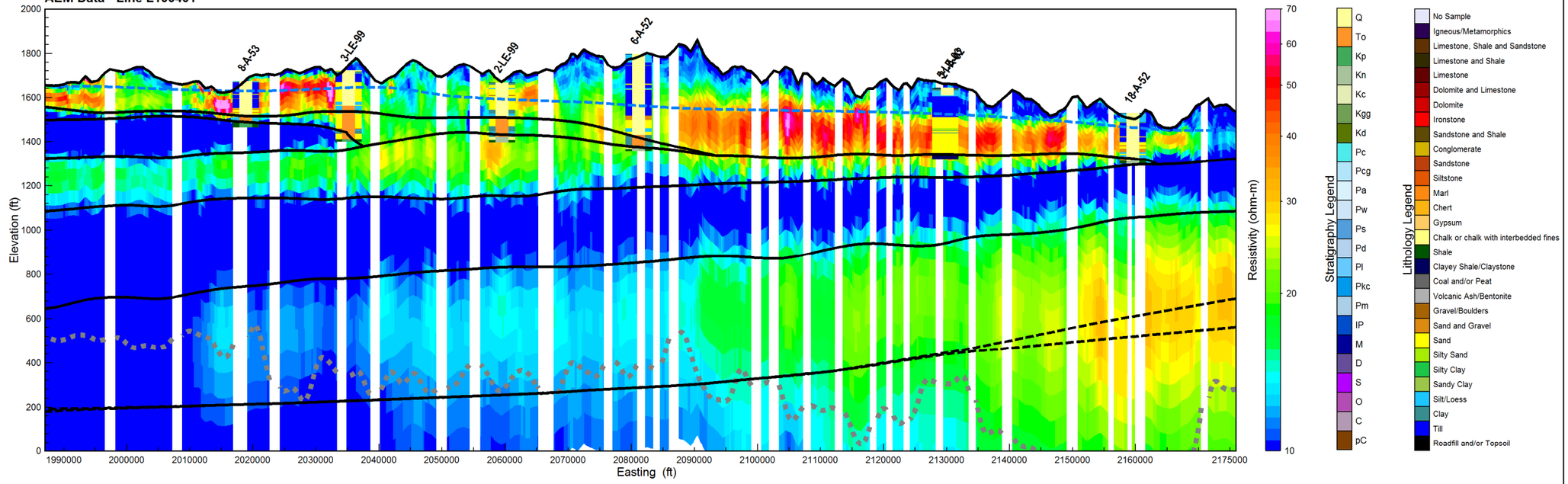
Lower Elkorn Natural Resources District

Airborne Geophysical Surveys
Resistivity and Geologic Interpretation Sections

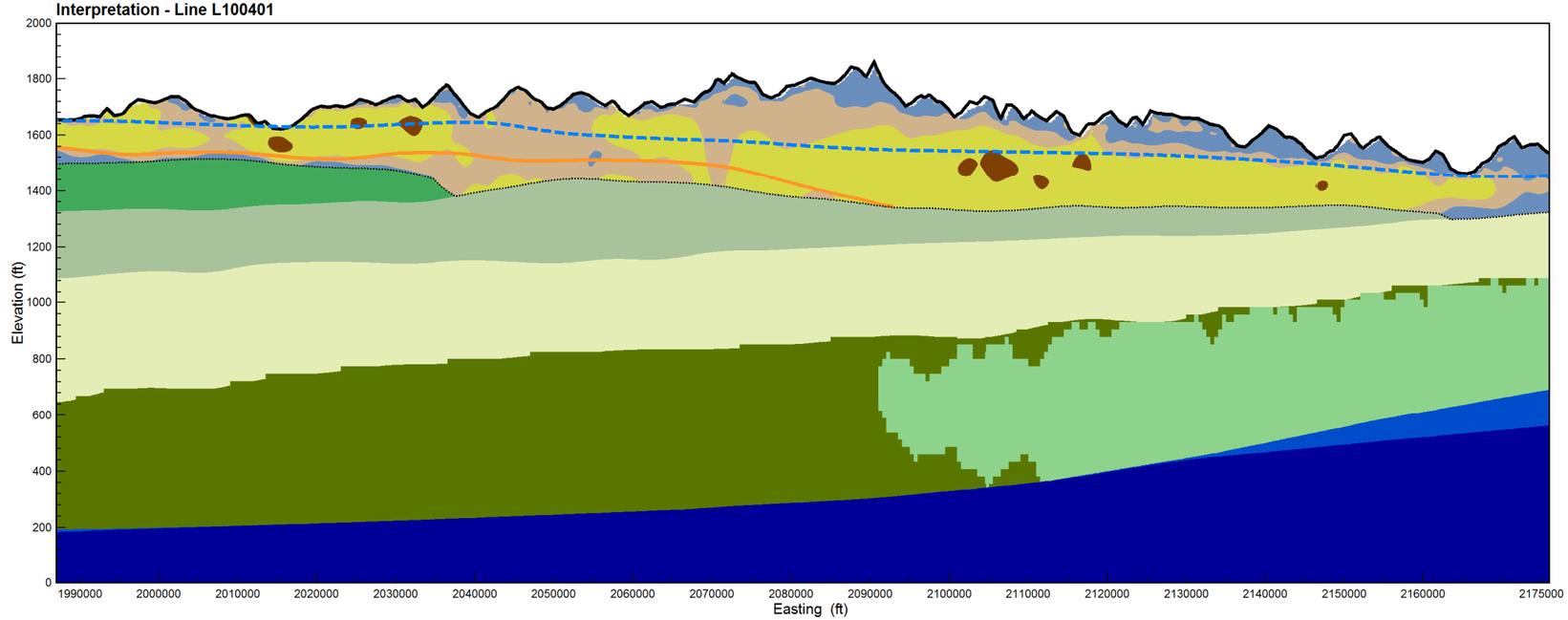
Fall 2014 Grid and Reconnaissance Flights

Flight Line L100301

AEM Data - Line L100401



Interpretation - Line L100401



Explanation: The top panel shows the inverted AEM sections from the Fall 2014 flights. The X-axis is shown has Easting or Northing along the flight line in NAD83 UTM Zone 14 using feet. See the Line Location map for specific line location. White space in the top panel shows where data were removed due to coupling or were not flown due to FAA regulations. CSD boreholes within 1 mile of the flight line are also shown with lithology and stratigraphy. The stratigraphy data overlays the lithology data at each borehole. The CSD 1995 water table is shown on both panels as a dashed blue line. The interpreted geologic units are shown on the top panel as solid and dashed black lines. The calculated DOI is shown as a dotted gray line on the top panel. The bottom panel shows the interpreted geologic units using the Stratigraphy Legend based on analysis of the AEM and borehole data. The dotted black line on the bottom panel indicates the boundary between potential aquifer material and the underlying geologic units. Material above this line is color-coded using the Quaternary/Ogallala Aquifer Material Legend. The Quaternary sediments are separated from the underlying Ogallala Group by an orange line. Resistive material in the Kd is color-coded using the Dakota Formation Material Legend. The Kc and Kgg units have been combined and are undifferentiated. Pennsylvanian units and Mississippian/Devonian units are identified individually and are considered undifferentiated within each unit. The contacts between these units and Kd are drawn as dashed black lines on the top panel as these units lie near or below the calculated DOI throughout most of the survey area.

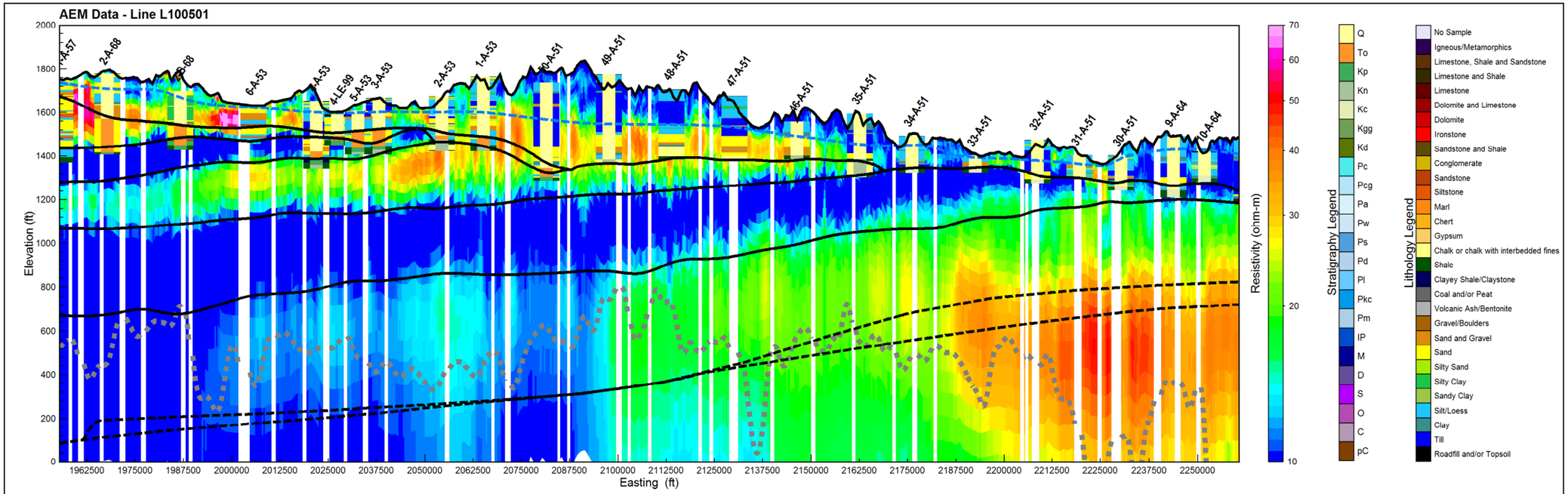
Lower Elkorn Natural Resources District

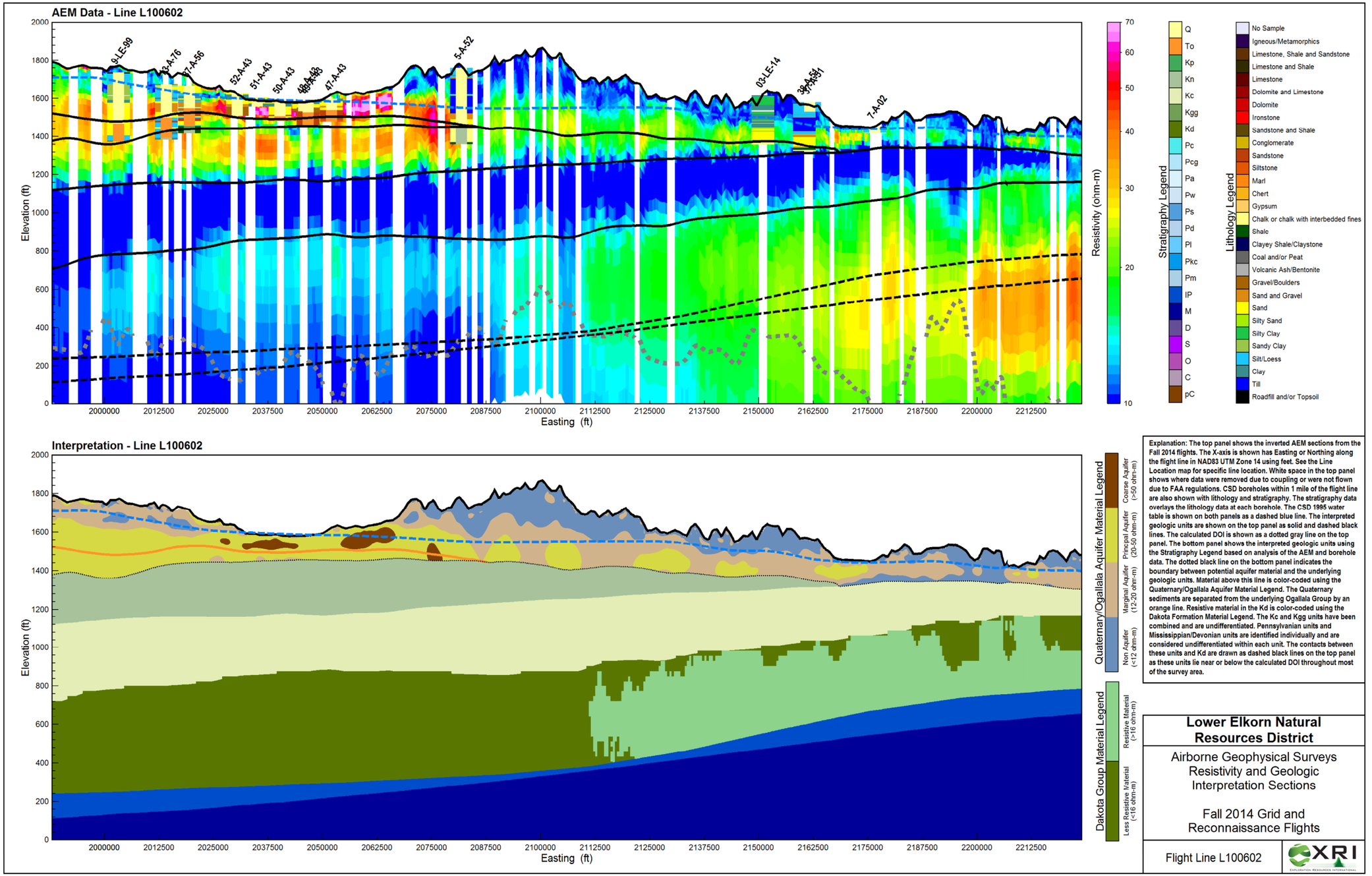
Airborne Geophysical Surveys
Resistivity and Geologic Interpretation Sections

Fall 2014 Grid and Reconnaissance Flights

Flight Line L100401

XRI
EXPLORATION RESOURCES INTERNATIONAL


AEM Data - Line L100501
Elevation (ft)
Easting (ft)
1962500 1975000 1987500 2000000 2012500 2025000 2037500 2050000 2062500 2075000 2087500 2100000 2112500 2125000 2137500 2150000 2162500 2175000 2187500 2200000 2212500 2225000 2237500 2250000
Resistivity (ohm-m)
Stratigraphy Legend
Q
To
Kp
Kn
Kc
Kgg
Kd
Pc
Pcg
Pa
Pw
Ps
Pd
Pl
Pkc
Pm
IP
M
D
S
O
C
pC
Lithology Legend
No Sample
Igneous/Metamorphics
Limestone, Shale and Sandstone
Limestone and Shale
Limestone
Dolomite and Limestone
Dolomite
Ironstone
Sandstone and Shale
Conglomerate
Sandstone
Siltstone
Marl
Chert
Gypsum
Chalk or chalk with interbedded fines
Shale
Clayey Shale/Claystone
Coal and/or Peat
Volcanic Ash/Bentonite
Gravel/Boulders
Sand and Gravel
Sand
Silty Sand
Silty Clay
Sandy Clay
Silt/Loess
Clay
Till
Roadfill and/or Topsoil
Interpretation - Line L100501
Quaternary/Ogallala Aquifer Material Legend
Coarse Aquifer (>50 ohm-m)
Principal Aquifer (20-50 ohm-m)
Marginal Aquifer (12-20 ohm-m)
Non Aquifer (<12 ohm-m)
Dakota Group Material Legend
Resistive Material (>16 ohm-m)
Less Resistive Material (<16 ohm-m)
Explanation: The top panel shows the inverted AEM sections from the Fall 2014 flights. The X-axis is shown has Easting or Northing along the flight line in NAD83 UTM Zone 14 using feet. See the Line Location map for specific line location. White space in the top panel shows where data were removed due to coupling or were not flown due to FAA regulations. CSD boreholes within 1 mile of the flight line are also shown with lithology and stratigraphy. The stratigraphy data overlays the lithology data at each borehole. The CSD 1995 water table is shown on both panels as a dashed blue line. The interpreted geologic units are shown on the top panel as solid and dashed black lines. The calculated DOI is shown as a dotted gray line on the top panel. The bottom panel shows the interpreted geologic units using the Stratigraphy Legend based on analysis of the AEM and borehole data. The dotted black line on the bottom panel indicates the boundary between potential aquifer material and the underlying geologic units. Material above this line is color-coded using the Quaternary/Ogallala Aquifer Material Legend. The Quaternary sediments are separated from the underlying Ogallala Group by an orange line. Resistive material in the Kd is color-coded using the Dakota Formation Material Legend. The Kc and Kgg units have been combined and are undifferentiated. Pennsylvanian units and Mississippian/Devonian units are identified individually and are considered undifferentiated within each unit. The contacts between these units and Kd are drawn as dashed black lines on the top panel as these units lie near or below the calculated DOI throughout most of the survey area.
Lower Elkorn Natural Resources District
Airborne Geophysical Surveys
Resistivity and Geologic Interpretation Sections
Fall 2014 Grid and Reconnaissance Flights
Flight Line L100501
XRI
EXPLORATION RESOURCES INTERNATIONAL



Explanation: The top panel shows the inverted AEM sections from the Fall 2014 flights. The X-axis is shown has Easting or Northing along the flight line in NAD83 UTM Zone 14 using feet. See the Line Location map for specific line location. White space in the top panel shows where data were removed due to coupling or were not flown due to FAA regulations. CSD boreholes within 1 mile of the flight line are also shown with lithology and stratigraphy. The stratigraphy data overlays the lithology data at each borehole. The CSD 1995 water table is shown on both panels as a dashed blue line. The interpreted geologic units are shown on the top panel as solid and dashed black lines. The calculated DOI is shown as a dotted gray line on the top panel. The bottom panel shows the interpreted geologic units using the Stratigraphy Legend based on analysis of the AEM and borehole data. The dotted black line on the bottom panel indicates the boundary between potential aquifer material and the underlying geologic units. Material above this line is color-coded using the Quaternary/Ogallala Aquifer Material Legend. The Quaternary sediments are separated from the underlying Ogallala Group by an orange line. Resistive material in the Kd is color-coded using the Dakota Formation Material Legend. The Kc and Kgg units have been combined and are undifferentiated. Pennsylvanian units and Mississippian/Devonian units are identified individually and are considered undifferentiated within each unit. The contacts between these units and Kd are drawn as dashed black lines on the top panel as these units lie near or below the calculated DOI throughout most of the survey area.

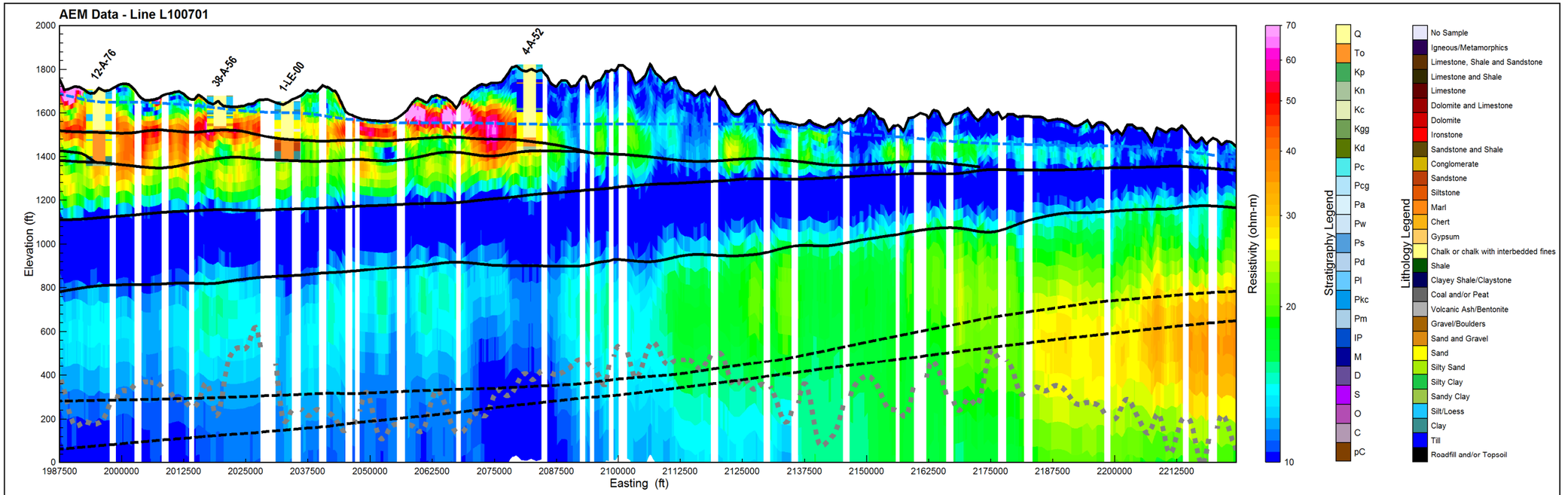
Lower Elkorn Natural Resources District

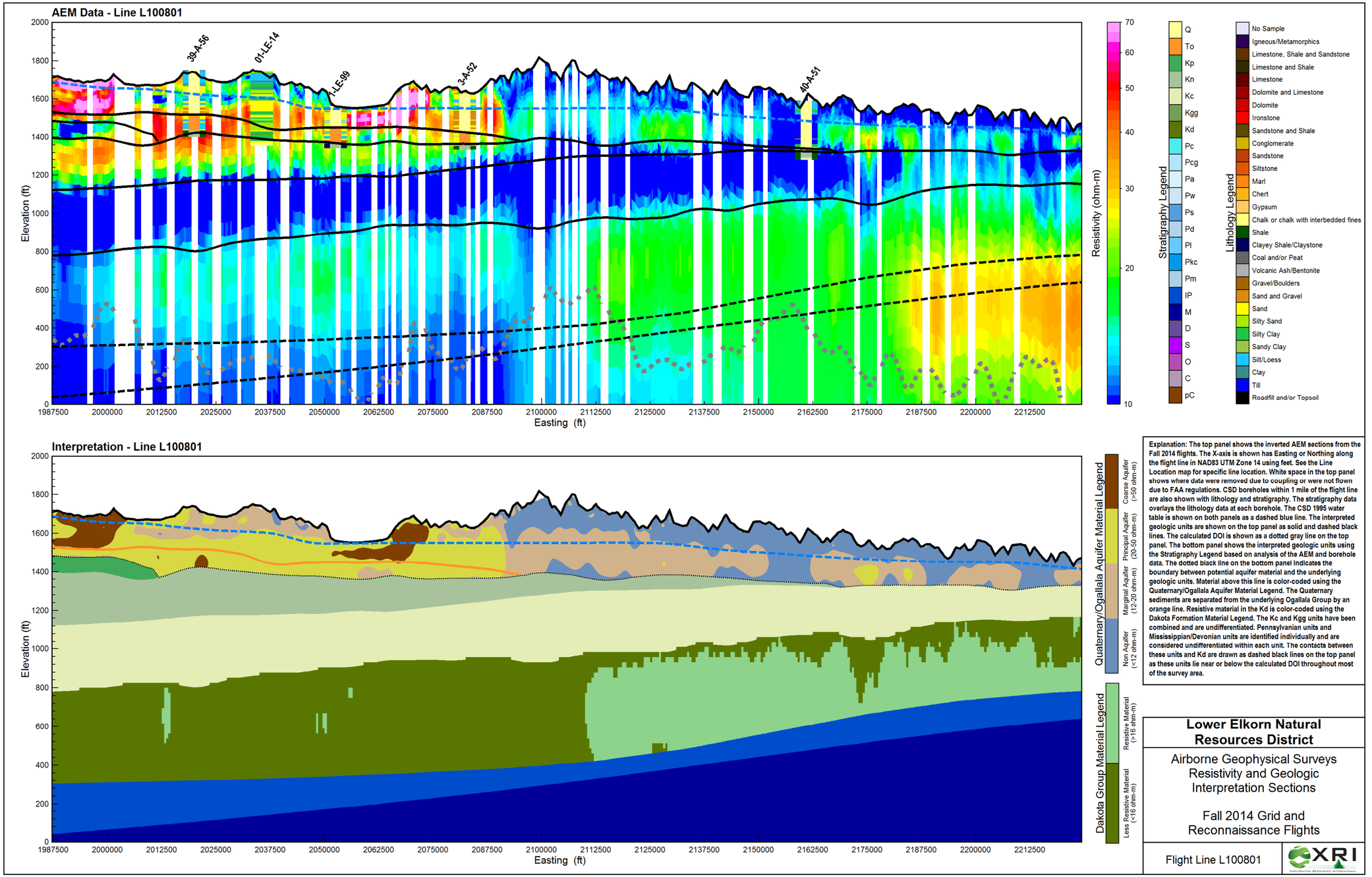
Airborne Geophysical Surveys
Resistivity and Geologic Interpretation Sections

Fall 2014 Grid and Reconnaissance Flights

Flight Line L100602

EXPLORATION RESOURCES INTERNATIONAL


AEM Data - Line L100701
12-A-76
38-A-56
1-LE-00
4-A-52
Elevation (ft)
Easting (ft)
Resistivity (ohm-m)
Stratigraphy Legend
Q
To
Kp
Kn
Kc
Kgg
Kd
Pc
Pcg
Pa
Pw
Ps
Pd
Pl
Pkc
Pm
IP
M
D
S
O
C
pC
Lithology Legend
No Sample
Igneous/Metamorphics
Limestone, Shale and Sandstone
Limestone and Shale
Limestone
Dolomite and Limestone
Dolomite
Ironstone
Sandstone and Shale
Conglomerate
Sandstone
Siltstone
Marl
Chert
Gypsum
Chalk or chalk with interbedded fines
Shale
Clayey Shale/Claystone
Coal and/or Peat
Volcanic Ash/Bentonite
Gravel/Boulders
Sand and Gravel
Sand
Silty Sand
Silty Clay
Sandy Clay
Silt/Loess
Clay
Till
Roadfill and/or Topsoil
Interpretation - Line L100701
Elevation (ft)
Easting (ft)
Quaternary/Ogallala Aquifer Material Legend
Coarse Aquifer (>50 ohm-m)
Principal Aquifer (20-50 ohm-m)
Marginal Aquifer (12-20 ohm-m)
Non Aquifer (<12 ohm-m)
Dakota Group Material Legend
Resistive Material (>16 ohm-m)
Less Resistive Material (<16 ohm-m)
Explanation: The top panel shows the inverted AEM sections from the Fall 2014 flights. The X-axis is shown has Easting or Northing along the flight line in NAD83 UTM Zone 14 using feet. See the Line Location map for specific line location. White space in the top panel shows where data were removed due to coupling or were not flown due to FAA regulations. CSD boreholes within 1 mile of the flight line are also shown with lithology and stratigraphy. The stratigraphy data overlays the lithology data at each borehole. The CSD 1995 water table is shown on both panels as a dashed blue line. The interpreted geologic units are shown on the top panel as solid and dashed black lines. The calculated DOI is shown as a dotted gray line on the top panel. The bottom panel shows the interpreted geologic units using the Stratigraphy Legend based on analysis of the AEM and borehole data. The dotted black line on the bottom panel indicates the boundary between potential aquifer material and the underlying geologic units. Material above this line is color-coded using the Quaternary/Ogallala Aquifer Material Legend. The Quaternary sediments are separated from the underlying Ogallala Group by an orange line. Resistive material in the Kd is color-coded using the Dakota Formation Material Legend. The Kc and Kgg units have been combined and are undifferentiated. Pennsylvanian units and Mississippian/Devonian units are identified individually and are considered undifferentiated within each unit. The contacts between these units and Kd are drawn as dashed black lines on the top panel as these units lie near or below the calculated DOI throughout most of the survey area.
Lower Elkorn Natural Resources District
Airborne Geophysical Surveys
Resistivity and Geologic Interpretation Sections
Fall 2014 Grid and Reconnaissance Flights
Flight Line L100701
EXRI
EXPLORATION RESOURCES INTERNATIONAL



Explanation: The top panel shows the inverted AEM sections from the Fall 2014 flights. The X-axis is shown has Easting or Northing along the flight line in NAD83 UTM Zone 14 using feet. See the Line Location map for specific line location. White space in the top panel shows where data were removed due to coupling or were not flown due to FAA regulations. CSD boreholes within 1 mile of the flight line are also shown with lithology and stratigraphy. The stratigraphy data overlays the lithology data at each borehole. The CSD 1995 water table is shown on both panels as a dashed blue line. The interpreted geologic units are shown on the top panel as solid and dashed black lines. The calculated DOI is shown as a dotted gray line on the top panel. The bottom panel shows the interpreted geologic units using the Stratigraphy Legend based on analysis of the AEM and borehole data. The dotted black line on the bottom panel indicates the boundary between potential aquifer material and the underlying geologic units. Material above this line is color-coded using the Quaternary/Ogallala Aquifer Material Legend. The Quaternary sediments are separated from the underlying Ogallala Group by an orange line. Resistive material in the Kd is color-coded using the Dakota Formation Material Legend. The Kc and Kgg units have been combined and are undifferentiated. Pennsylvanian units and Mississippian/Devonian units are identified individually and are considered undifferentiated within each unit. The contacts between these units and Kd are drawn as dashed black lines on the top panel as these units lie near or below the calculated DOI throughout most of the survey area.

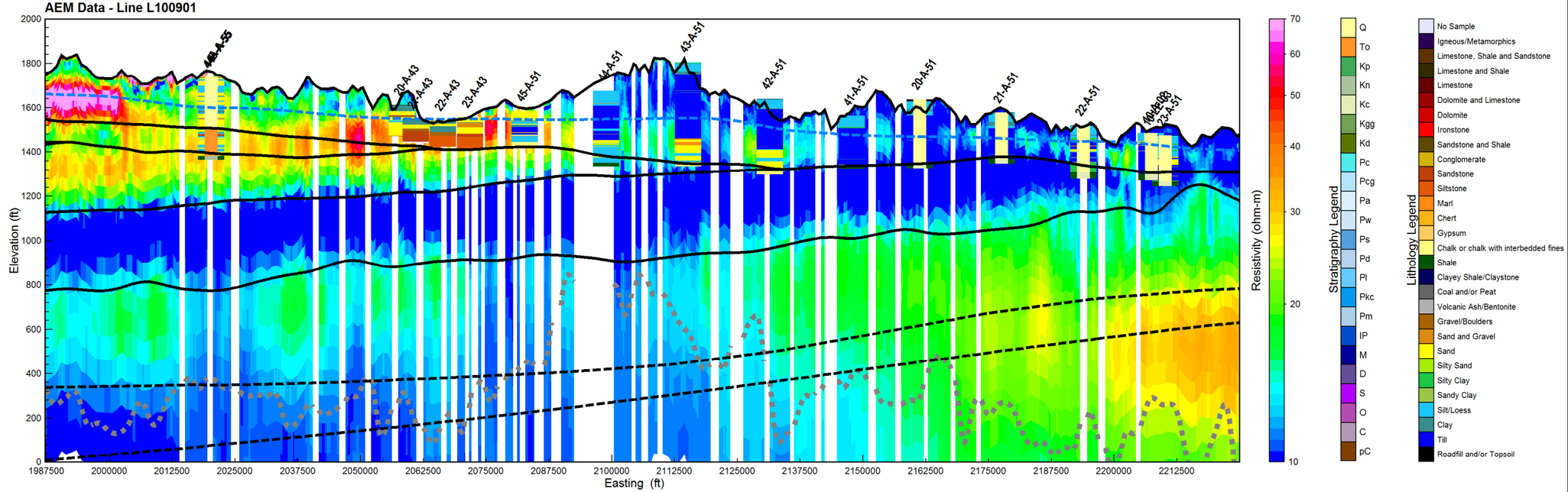
Lower Elkorn Natural Resources District

Airborne Geophysical Surveys
Resistivity and Geologic Interpretation Sections

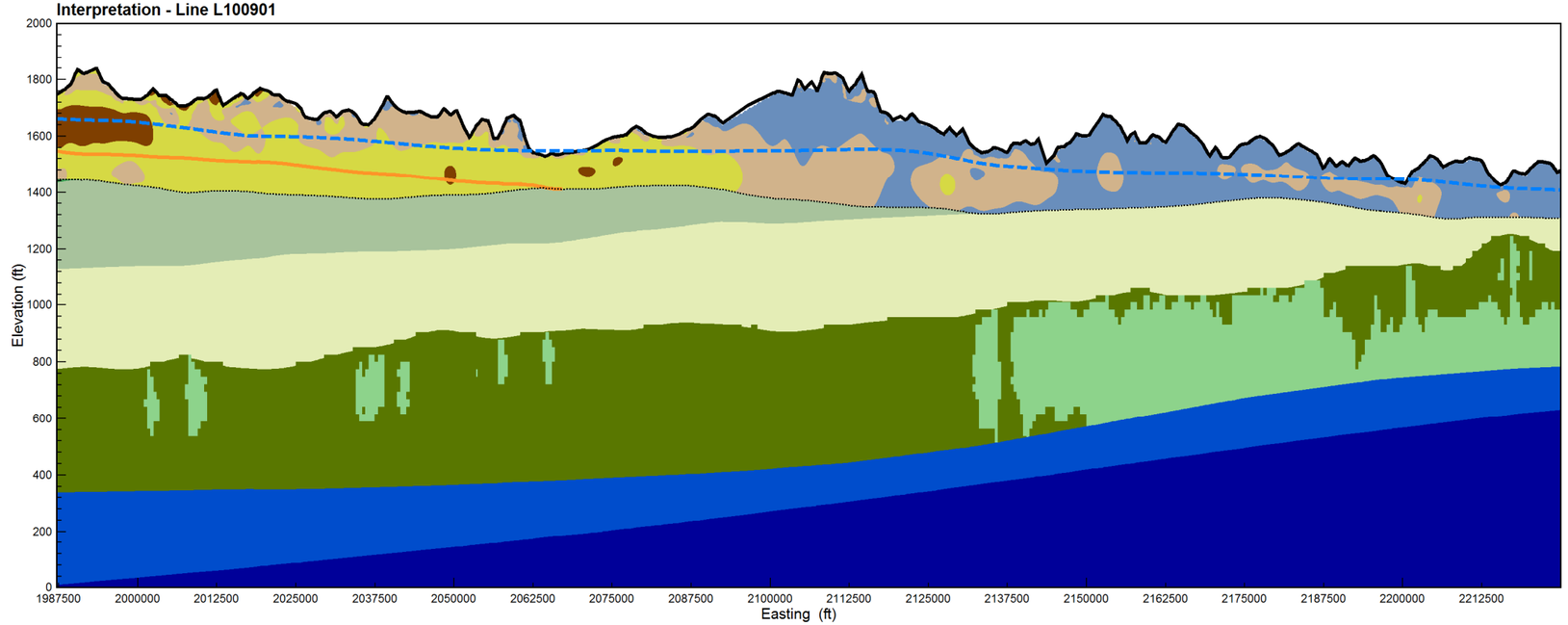
Fall 2014 Grid and Reconnaissance Flights

Flight Line L100801

AEM Data - Line L100901



Interpretation - Line L100901



Explanation: The top panel shows the inverted AEM sections from the Fall 2014 flights. The X-axis is shown has Easting or Northing along the flight line in NAD83 UTM Zone 14 using feet. See the Line Location map for specific line location. White space in the top panel shows where data were removed due to coupling or were not flown due to FAA regulations. CSD boreholes within 1 mile of the flight line are also shown with lithology and stratigraphy. The stratigraphy data overlays the lithology data at each borehole. The CSD 1995 water table is shown on both panels as a dashed blue line. The interpreted geologic units are shown on the top panel as solid and dashed black lines. The calculated DOI is shown as a dotted gray line on the top panel. The bottom panel shows the interpreted geologic units using the Stratigraphy Legend based on analysis of the AEM and borehole data. The dotted black line on the bottom panel indicates the boundary between potential aquifer material and the underlying geologic units. Material above this line is color-coded using the Quaternary/Ogallala Aquifer Material Legend. The Quaternary sediments are separated from the underlying Ogallala Group by an orange line. Resistive material in the Kd is color-coded using the Dakota Formation Material Legend. The Kc and Kgg units have been combined and are undifferentiated. Pennsylvanian units and Mississippian/Devonian units are identified individually and are considered undifferentiated within each unit. The contacts between these units and Kd are drawn as dashed black lines on the top panel as these units lie near or below the calculated DOI throughout most of the survey area.

Lower Elkorn Natural Resources District

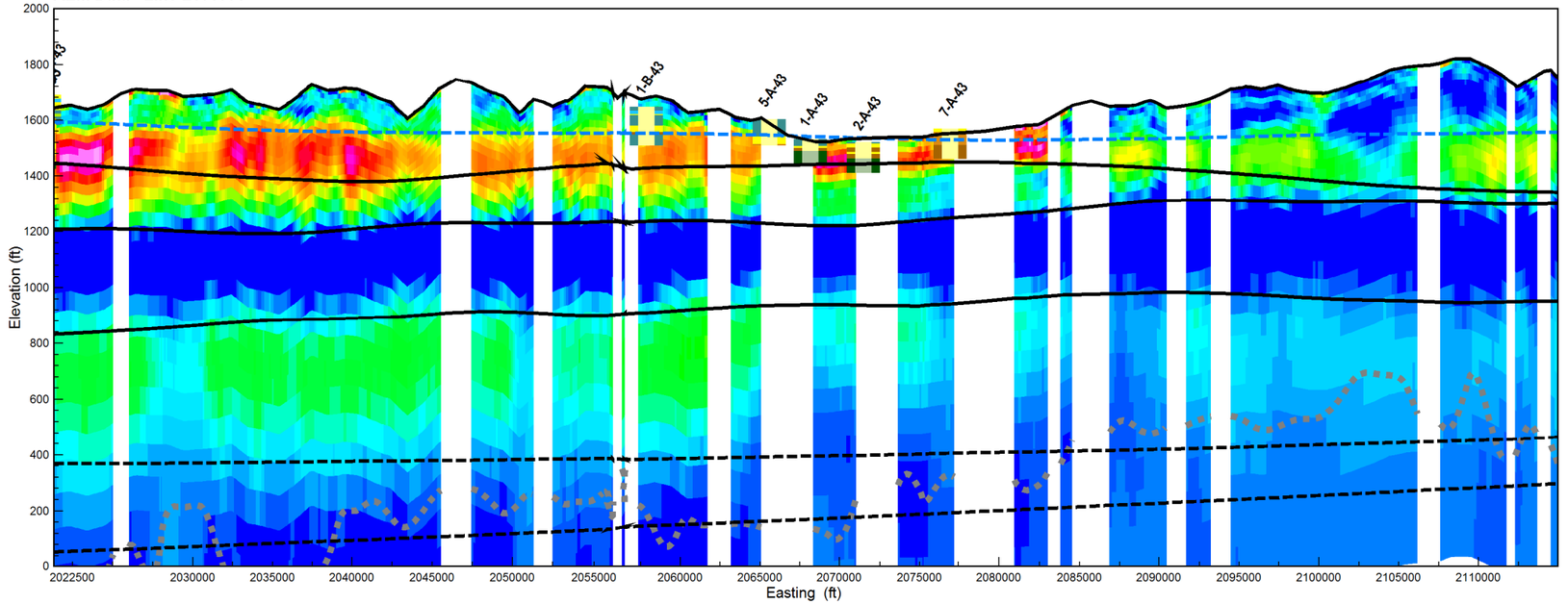
Airborne Geophysical Surveys
Resistivity and Geologic Interpretation Sections

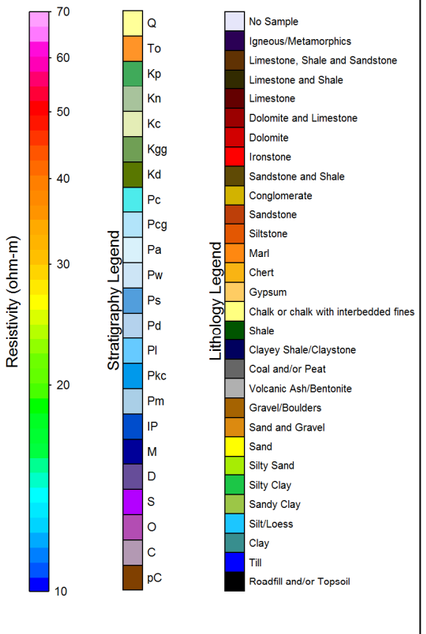
Fall 2014 Grid and Reconnaissance Flights

Flight Line L100901

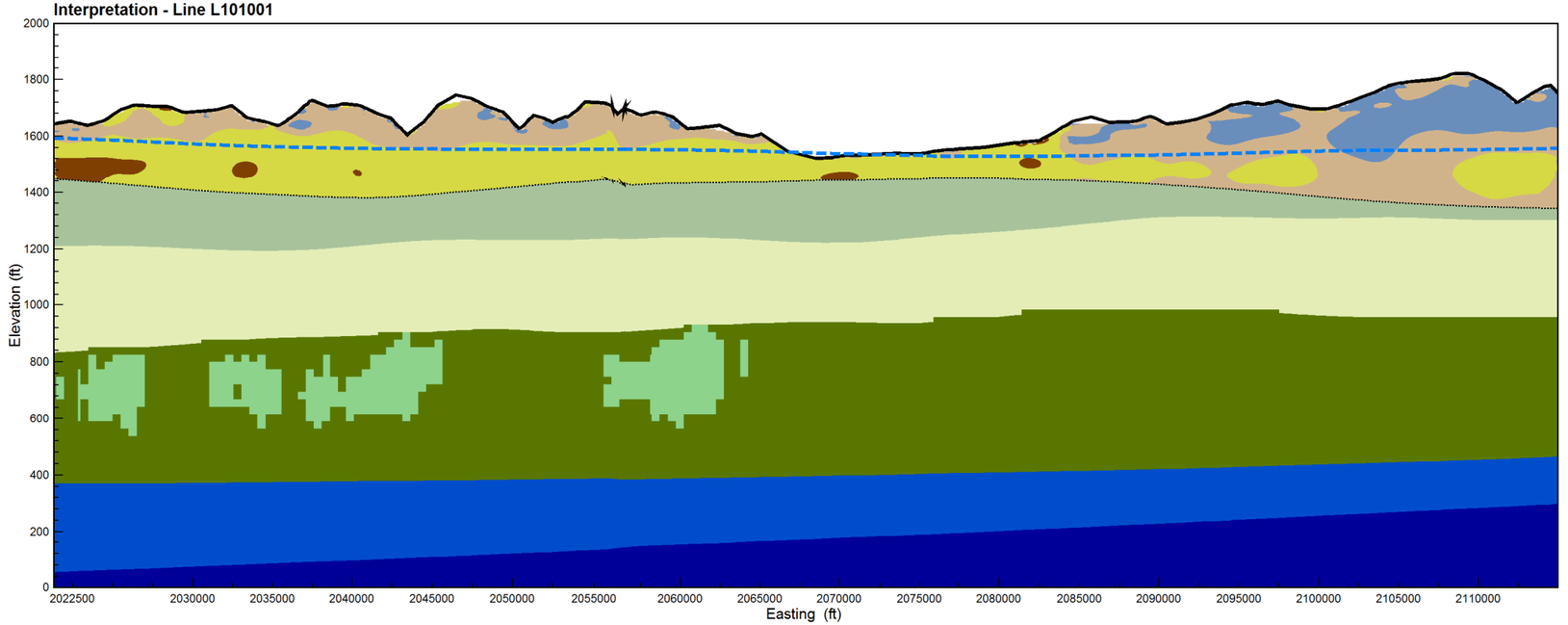
XRI
EXPLORATION RESOURCES INTERNATIONAL

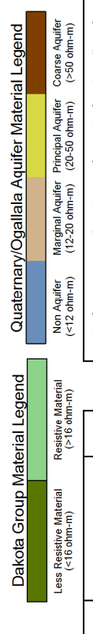
AEM Data - Line L101001





Interpretation - Line L101001





Explanation: The top panel shows the inverted AEM sections from the Fall 2014 flights. The X-axis is shown has Easting or Northing along the flight line in NAD83 UTM Zone 14 using feet. See the Line Location map for specific line location. White space in the top panel shows where data were removed due to coupling or were not flown due to FAA regulations. CSD boreholes within 1 mile of the flight line are also shown with lithology and stratigraphy. The stratigraphy data overlays the lithology data at each borehole. The CSD 1995 water table is shown on both panels as a dashed blue line. The interpreted geologic units are shown on the top panel as solid and dashed black lines. The calculated DOI is shown as a dotted gray line on the top panel. The bottom panel shows the interpreted geologic units using the Stratigraphy Legend based on analysis of the AEM and borehole data. The dotted black line on the bottom panel indicates the boundary between potential aquifer material and the underlying geologic units. Material above this line is color-coded using the Quaternary/Ogallala Aquifer Material Legend. The Quaternary sediments are separated from the underlying Ogallala Group by an orange line. Resistive material in the Kd is color-coded using the Dakota Formation Material Legend. The Kc and Kgg units have been combined and are undifferentiated. Pennsylvanian units and Mississippian/Devonian units are identified individually and are considered undifferentiated within each unit. The contacts between these units and Kd are drawn as dashed black lines on the top panel as these units lie near or below the calculated DOI throughout most of the survey area.

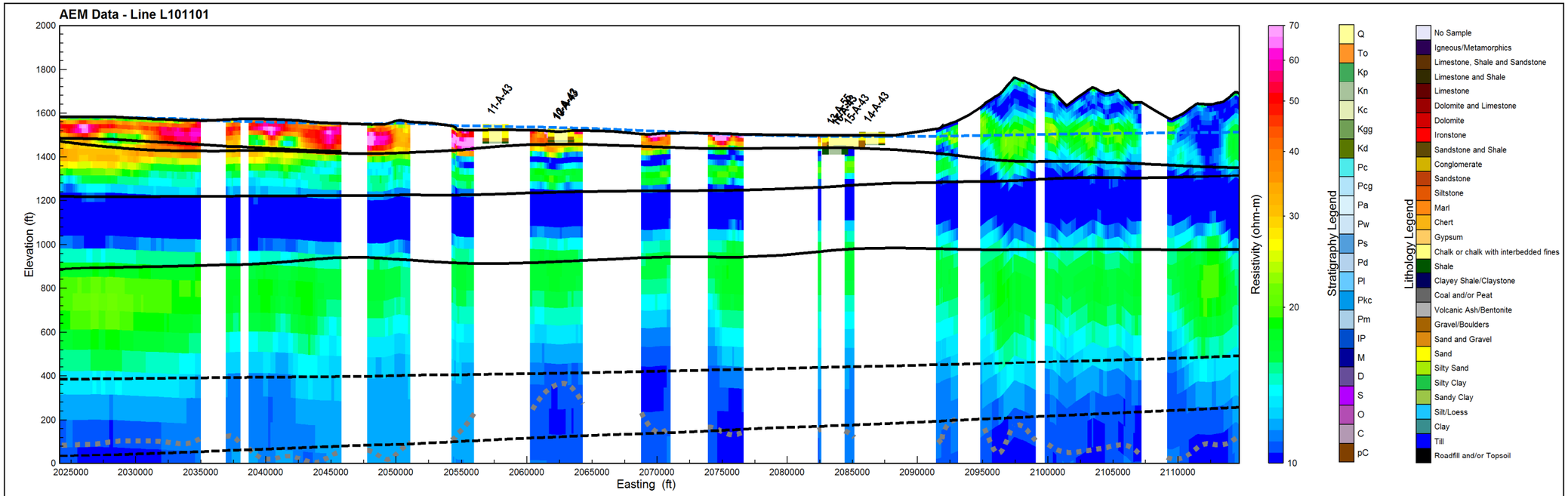
Lower Elkorn Natural Resources District

Airborne Geophysical Surveys
Resistivity and Geologic Interpretation Sections

Fall 2014 Grid and Reconnaissance Flights

Flight Line L101001

EXPLORATION RESOURCES INTERNATIONAL



Explanation: The top panel shows the inverted AEM sections from the Fall 2014 flights. The X-axis is shown has Easting or Northing along the flight line in NAD83 UTM Zone 14 using feet. See the Line Location map for specific line location. White space in the top panel shows where data were removed due to coupling or were not flown due to FAA regulations. CSD boreholes within 1 mile of the flight line are also shown with lithology and stratigraphy. The stratigraphy data overlays the lithology data at each borehole. The CSD 1995 water table is shown on both panels as a dashed blue line. The interpreted geologic units are shown on the top panel as solid and dashed black lines. The calculated DOI is shown as a dotted gray line on the top panel. The bottom panel shows the interpreted geologic units using the Stratigraphy Legend based on analysis of the AEM and borehole data. The dotted black line on the bottom panel indicates the boundary between potential aquifer material and the underlying geologic units. Material above this line is color-coded using the Quaternary/Ogallala Aquifer Material Legend. The Quaternary sediments are separated from the underlying Ogallala Group by an orange line. Resistive material in the Kd is color-coded using the Dakota Formation Material Legend. The Kc and Kgg units have been combined and are undifferentiated. Pennsylvanian units and Mississippian/Devonian units are identified individually and are considered undifferentiated within each unit. The contacts between these units and Kd are drawn as dashed black lines on the top panel as these units lie near or below the calculated DOI throughout most of the survey area.

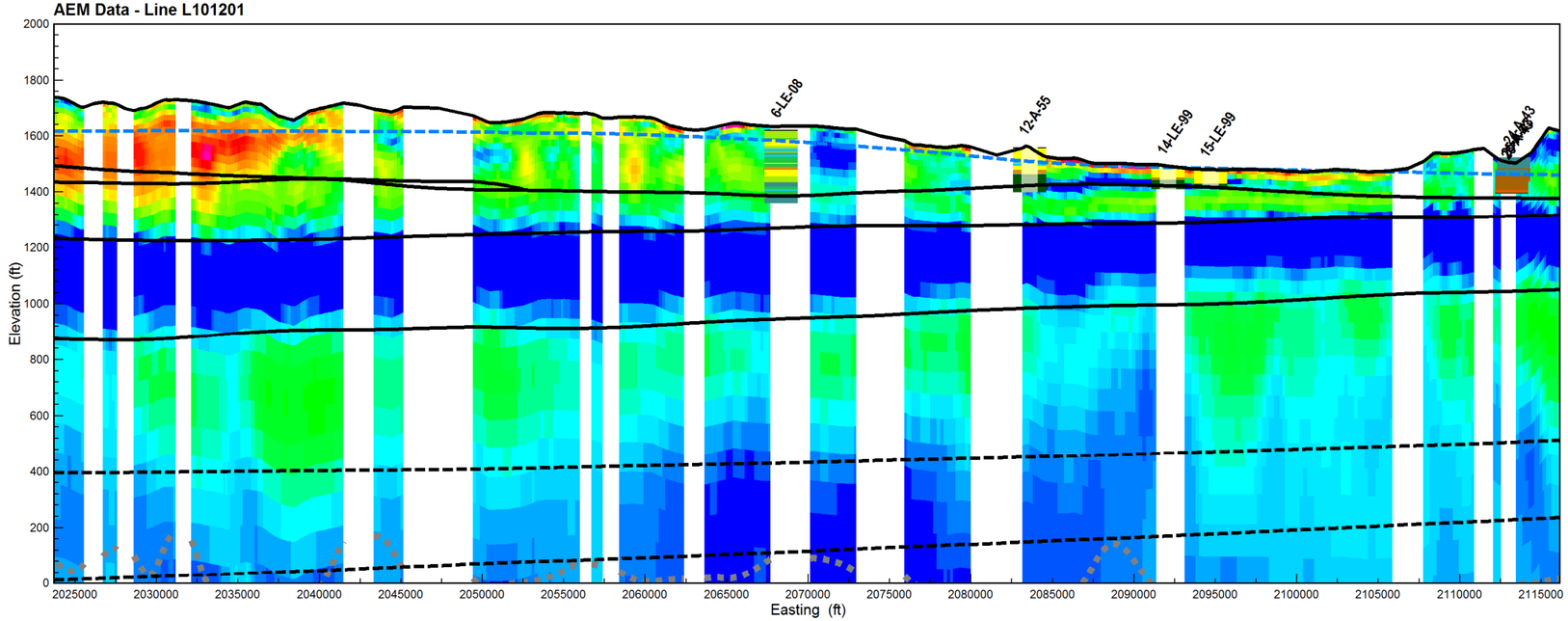
Lower Elkorn Natural Resources District

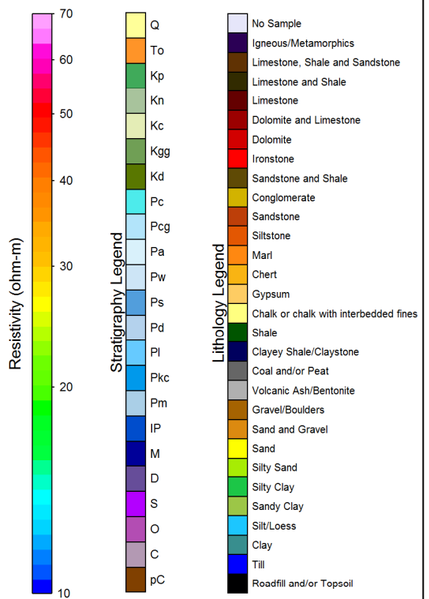
Airborne Geophysical Surveys
Resistivity and Geologic Interpretation Sections

Fall 2014 Grid and Reconnaissance Flights

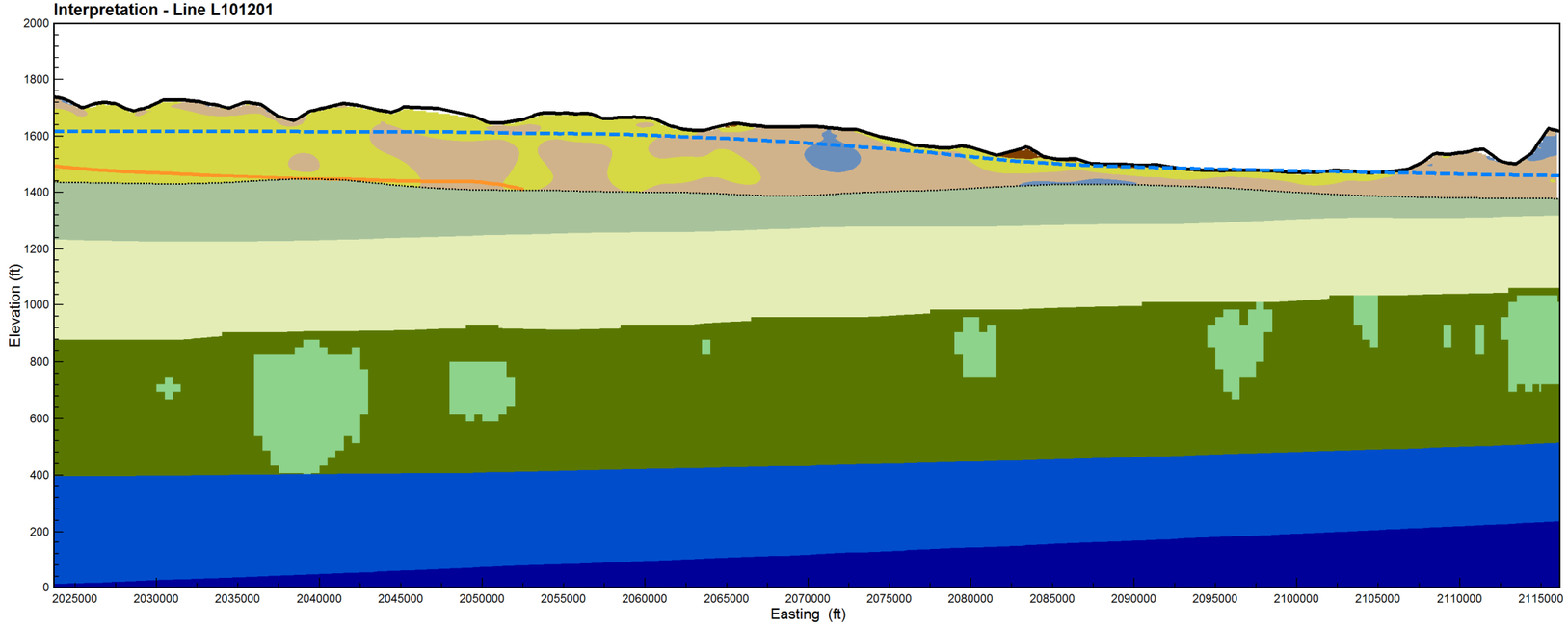
Flight Line L101101

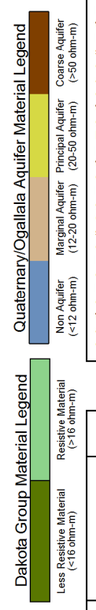
AEM Data - Line L101201





Interpretation - Line L101201





Explanation: The top panel shows the inverted AEM sections from the Fall 2014 flights. The X-axis is shown has Easting or Northing along the flight line in NAD83 UTM Zone 14 using feet. See the Line Location map for specific line location. White space in the top panel shows where data were removed due to coupling or were not flown due to FAA regulations. CSD boreholes within 1 mile of the flight line are also shown with lithology and stratigraphy. The stratigraphy data overlays the lithology data at each borehole. The CSD 1995 water table is shown on both panels as a dashed blue line. The interpreted geologic units are shown on the top panel as solid and dashed black lines. The calculated DOI is shown as a dotted gray line on the top panel. The bottom panel shows the interpreted geologic units using the Stratigraphy Legend based on analysis of the AEM and borehole data. The dotted black line on the bottom panel indicates the boundary between potential aquifer material and the underlying geologic units. Material above this line is color-coded using the Quaternary/Ogallala Aquifer Material Legend. The Quaternary sediments are separated from the underlying Ogallala Group by an orange line. Resistive material in the Kd is color-coded using the Dakota Formation Material Legend. The Kc and Kgg units have been combined and are undifferentiated. Pennsylvanian units and Mississippian/Devonian units are identified individually and are considered undifferentiated within each unit. The contacts between these units and Kd are drawn as dashed black lines on the top panel as these units lie near or below the calculated DOI throughout most of the survey area.

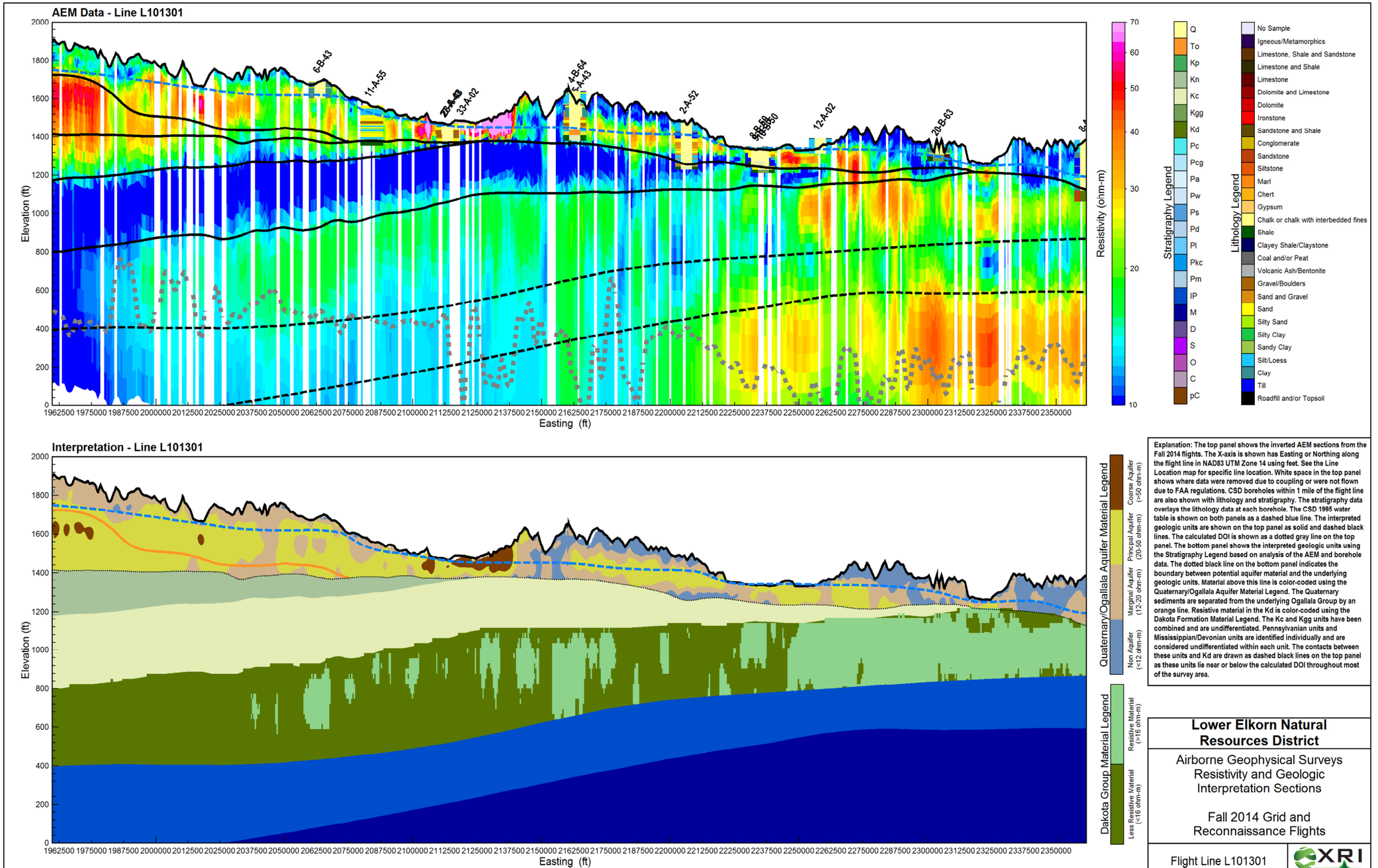
Lower Elkorn Natural Resources District

Airborne Geophysical Surveys
Resistivity and Geologic Interpretation Sections

Fall 2014 Grid and Reconnaissance Flights

Flight Line L101201

XRI
EXPLORATION RESOURCES INTERNATIONAL



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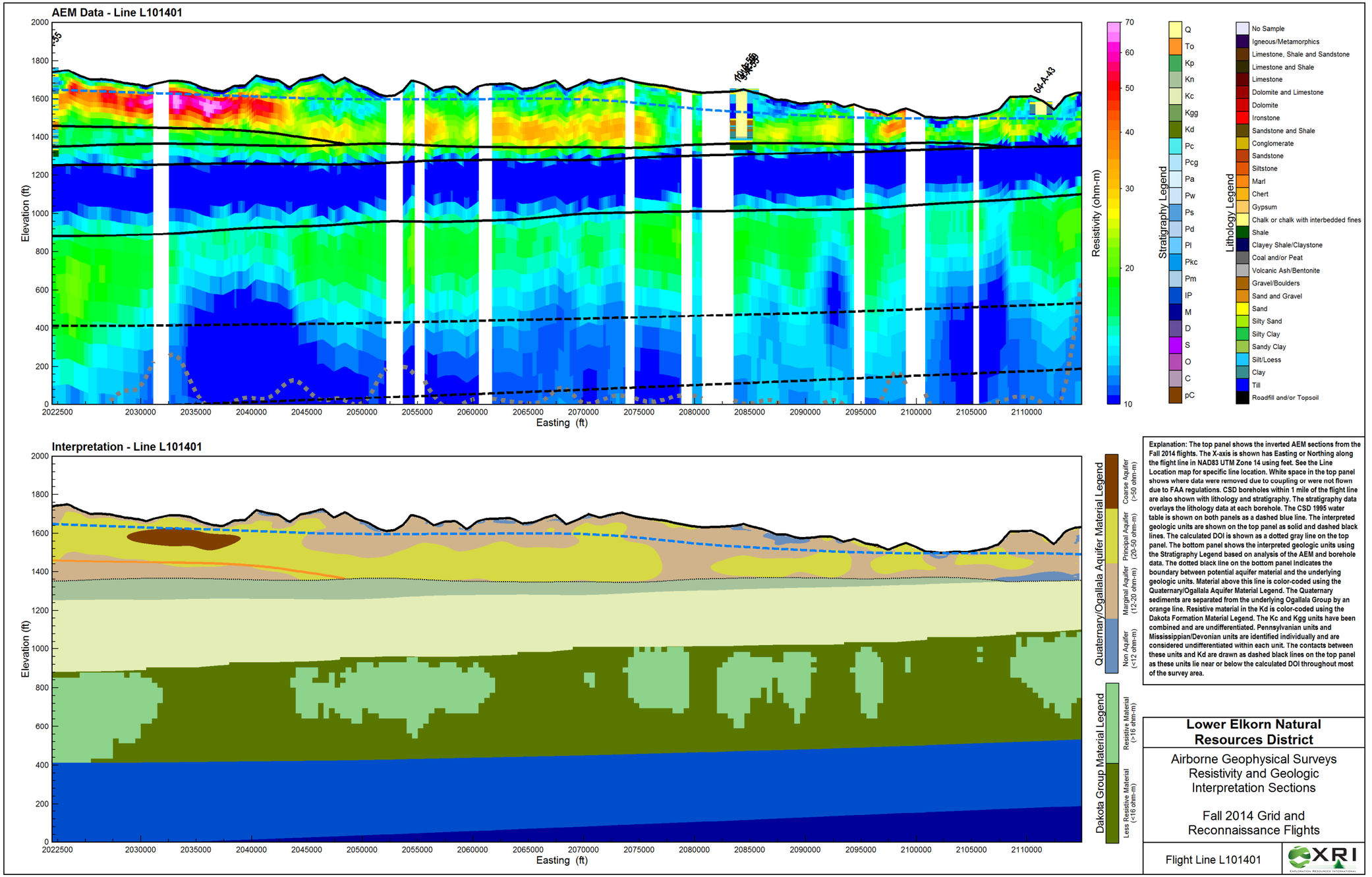
Lower Elkorn Natural Resources District

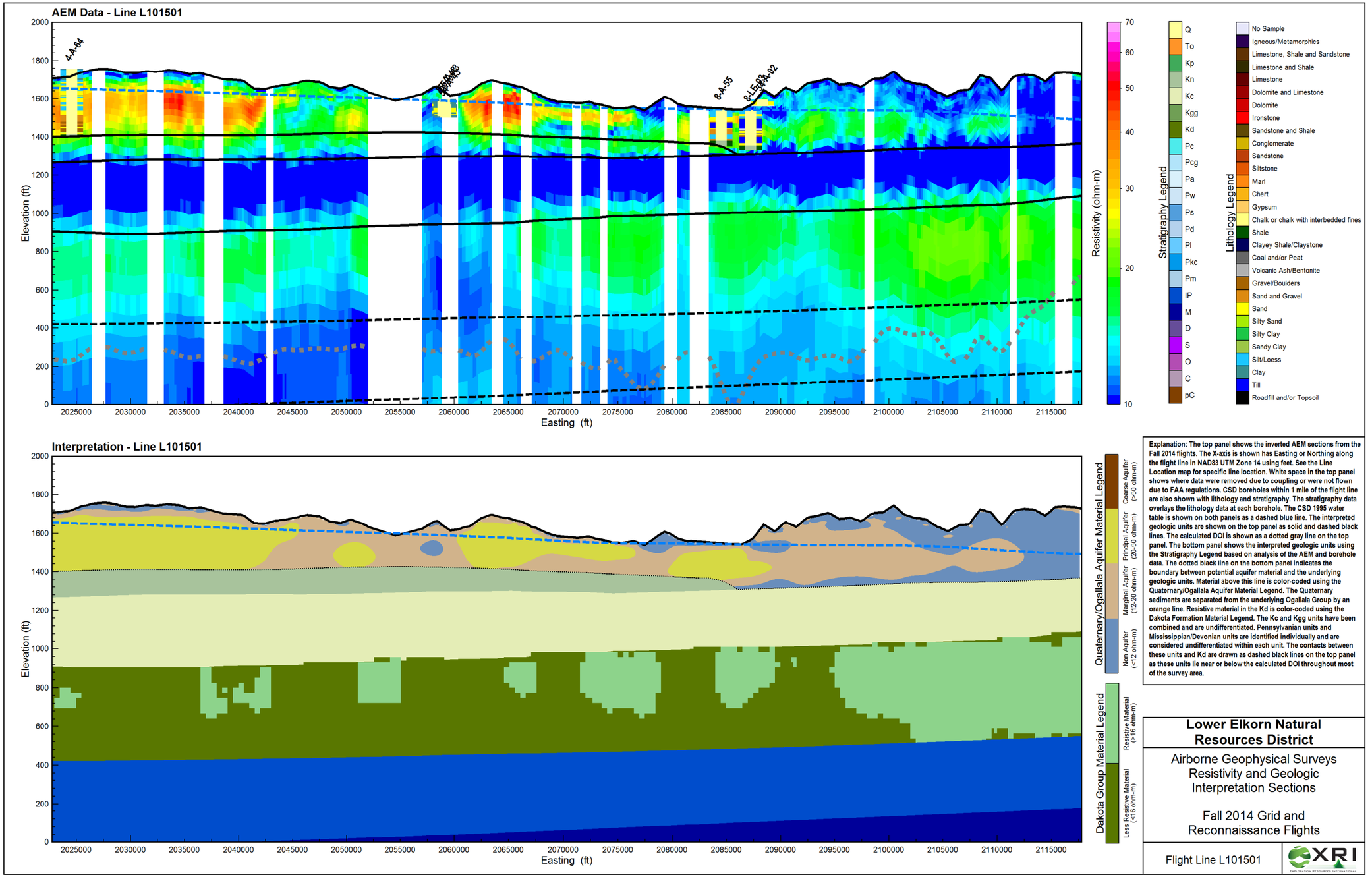
Airborne Geophysical Surveys
Resistivity and Geologic Interpretation Sections

Fall 2014 Grid and Reconnaissance Flights

Flight Line L101301

XRI Exploration Resources International


AEM Data - Line L101401
Elevation (ft)
Easting (ft)
2022500
2030000
2035000
2040000
2045000
2050000
2055000
2060000
2065000
2070000
2075000
2080000
2085000
2090000
2095000
2100000
2105000
2110000
Resistivity (ohm-m)
Stratigraphy Legend
Q
To
Kp
Kn
Kc
Kgg
Kd
Pc
Pcg
Pa
Pw
Ps
Pd
Pl
Pkc
Pm
IP
M
D
S
O
C
pC
Lithology Legend
No Sample
Igneous/Metamorphics
Limestone, Shale and Sandstone
Limestone and Shale
Limestone
Dolomite and Limestone
Dolomite
Ironstone
Sandstone and Shale
Conglomerate
Sandstone
Siltstone
Marl
Chert
Gypsum
Chalk or chalk with interbedded fines
Shale
Clayey Shale/Claystone
Coal and/or Peat
Volcanic Ash/Bentonite
Gravel/Boulders
Sand and Gravel
Sand
Silty Sand
Silty Clay
Sandy Clay
Silt/Loess
Clay
Till
Roadfill and/or Topsoil
64-A-43
Interpretation - Line L101401
Quaternary/Ogallala Aquifer Material Legend
Coarse Aquifer (>50 ohm-m)
Principal Aquifer (20-50 ohm-m)
Marginal Aquifer (12-20 ohm-m)
Non Aquifer (<12 ohm-m)
Dakota Group Material Legend
Resistive Material (>16 ohm-m)
Less Resistive Material (<16 ohm-m)
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Lower Elkorn Natural Resources District
Airborne Geophysical Surveys
Resistivity and Geologic Interpretation Sections
Fall 2014 Grid and Reconnaissance Flights
Flight Line L101401
EXPLORATION RESOURCES INTERNATIONAL



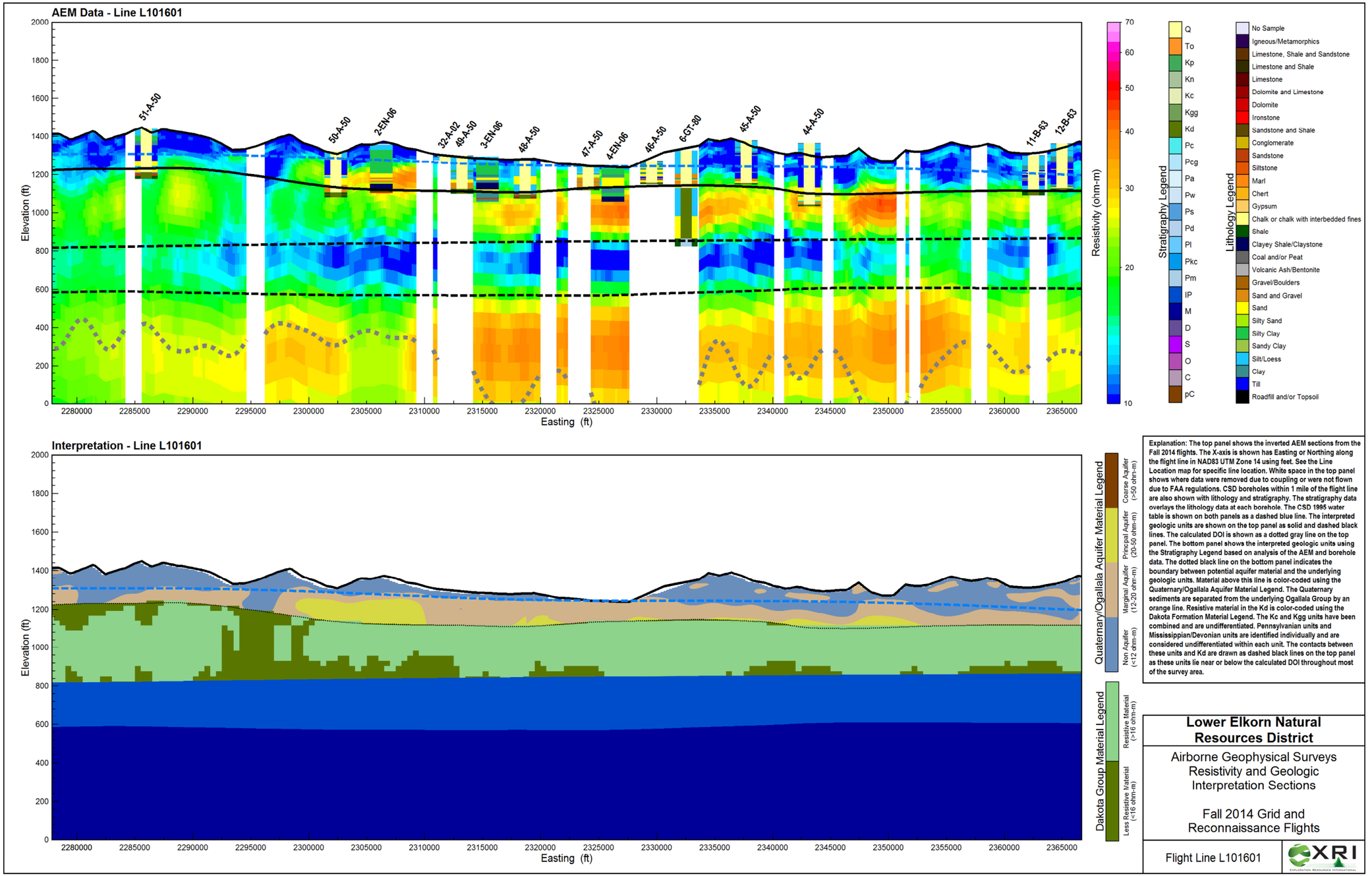
Explanation: The top panel shows the inverted AEM sections from the Fall 2014 flights. The X-axis is shown has Easting or Northing along the flight line in NAD83 UTM Zone 14 using feet. See the Line Location map for specific line location. White space in the top panel shows where data were removed due to coupling or were not flown due to FAA regulations. CSD boreholes within 1 mile of the flight line are also shown with lithology and stratigraphy. The stratigraphy data overlays the lithology data at each borehole. The CSD 1995 water table is shown on both panels as a dashed blue line. The interpreted geologic units are shown on the top panel as solid and dashed black lines. The calculated DOI is shown as a dotted gray line on the top panel. The bottom panel shows the interpreted geologic units using the Stratigraphy Legend based on analysis of the AEM and borehole data. The dotted black line on the bottom panel indicates the boundary between potential aquifer material and the underlying geologic units. Material above this line is color-coded using the Quaternary/Ogallala Aquifer Material Legend. The Quaternary sediments are separated from the underlying Ogallala Group by an orange line. Resistive material in the Kd is color-coded using the Dakota Formation Material Legend. The Kc and Kgg units have been combined and are undifferentiated. Pennsylvanian units and Mississippian/Devonian units are identified individually and are considered undifferentiated within each unit. The contacts between these units and Kd are drawn as dashed black lines on the top panel as these units lie near or below the calculated DOI throughout most of the survey area.

Lower Elkorn Natural Resources District

Airborne Geophysical Surveys
Resistivity and Geologic Interpretation Sections

Fall 2014 Grid and Reconnaissance Flights

Flight Line L101501



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Lower Elkorn Natural Resources District

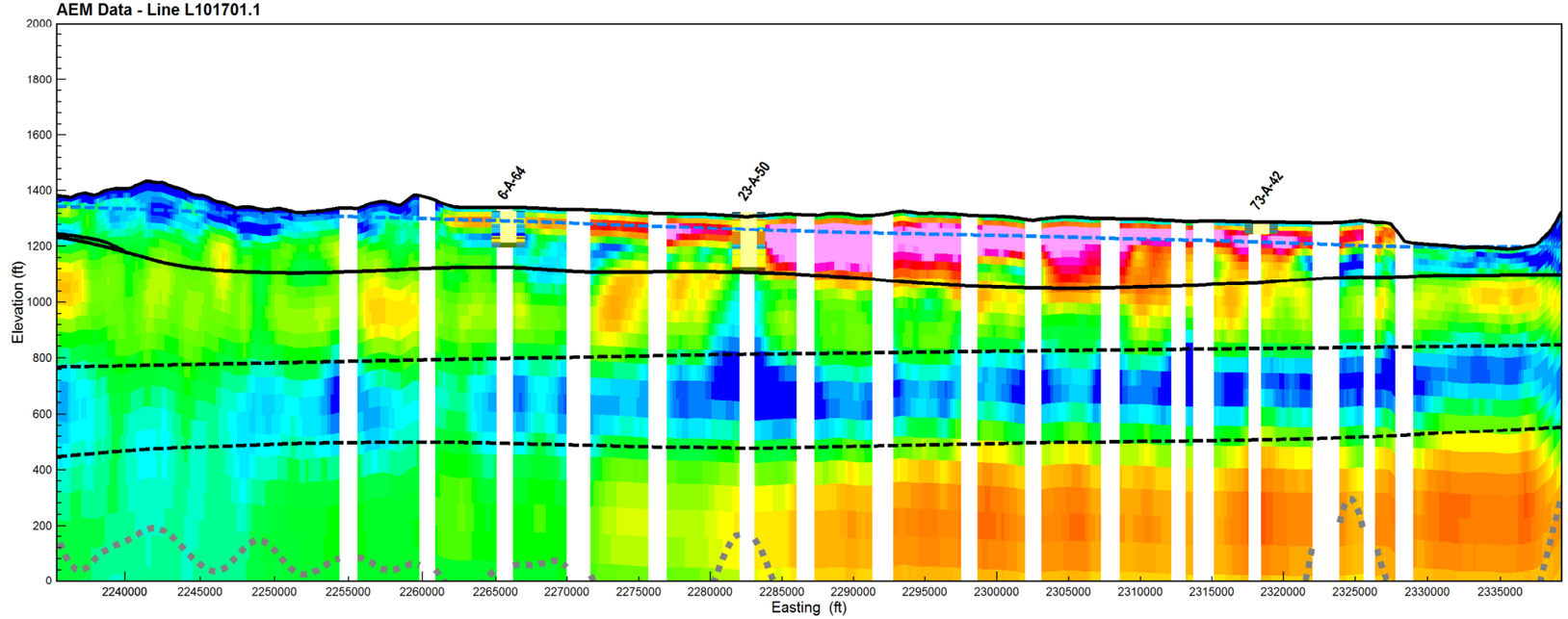
Airborne Geophysical Surveys
Resistivity and Geologic Interpretation Sections

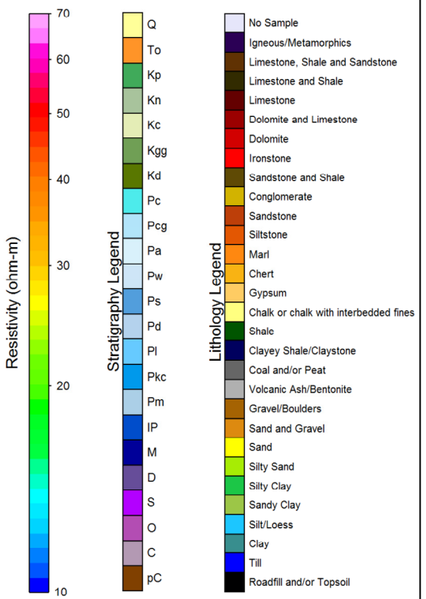
Fall 2014 Grid and Reconnaissance Flights

Flight Line L101601

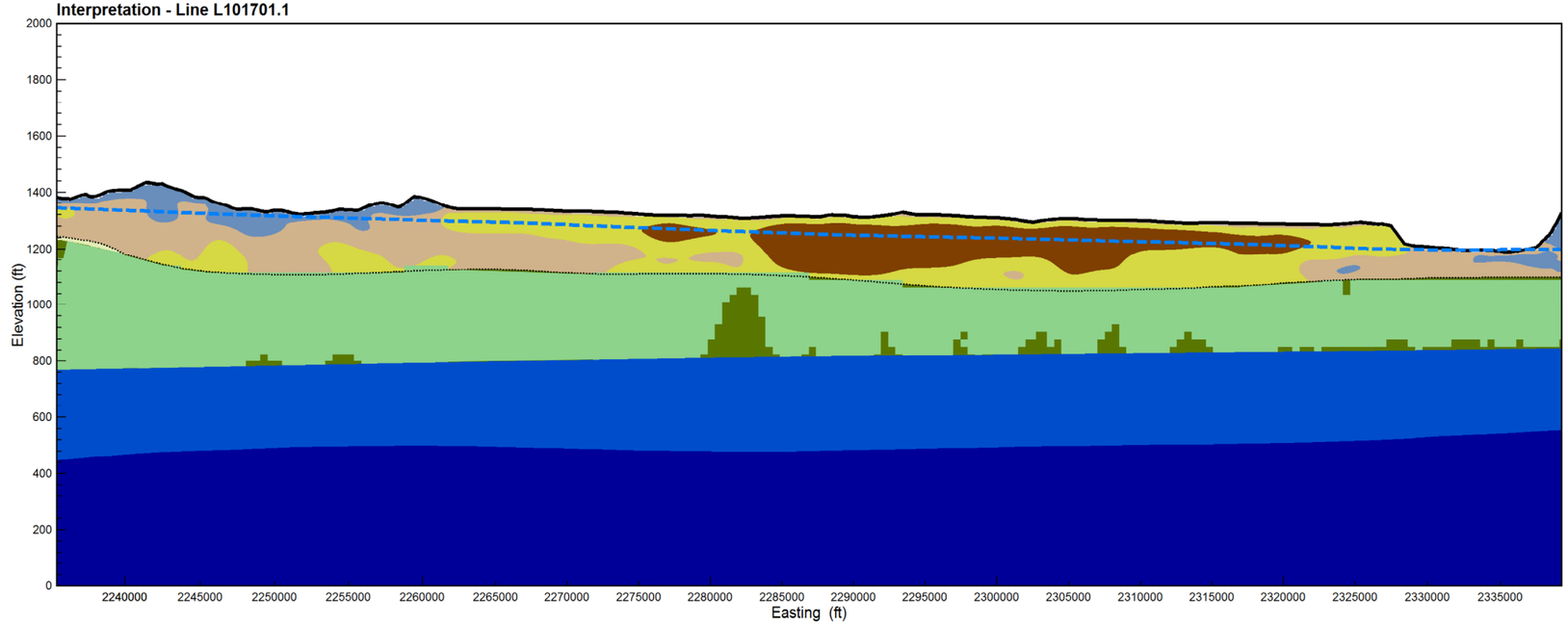
XRI
EXPLORATION RESOURCES INTERNATIONAL

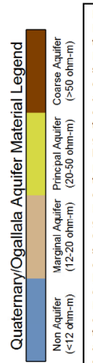
AEM Data - Line L101701.1

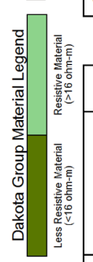




Interpretation - Line L101701.1







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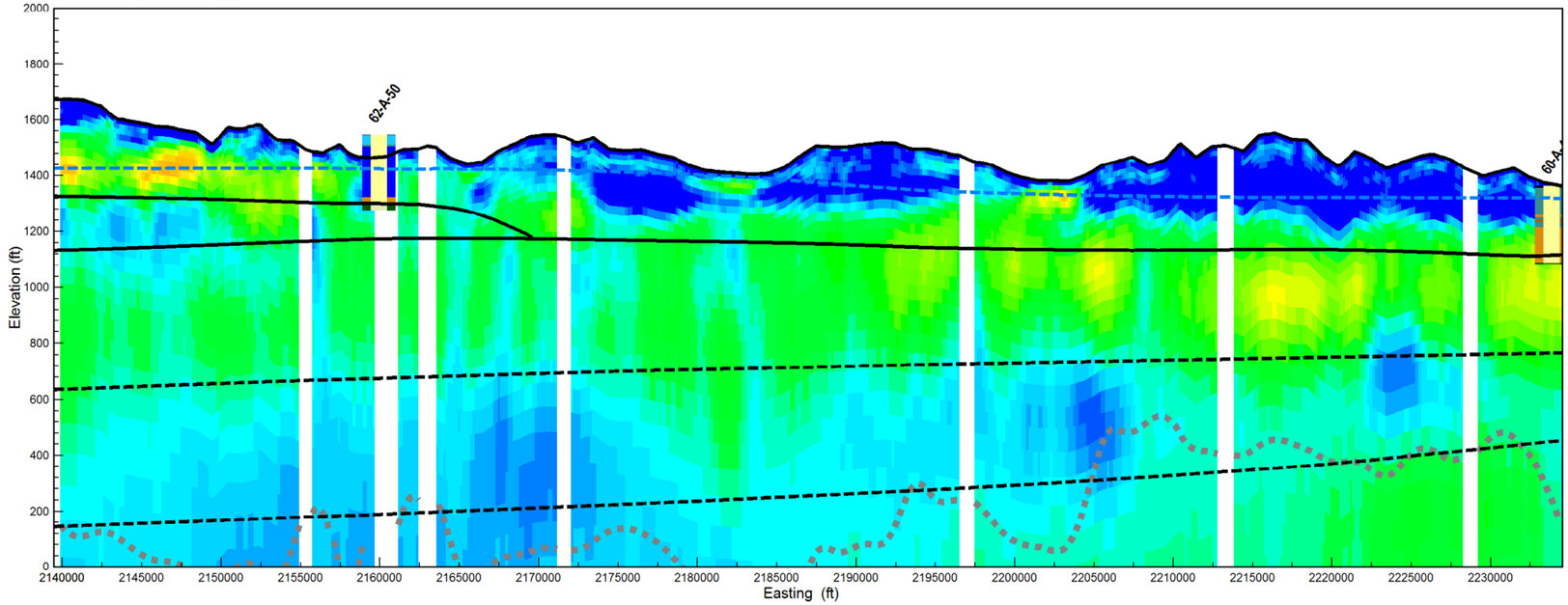
Lower Elkorn Natural Resources District

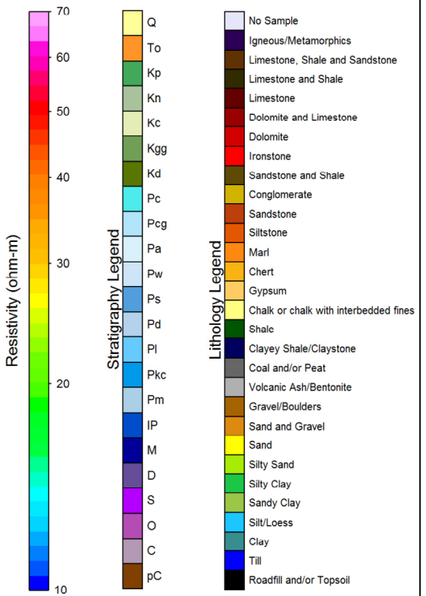
Airborne Geophysical Surveys
Resistivity and Geologic Interpretation Sections

Fall 2014 Grid and Reconnaissance Flights

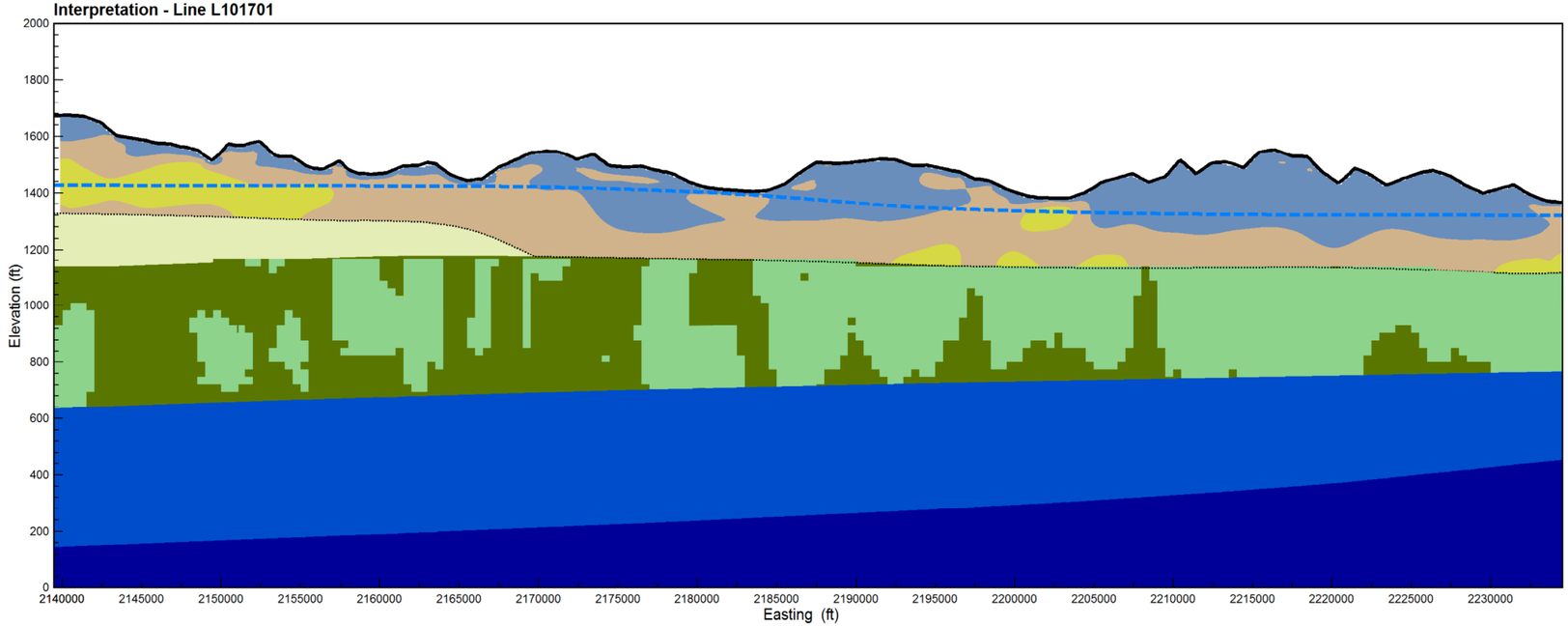
Flight Line L101701.1

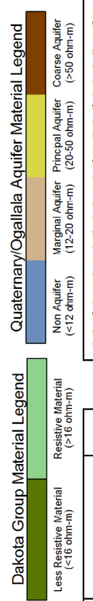
AEM Data - Line L101701





Interpretation - Line L101701





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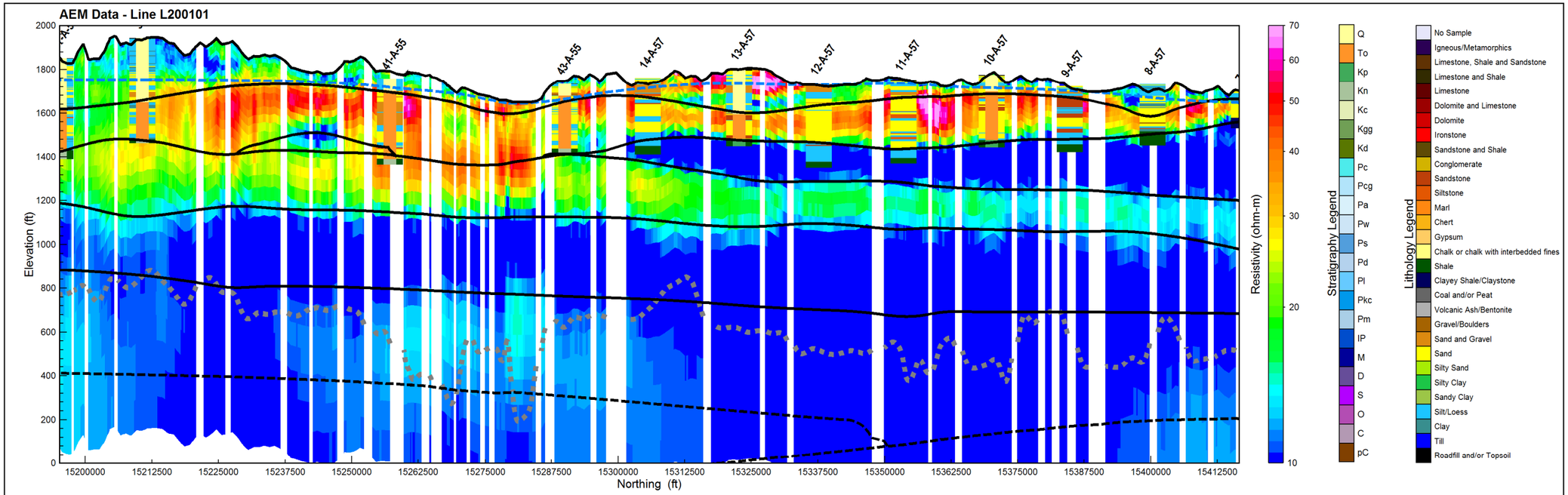
Lower Elkorn Natural Resources District

Airborne Geophysical Surveys
Resistivity and Geologic Interpretation Sections

Fall 2014 Grid and Reconnaissance Flights

Flight Line L101701

EXPLORATION RESOURCES INTERNATIONAL



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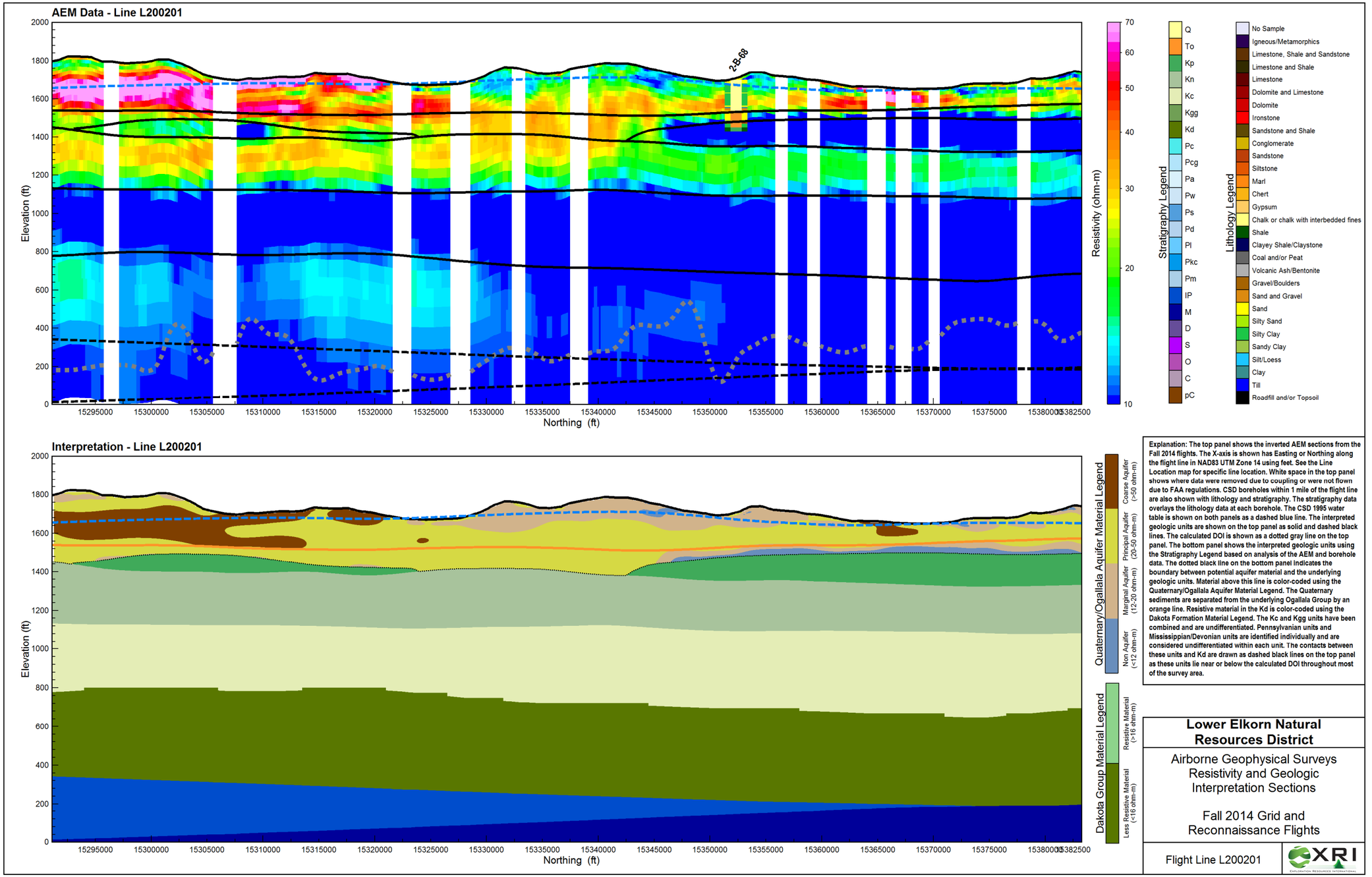
Lower Elkorn Natural Resources District

Airborne Geophysical Surveys
Resistivity and Geologic Interpretation Sections

Fall 2014 Grid and Reconnaissance Flights

Flight Line L200101

XRI Exploration Resources International



Explanation: The top panel shows the inverted AEM sections from the Fall 2014 flights. The X-axis is shown has Easting or Northing along the flight line in NAD83 UTM Zone 14 using feet. See the Line Location map for specific line location. White space in the top panel shows where data were removed due to coupling or were not flown due to FAA regulations. CSD boreholes within 1 mile of the flight line are also shown with lithology and stratigraphy. The stratigraphy data overlays the lithology data at each borehole. The CSD 1995 water table is shown on both panels as a dashed blue line. The interpreted geologic units are shown on the top panel as solid and dashed black lines. The calculated DOI is shown as a dotted gray line on the top panel. The bottom panel shows the interpreted geologic units using the Stratigraphy Legend based on analysis of the AEM and borehole data. The dotted black line on the bottom panel indicates the boundary between potential aquifer material and the underlying geologic units. Material above this line is color-coded using the Quaternary/Ogallala Aquifer Material Legend. The Quaternary sediments are separated from the underlying Ogallala Group by an orange line. Resistive material in the Kd is color-coded using the Dakota Formation Material Legend. The Kc and Kgg units have been combined and are undifferentiated. Pennsylvanian units and Mississippian/Devonian units are identified individually and are considered undifferentiated within each unit. The contacts between these units and Kd are drawn as dashed black lines on the top panel as these units lie near or below the calculated DOI throughout most of the survey area.

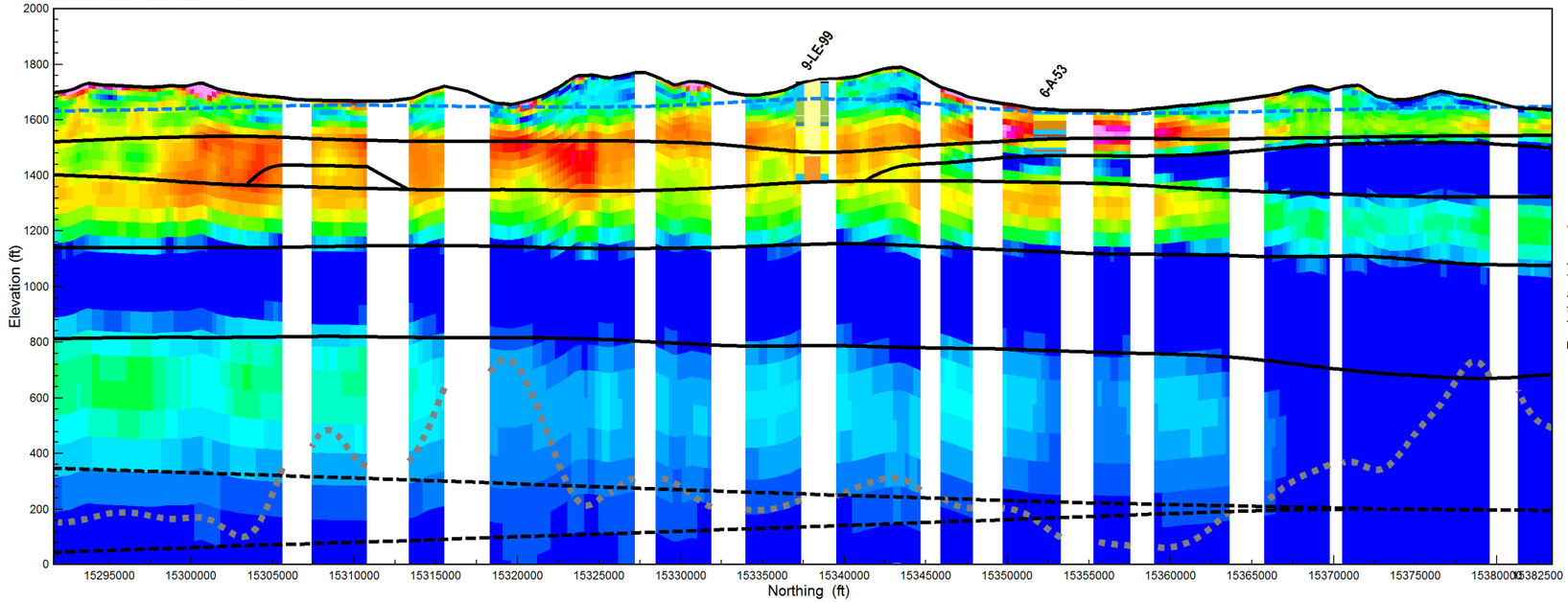
Lower Elkorn Natural Resources District

Airborne Geophysical Surveys
Resistivity and Geologic Interpretation Sections

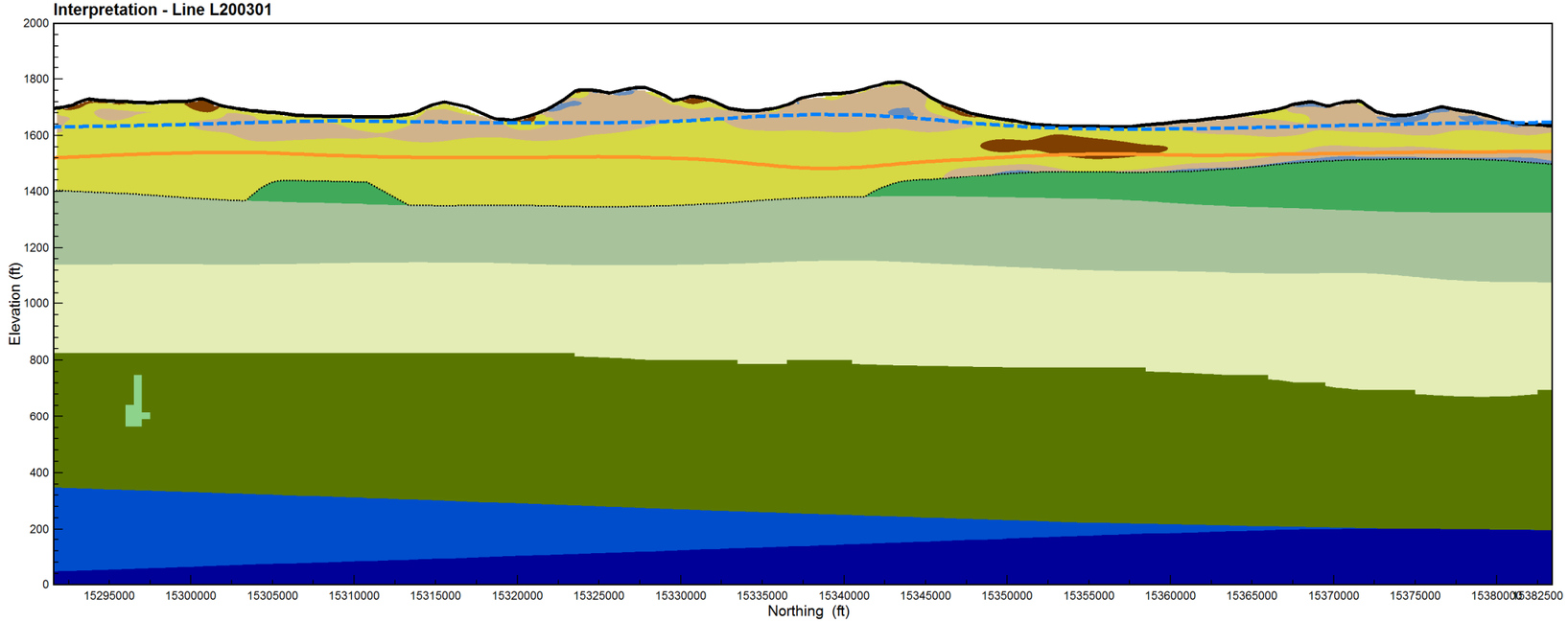
Fall 2014 Grid and Reconnaissance Flights

Flight Line L200201

AEM Data - Line L200301



Interpretation - Line L200301



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Lower Elkorn Natural Resources District

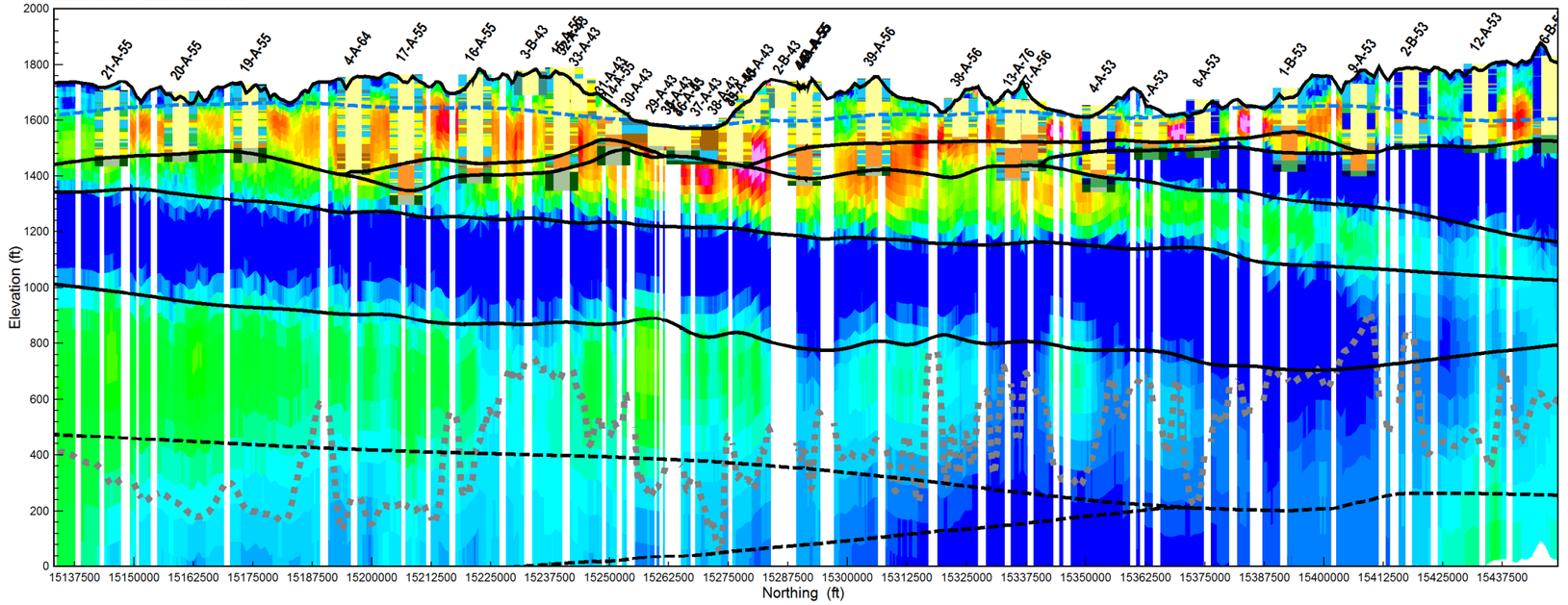
Airborne Geophysical Surveys
Resistivity and Geologic Interpretation Sections

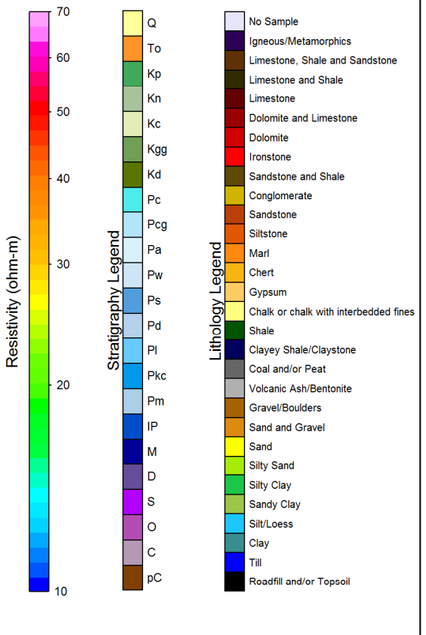
Fall 2014 Grid and Reconnaissance Flights

Flight Line L200301

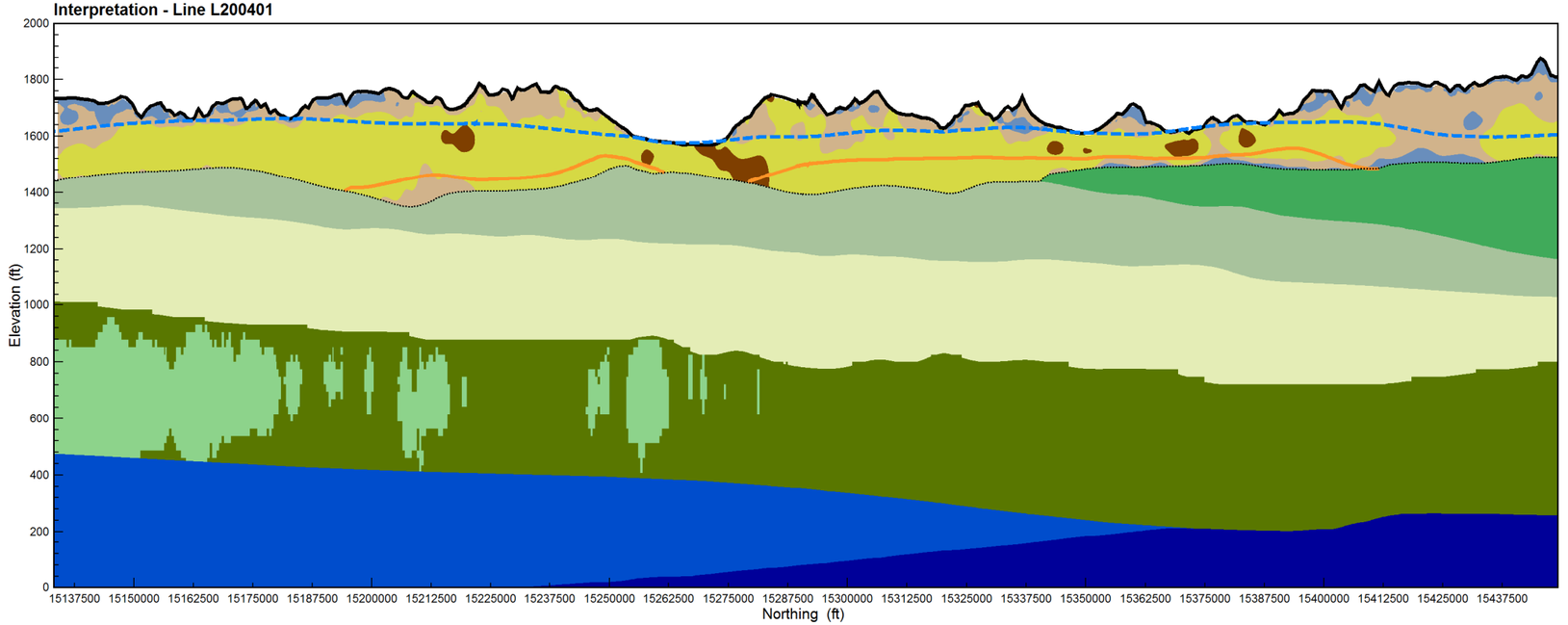
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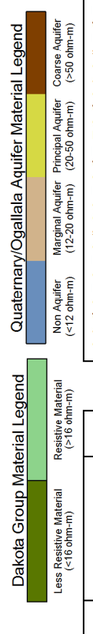
AEM Data - Line L200401





Interpretation - Line L200401





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Lower Elkorn Natural Resources District

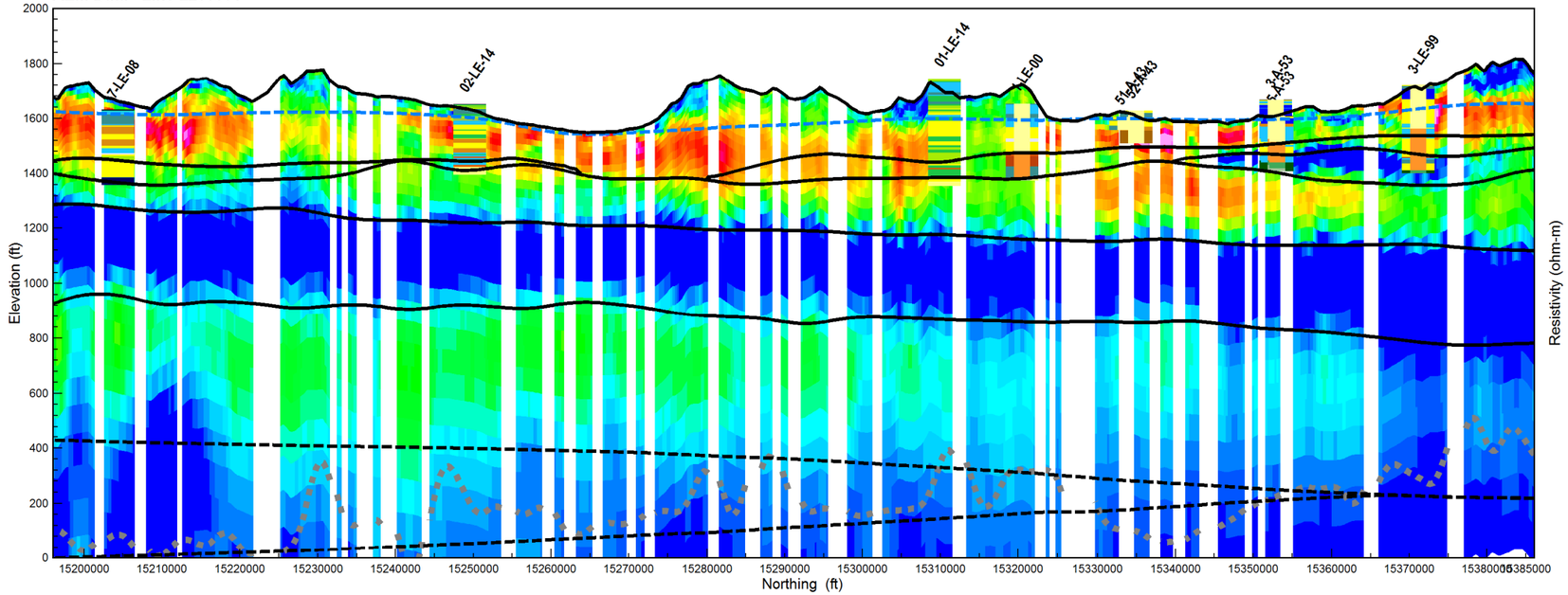
Airborne Geophysical Surveys
Resistivity and Geologic Interpretation Sections

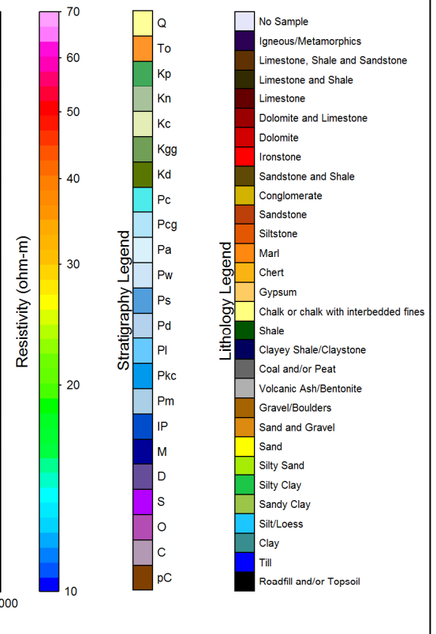
Fall 2014 Grid and Reconnaissance Flights

Flight Line L200401

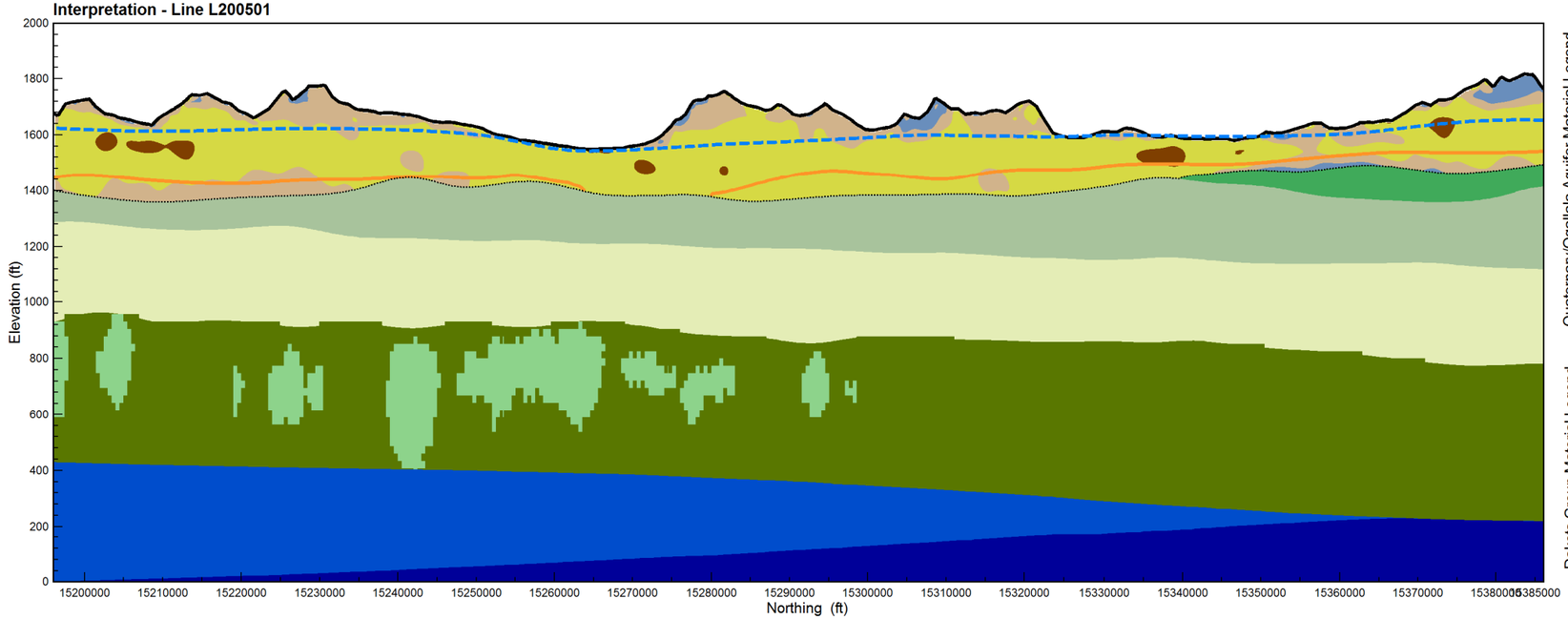
EXPLORATION RESOURCES INTERNATIONAL

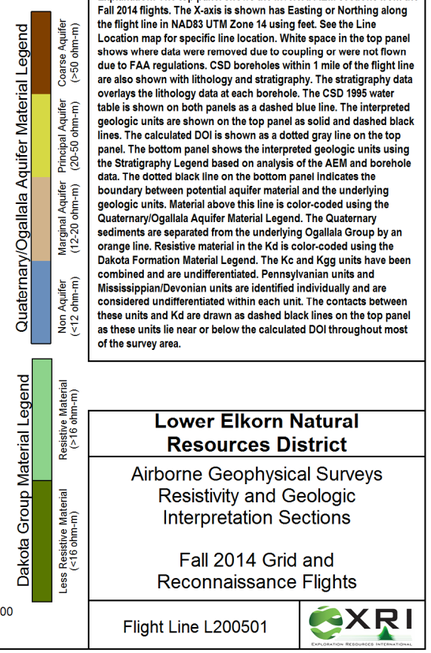
AEM Data - Line L200501





Interpretation - Line L200501





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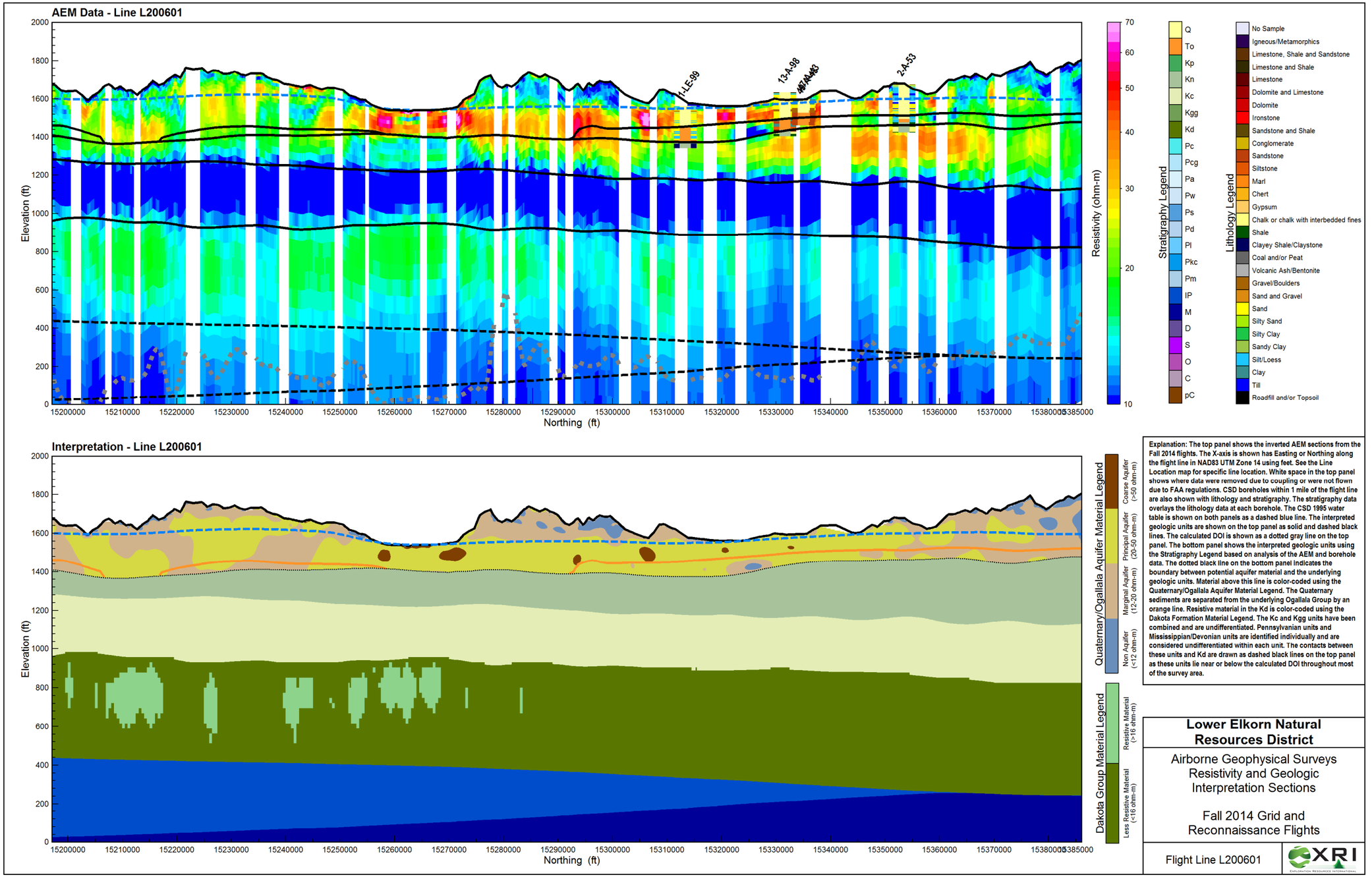
Lower Elkorn Natural Resources District

Airborne Geophysical Surveys
Resistivity and Geologic Interpretation Sections

Fall 2014 Grid and Reconnaissance Flights

Flight Line L200501

XRI
EXPLORATION RESOURCES INTERNATIONAL



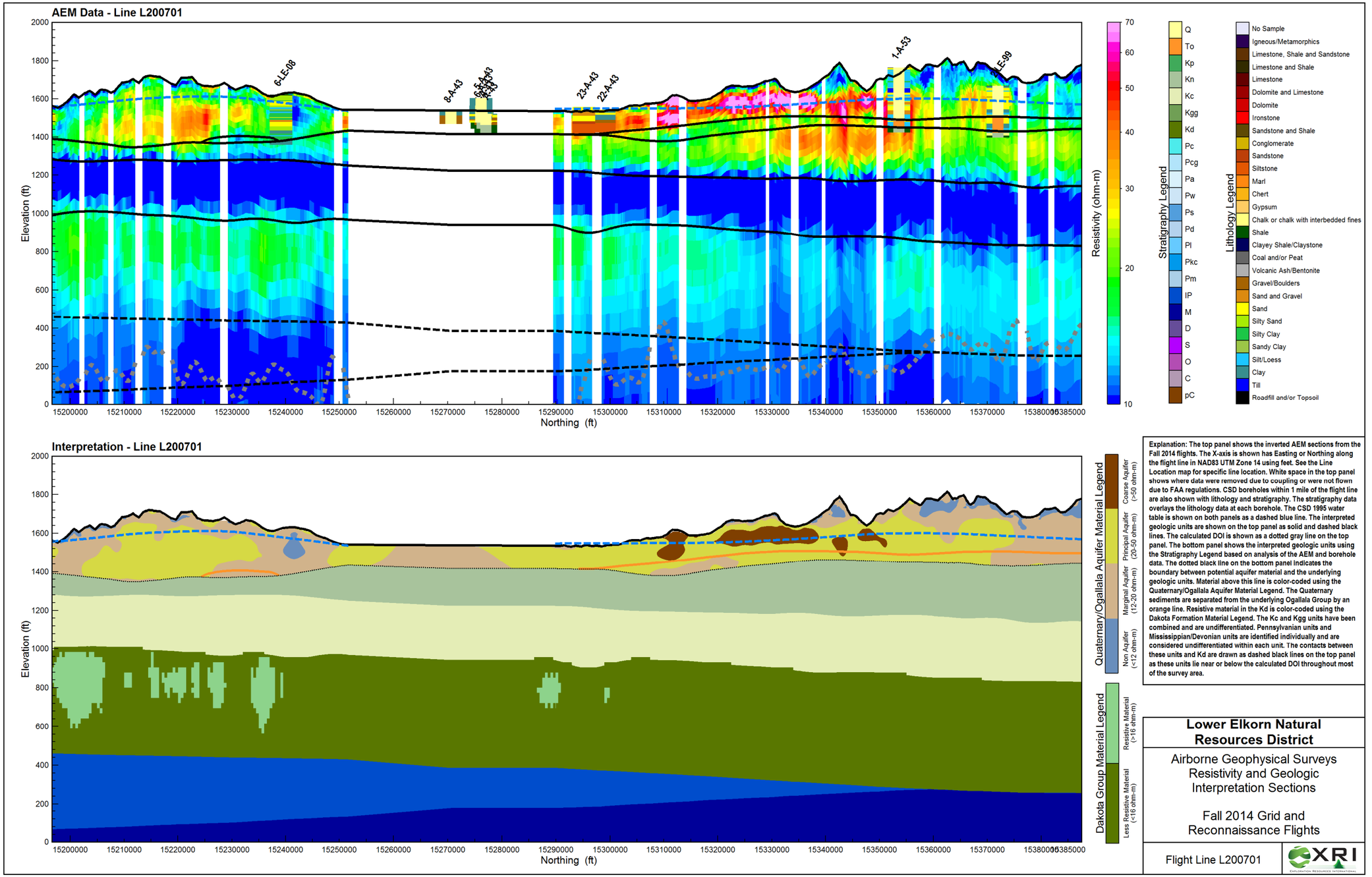
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Lower Elkorn Natural Resources District

Airborne Geophysical Surveys
Resistivity and Geologic Interpretation Sections

Fall 2014 Grid and Reconnaissance Flights

Flight Line L200601



Explanation: The top panel shows the inverted AEM sections from the Fall 2014 flights. The X-axis is shown has Easting or Northing along the flight line in NAD83 UTM Zone 14 using feet. See the Line Location map for specific line location. White space in the top panel shows where data were removed due to coupling or were not flown due to FAA regulations. CSD boreholes within 1 mile of the flight line are also shown with lithology and stratigraphy. The stratigraphy data overlays the lithology data at each borehole. The CSD 1995 water table is shown on both panels as a dashed blue line. The interpreted geologic units are shown on the top panel as solid and dashed black lines. The calculated DOI is shown as a dotted gray line on the top panel. The bottom panel shows the interpreted geologic units using the Stratigraphy Legend based on analysis of the AEM and borehole data. The dotted black line on the bottom panel indicates the boundary between potential aquifer material and the underlying geologic units. Material above this line is color-coded using the Quaternary/Ogallala Aquifer Material Legend. The Quaternary sediments are separated from the underlying Ogallala Group by an orange line. Resistive material in the Kd is color-coded using the Dakota Formation Material Legend. The Kc and Kgg units have been combined and are undifferentiated. Pennsylvanian units and Mississippian/Devonian units are identified individually and are considered undifferentiated within each unit. The contacts between these units and Kd are drawn as dashed black lines on the top panel as these units lie near or below the calculated DOI throughout most of the survey area.

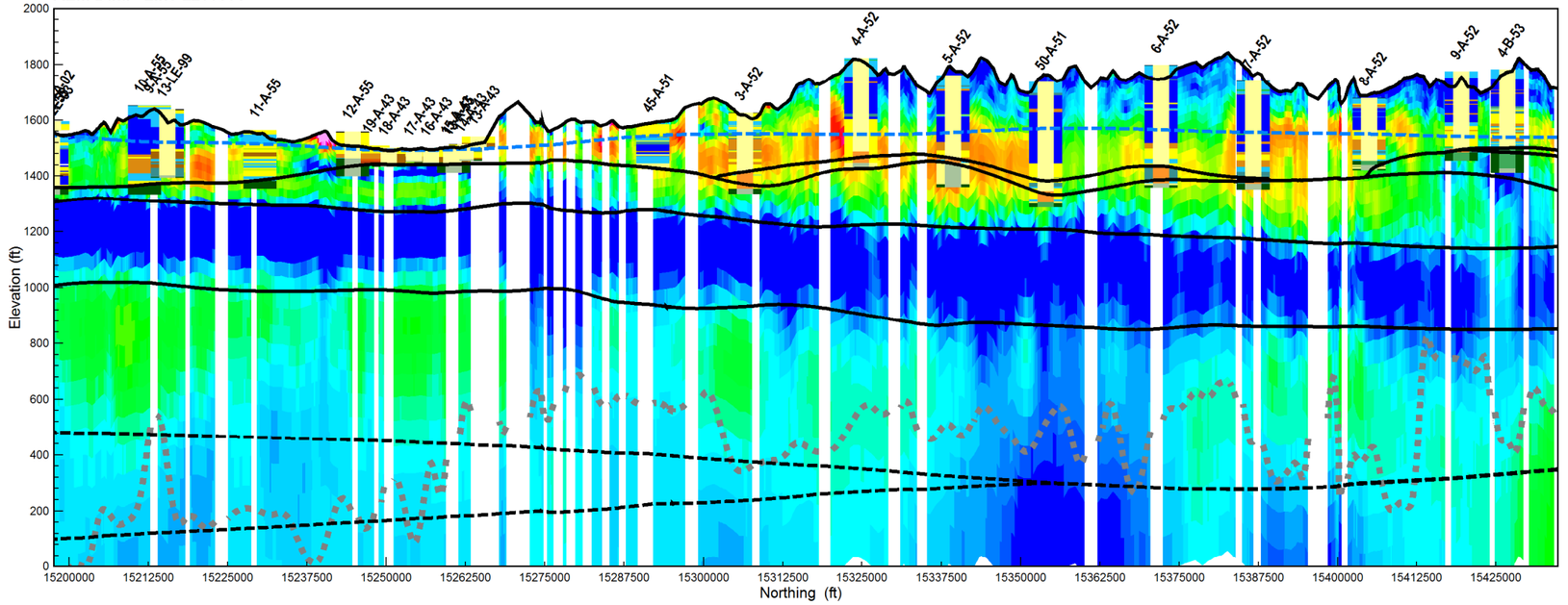
Lower Elkorn Natural Resources District

Airborne Geophysical Surveys
Resistivity and Geologic Interpretation Sections

Fall 2014 Grid and Reconnaissance Flights

Flight Line L200701

AEM Data - Line L200801

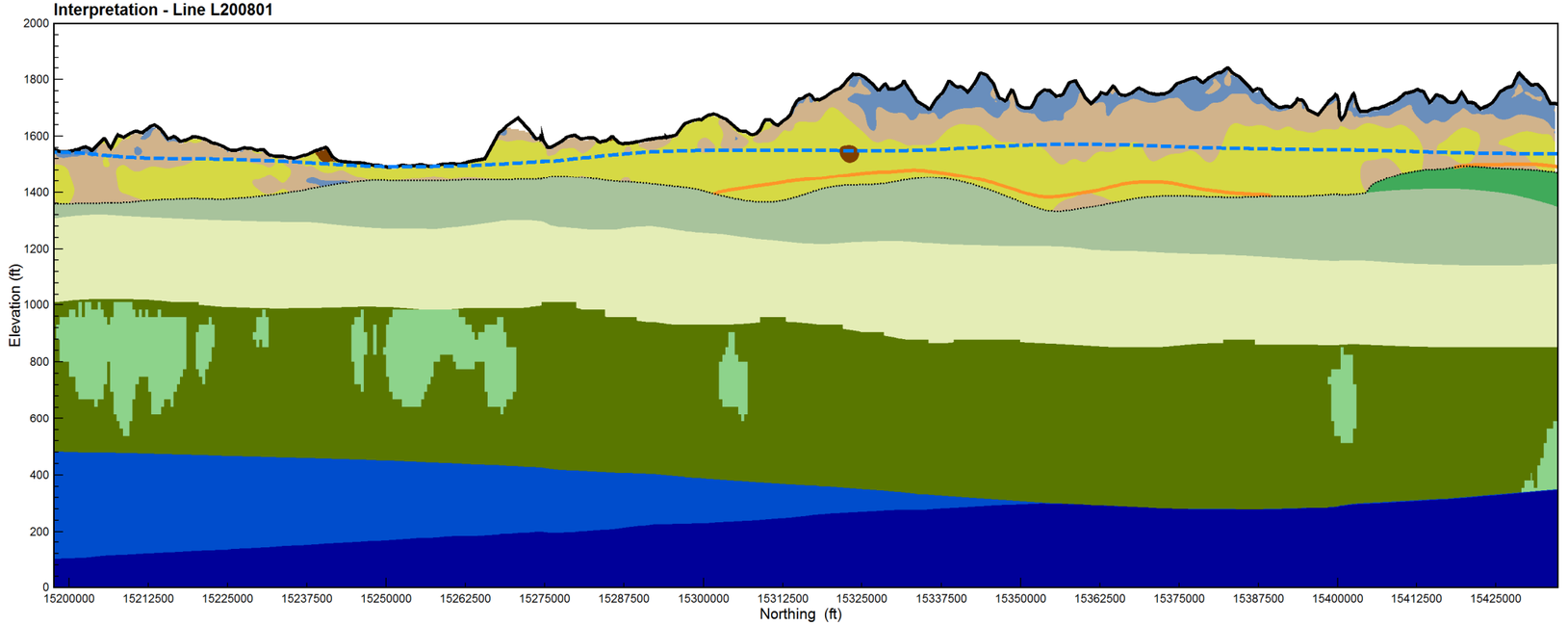


Resistivity (ohm-m): 10, 20, 30, 40, 50, 60, 70

Stratigraphy Legend: Q, To, Kp, Kn, Kc, Kgg, Kd, Pc, Pcg, Pa, Pw, Ps, Pd, Pl, Pkc, Pm, IP, M, D, S, O, C, pC

Lithology Legend: No Sample; Igneous/Metamorphics; Limestone, Shale and Sandstone; Limestone and Shale; Limestone; Dolomite and Limestone; Dolomite; Ironstone; Sandstone and Shale; Conglomerate; Sandstone; Siltstone; Marl; Chert; Gypsum; Chalk or chalk with interbedded fines; Shale; Clayey Shale/Claystone; Coal and/or Peat; Volcanic Ash/Bentonite; Gravel/Boulders; Sand and Gravel; Sand; Silty Sand; Silty Clay; Sandy Clay; Silt/Loess; Clay; Till; Roadfill and/or Topsoil

Interpretation - Line L200801



Quaternary/Ogallala Aquifer Material Legend: Coarse Aquifer (>50 ohm-m); Principal Aquifer (20-50 ohm-m); Marginal Aquifer (12-20 ohm-m); Non Aquifer (<12 ohm-m)

Dakota Group Material Legend: Resistive Material (>16 ohm-m); Less Resistive Material (<16 ohm-m)

Explanation: The top panel shows the inverted AEM sections from the Fall 2014 flights. The X-axis is shown has Easting or Northing along the flight line in NAD83 UTM Zone 14 using feet. See the Line Location map for specific line location. White space in the top panel shows where data were removed due to coupling or were not flown due to FAA regulations. CSD boreholes within 1 mile of the flight line are also shown with lithology and stratigraphy. The stratigraphy data overlays the lithology data at each borehole. The CSD 1995 water table is shown on both panels as a dashed blue line. The interpreted geologic units are shown on the top panel as solid and dashed black lines. The calculated DOI is shown as a dotted gray line on the top panel. The bottom panel shows the interpreted geologic units using the Stratigraphy Legend based on analysis of the AEM and borehole data. The dotted black line on the bottom panel indicates the boundary between potential aquifer material and the underlying geologic units. Material above this line is color-coded using the Quaternary/Ogallala Aquifer Material Legend. The Quaternary sediments are separated from the underlying Ogallala Group by an orange line. Resistive material in the Kd is color-coded using the Dakota Formation Material Legend. The Kc and Kgg units have been combined and are undifferentiated. Pennsylvanian units and Mississippian/Devonian units are identified individually and are considered undifferentiated within each unit. The contacts between these units and Kd are drawn as dashed black lines on the top panel as these units lie near or below the calculated DOI throughout most of the survey area.

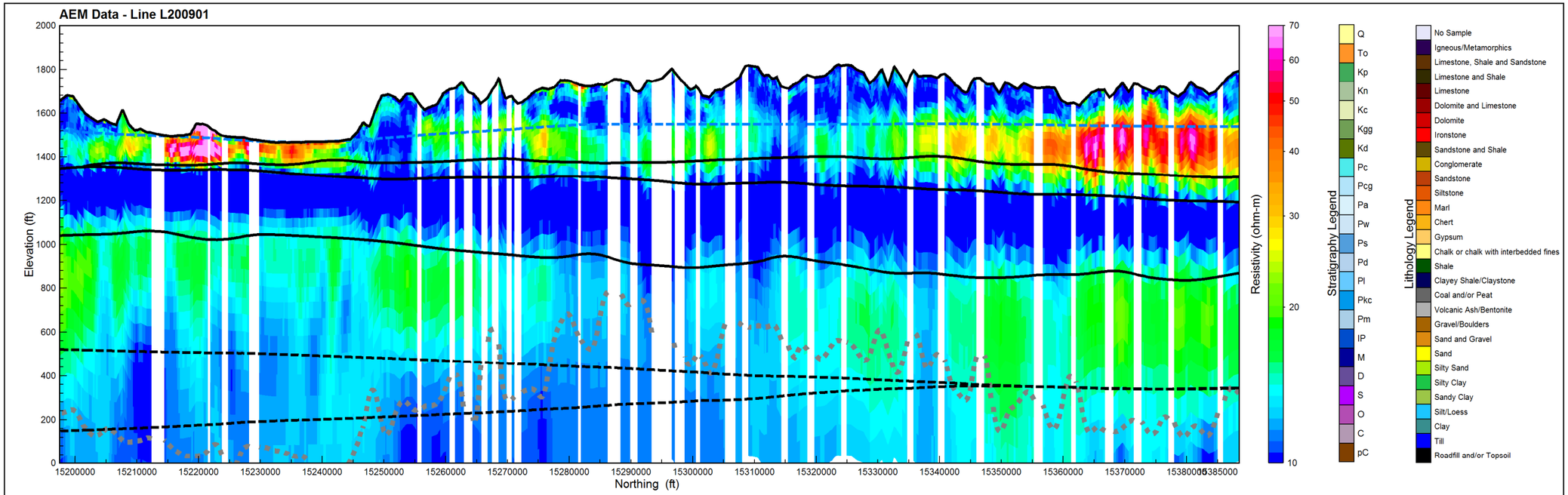
Lower Elkorn Natural Resources District

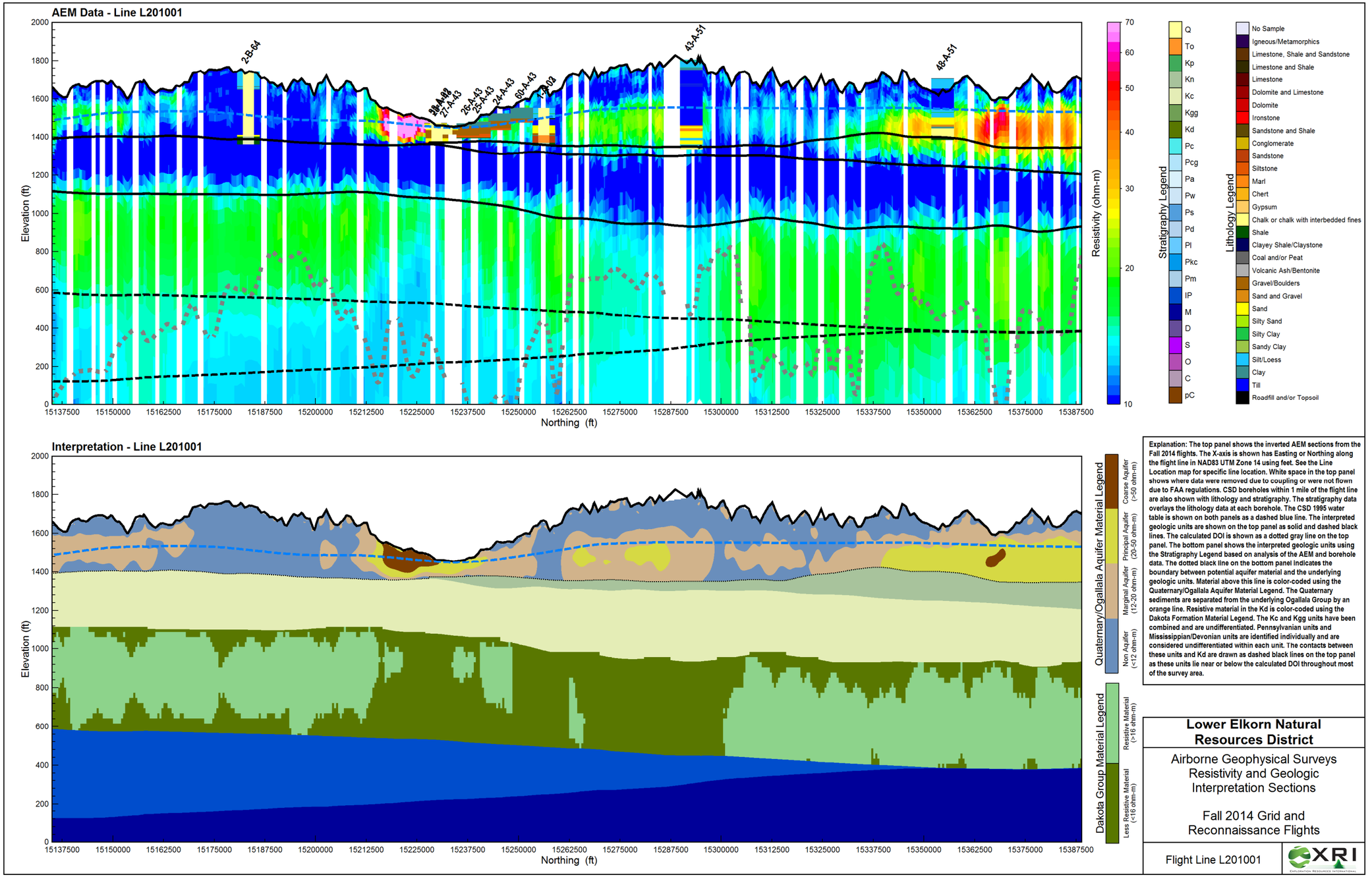
Airborne Geophysical Surveys
Resistivity and Geologic Interpretation Sections

Fall 2014 Grid and Reconnaissance Flights

Flight Line L200801

XRI Exploration Resources International


AEM Data - Line L200901
Elevation (ft)
Northing (ft)
Resistivity (ohm-m)
Stratigraphy Legend
Q
To
Kp
Kn
Kc
Kgg
Kd
Pc
Pcg
Pa
Pw
Ps
Pd
Pl
Pkc
Pm
IP
M
D
S
O
C
pC
Lithology Legend
No Sample
Igneous/Metamorphics
Limestone, Shale and Sandstone
Limestone and Shale
Limestone
Dolomite and Limestone
Dolomite
Ironstone
Sandstone and Shale
Conglomerate
Sandstone
Siltstone
Marl
Chert
Gypsum
Chalk or chalk with interbedded fines
Shale
Clayey Shale/Claystone
Coal and/or Peat
Volcanic Ash/Bentonite
Gravel/Boulders
Sand and Gravel
Sand
Silty Sand
Silty Clay
Sandy Clay
Silt/Loess
Clay
Till
Roadfill and/or Topsoil
Interpretation - Line L200901
Quaternary/Ogallala Aquifer Material Legend
Coarse Aquifer (>50 ohm-m)
Principal Aquifer (20-50 ohm-m)
Marginal Aquifer (12-20 ohm-m)
Non Aquifer (<12 ohm-m)
Dakota Group Material Legend
Resistive Material (>16 ohm-m)
Less Resistive Material (<16 ohm-m)
Explanation: The top panel shows the inverted AEM sections from the Fall 2014 flights. The X-axis is shown has Easting or Northing along the flight line in NAD83 UTM Zone 14 using feet. See the Line Location map for specific line location. White space in the top panel shows where data were removed due to coupling or were not flown due to FAA regulations. CSD boreholes within 1 mile of the flight line are also shown with lithology and stratigraphy. The stratigraphy data overlays the lithology data at each borehole. The CSD 1995 water table is shown on both panels as a dashed blue line. The interpreted geologic units are shown on the top panel as solid and dashed black lines. The calculated DOI is shown as a dotted gray line on the top panel. The bottom panel shows the interpreted geologic units using the Stratigraphy Legend based on analysis of the AEM and borehole data. The dotted black line on the bottom panel indicates the boundary between potential aquifer material and the underlying geologic units. Material above this line is color-coded using the Quaternary/Ogallala Aquifer Material Legend. The Quaternary sediments are separated from the underlying Ogallala Group by an orange line. Resistive material in the Kd is color-coded using the Dakota Formation Material Legend. The Kc and Kgg units have been combined and are undifferentiated. Pennsylvanian units and Mississippian/Devonian units are identified individually and are considered undifferentiated within each unit. The contacts between these units and Kd are drawn as dashed black lines on the top panel as these units lie near or below the calculated DOI throughout most of the survey area.
Lower Elkorn Natural Resources District
Airborne Geophysical Surveys
Resistivity and Geologic Interpretation Sections
Fall 2014 Grid and Reconnaissance Flights
Flight Line L200901
EXPLORATION RESOURCES INTERNATIONAL



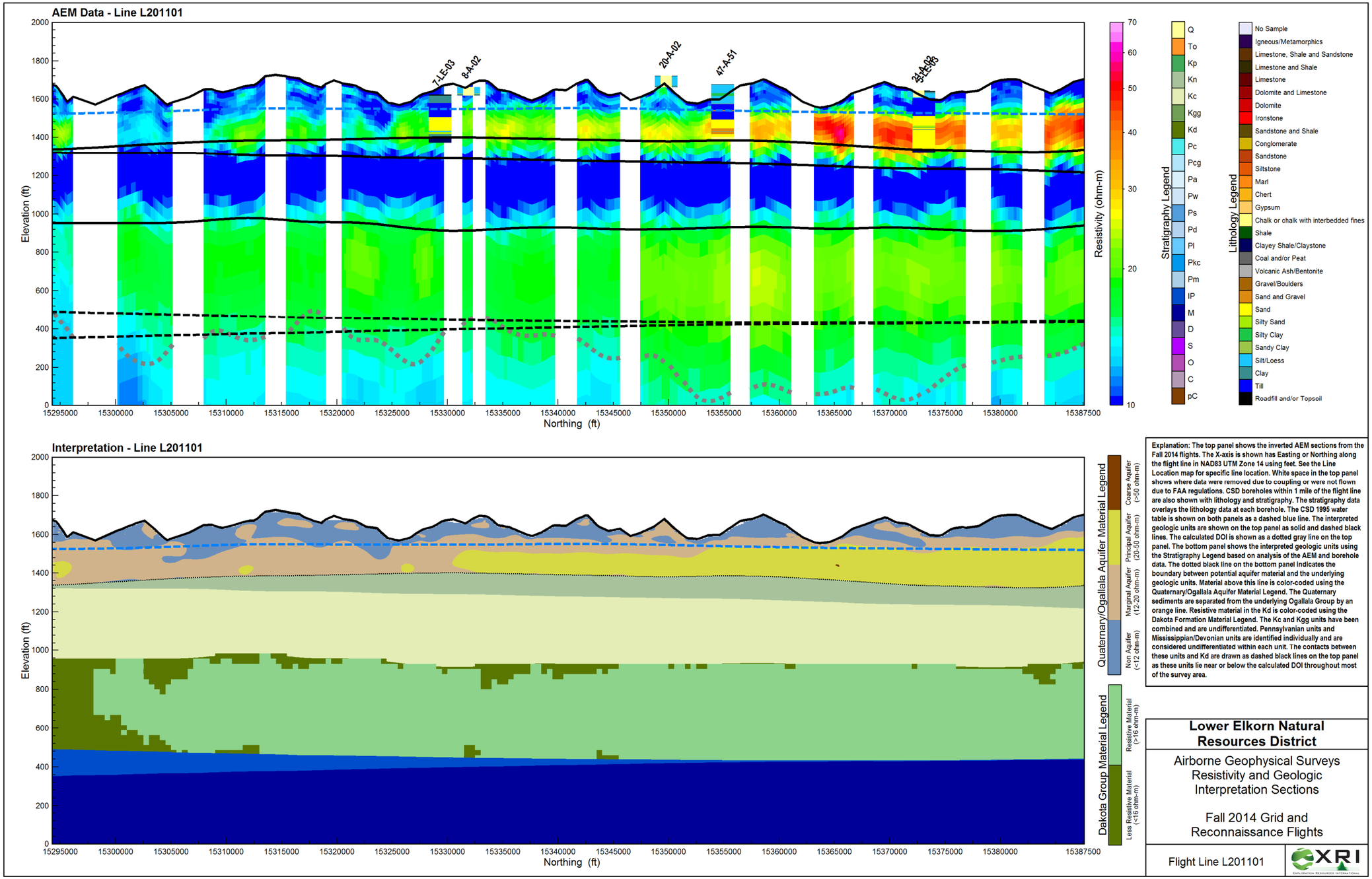
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Lower Elkorn Natural Resources District

Airborne Geophysical Surveys
Resistivity and Geologic Interpretation Sections

Fall 2014 Grid and Reconnaissance Flights

Flight Line L201001



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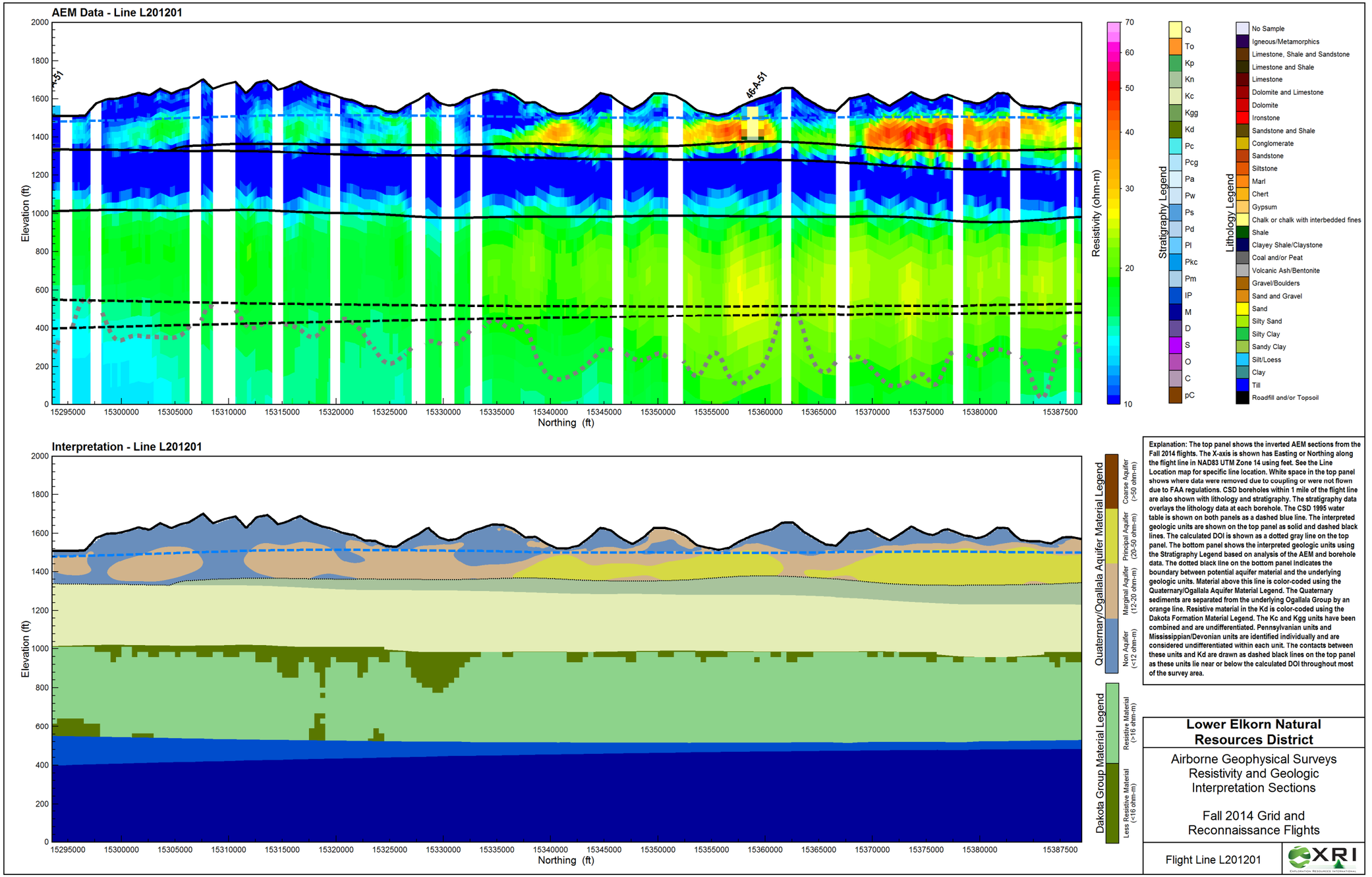
Lower Elkorn Natural Resources District

Airborne Geophysical Surveys
Resistivity and Geologic Interpretation Sections

Fall 2014 Grid and Reconnaissance Flights

Flight Line L201101

XRI
EXPLORATION RESOURCES INTERNATIONAL



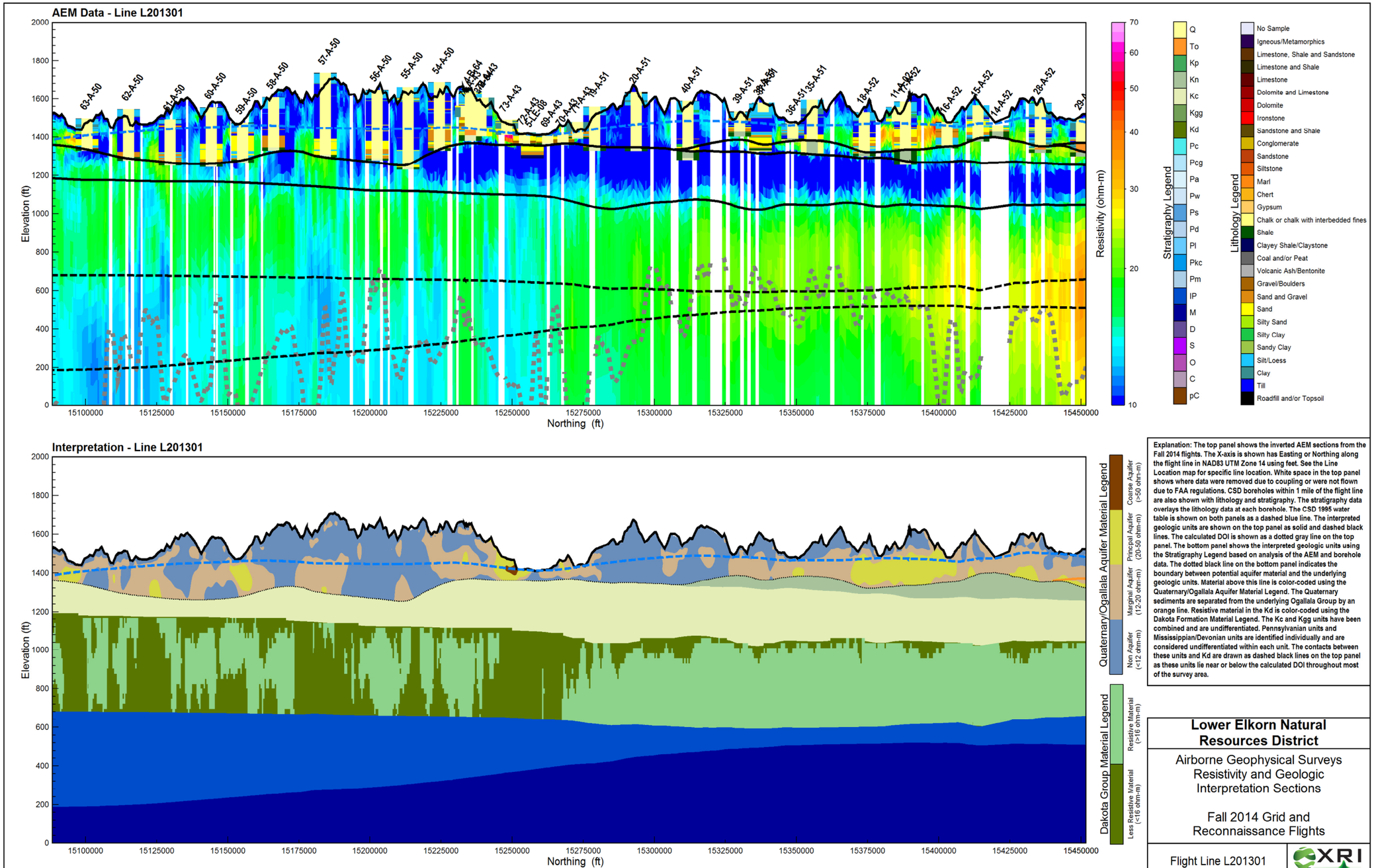
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Lower Elkorn Natural Resources District

Airborne Geophysical Surveys
Resistivity and Geologic Interpretation Sections

Fall 2014 Grid and Reconnaissance Flights

Flight Line L201201



Explanation: The top panel shows the inverted AEM sections from the Fall 2014 flights. The X-axis is shown has Easting or Northing along the flight line in NAD83 UTM Zone 14 using feet. See the Line Location map for specific line location. White space in the top panel shows where data were removed due to coupling or were not flown due to FAA regulations. CSD boreholes within 1 mile of the flight line are also shown with lithology and stratigraphy. The stratigraphy data overlays the lithology data at each borehole. The CSD 1995 water table is shown on both panels as a dashed blue line. The interpreted geologic units are shown on the top panel as solid and dashed black lines. The calculated DOI is shown as a dotted gray line on the top panel. The bottom panel shows the interpreted geologic units using the Stratigraphy Legend based on analysis of the AEM and borehole data. The dotted black line on the bottom panel indicates the boundary between potential aquifer material and the underlying geologic units. Material above this line is color-coded using the Quaternary/Ogallala Aquifer Material Legend. The Quaternary sediments are separated from the underlying Ogallala Group by an orange line. Resistive material in the Kd is color-coded using the Dakota Formation Material Legend. The Kc and Kgg units have been combined and are undifferentiated. Pennsylvanian units and Mississippian/Devonian units are identified individually and are considered undifferentiated within each unit. The contacts between these units and Kd are drawn as dashed black lines on the top panel as these units lie near or below the calculated DOI throughout most of the survey area.

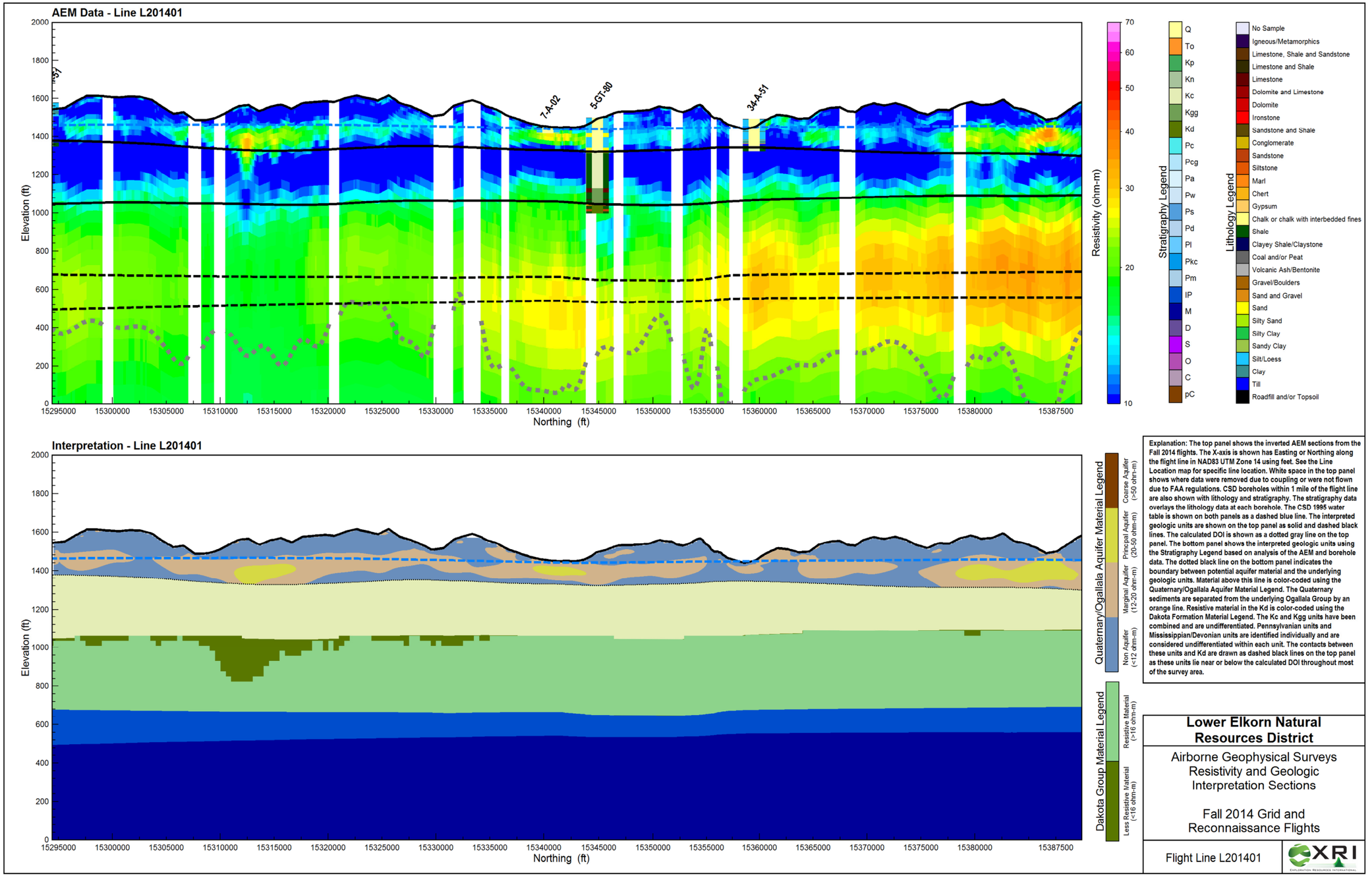
Lower Elkorn Natural Resources District

Airborne Geophysical Surveys
Resistivity and Geologic Interpretation Sections

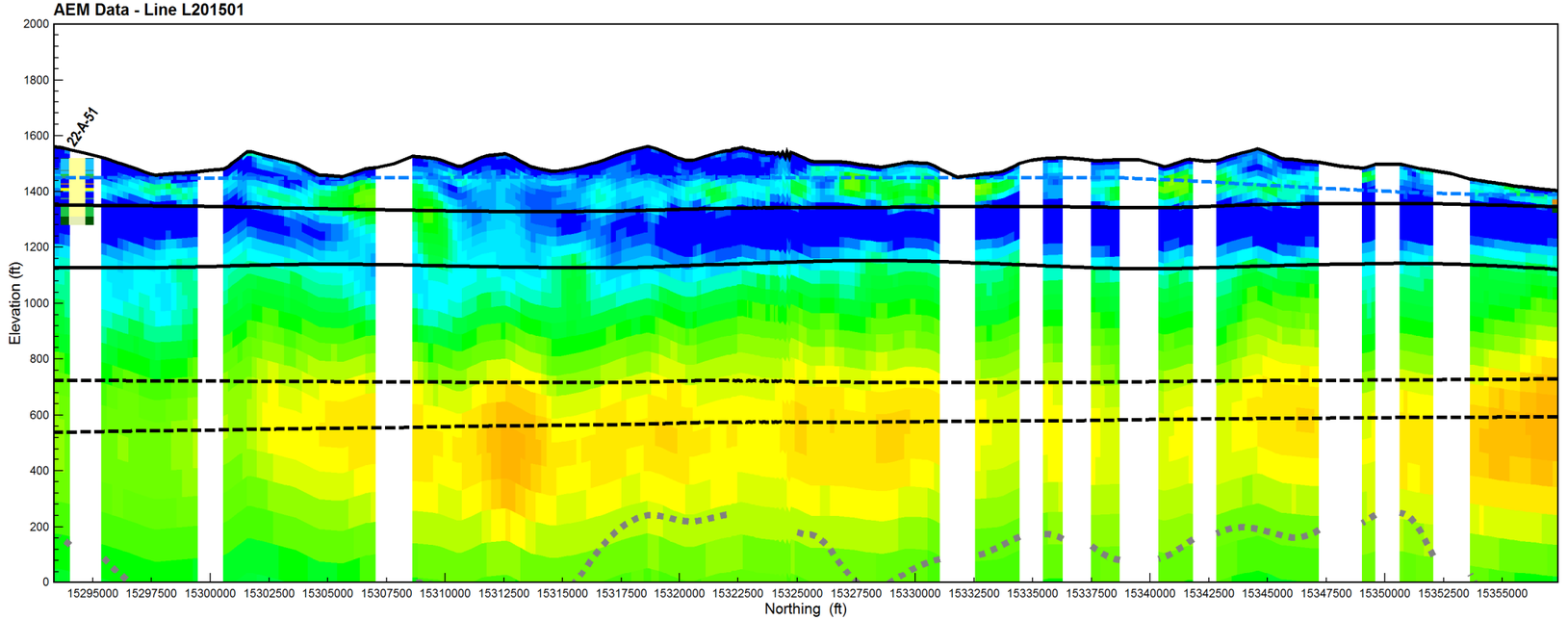
Fall 2014 Grid and Reconnaissance Flights

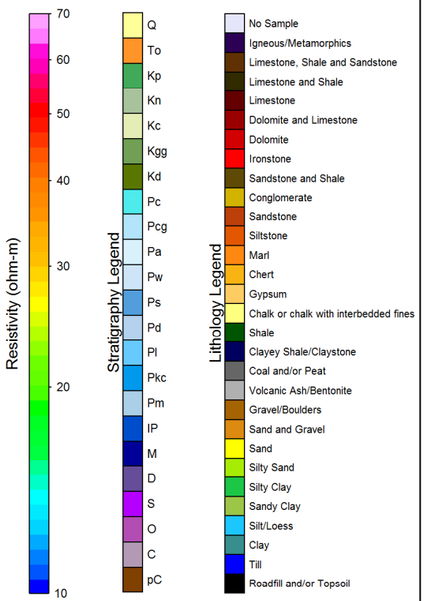
Flight Line L201301

XRI
EXPLORATION RESOURCES INTERNATIONAL

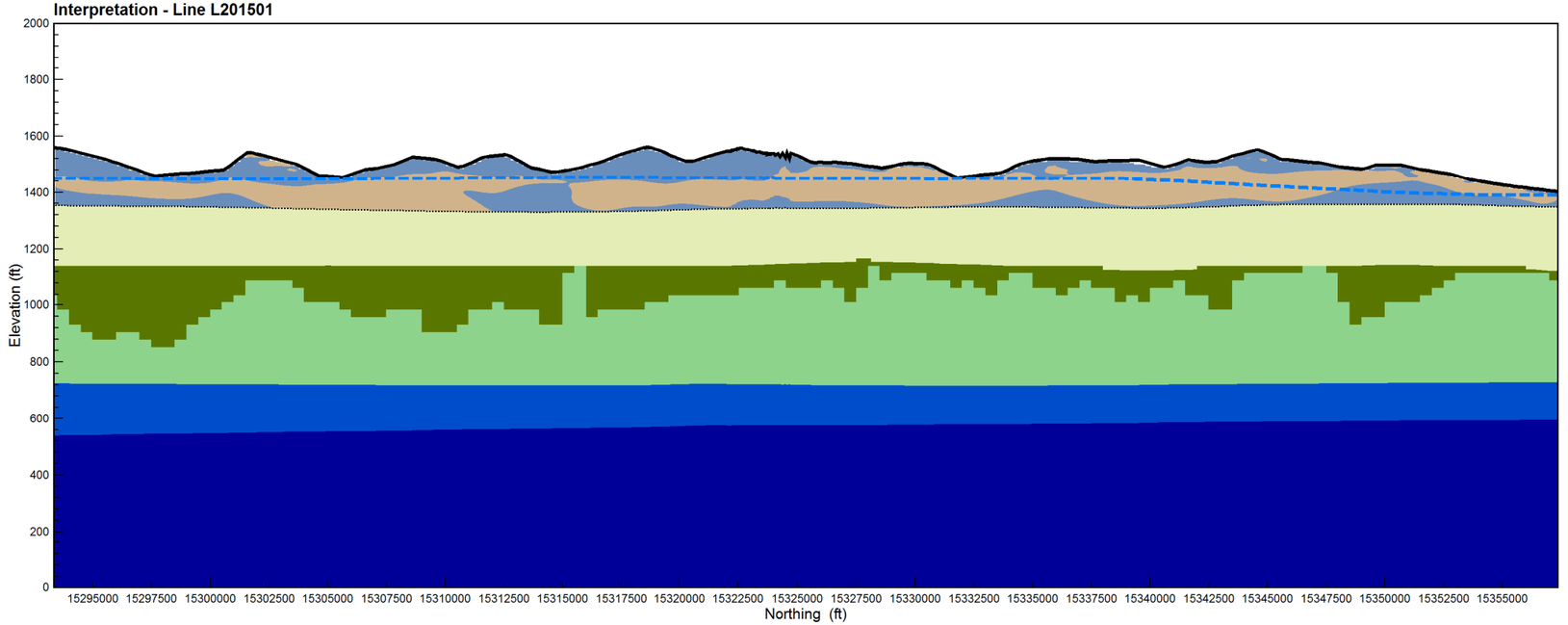

AEM Data - Line L201401
Elevation (ft)
Northing (ft)
7-A-02
5-GT-80
34-A-51
Resistivity (ohm-m)
Stratigraphy Legend
Q
To
Kp
Kn
Kc
Kgg
Kd
Pc
Pcg
Pa
Pw
Ps
Pd
Pl
Pkc
Pm
IP
M
D
S
O
C
pC
Lithology Legend
No Sample
Igneous/Metamorphics
Limestone, Shale and Sandstone
Limestone and Shale
Limestone
Dolomite and Limestone
Dolomite
Ironstone
Sandstone and Shale
Conglomerate
Sandstone
Siltstone
Marl
Chert
Gypsum
Chalk or chalk with interbedded fines
Shale
Clayey Shale/Claystone
Coal and/or Peat
Volcanic Ash/Bentonite
Gravel/Boulders
Sand and Gravel
Sand
Silty Sand
Silty Clay
Sandy Clay
Silt/Loess
Clay
Till
Roadfill and/or Topsoil
Interpretation - Line L201401
Quaternary/Ogallala Aquifer Material Legend
Coarse Aquifer (>50 ohm-m)
Principal Aquifer (20-50 ohm-m)
Marginal Aquifer (12-20 ohm-m)
Non Aquifer (<12 ohm-m)
Dakota Group Material Legend
Resistive Material (>16 ohm-m)
Less Resistive Material (<16 ohm-m)
Explanation: The top panel shows the inverted AEM sections from the Fall 2014 flights. The X-axis is shown has Easting or Northing along the flight line in NAD83 UTM Zone 14 using feet. See the Line Location map for specific line location. White space in the top panel shows where data were removed due to coupling or were not flown due to FAA regulations. CSD boreholes within 1 mile of the flight line are also shown with lithology and stratigraphy. The stratigraphy data overlays the lithology data at each borehole. The CSD 1995 water table is shown on both panels as a dashed blue line. The interpreted geologic units are shown on the top panel as solid and dashed black lines. The calculated DOI is shown as a dotted gray line on the top panel. The bottom panel shows the interpreted geologic units using the Stratigraphy Legend based on analysis of the AEM and borehole data. The dotted black line on the bottom panel indicates the boundary between potential aquifer material and the underlying geologic units. Material above this line is color-coded using the Quaternary/Ogallala Aquifer Material Legend. The Quaternary sediments are separated from the underlying Ogallala Group by an orange line. Resistive material in the Kd is color-coded using the Dakota Formation Material Legend. The Kc and Kgg units have been combined and are undifferentiated. Pennsylvanian units and Mississippian/Devonian units are identified individually and are considered undifferentiated within each unit. The contacts between these units and Kd are drawn as dashed black lines on the top panel as these units lie near or below the calculated DOI throughout most of the survey area.
Lower Elkorn Natural Resources District
Airborne Geophysical Surveys
Resistivity and Geologic Interpretation Sections
Fall 2014 Grid and Reconnaissance Flights
Flight Line L201401
XRI
EXPLORATION RESOURCES INTERNATIONAL

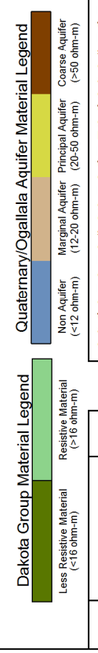
AEM Data - Line L201501





Interpretation - Line L201501





Explanation: The top panel shows the inverted AEM sections from the Fall 2014 flights. The X-axis is shown has Easting or Northing along the flight line in NAD83 UTM Zone 14 using feet. See the Line Location map for specific line location. White space in the top panel shows where data were removed due to coupling or were not flown due to FAA regulations. CSD boreholes within 1 mile of the flight line are also shown with lithology and stratigraphy. The stratigraphy data overlays the lithology data at each borehole. The CSD 1995 water table is shown on both panels as a dashed blue line. The interpreted geologic units are shown on the top panel as solid and dashed black lines. The calculated DOI is shown as a dotted gray line on the top panel. The bottom panel shows the interpreted geologic units using the Stratigraphy Legend based on analysis of the AEM and borehole data. The dotted black line on the bottom panel indicates the boundary between potential aquifer material and the underlying geologic units. Material above this line is color-coded using the Quaternary/Ogallala Aquifer Material Legend. The Quaternary sediments are separated from the underlying Ogallala Group by an orange line. Resistive material in the Kd is color-coded using the Dakota Formation Material Legend. The Kc and Kgg units have been combined and are undifferentiated. Pennsylvanian units and Mississippian/Devonian units are identified individually and are considered undifferentiated within each unit. The contacts between these units and Kd are drawn as dashed black lines on the top panel as these units lie near or below the calculated DOI throughout most of the survey area.

Lower Elkorn Natural Resources District

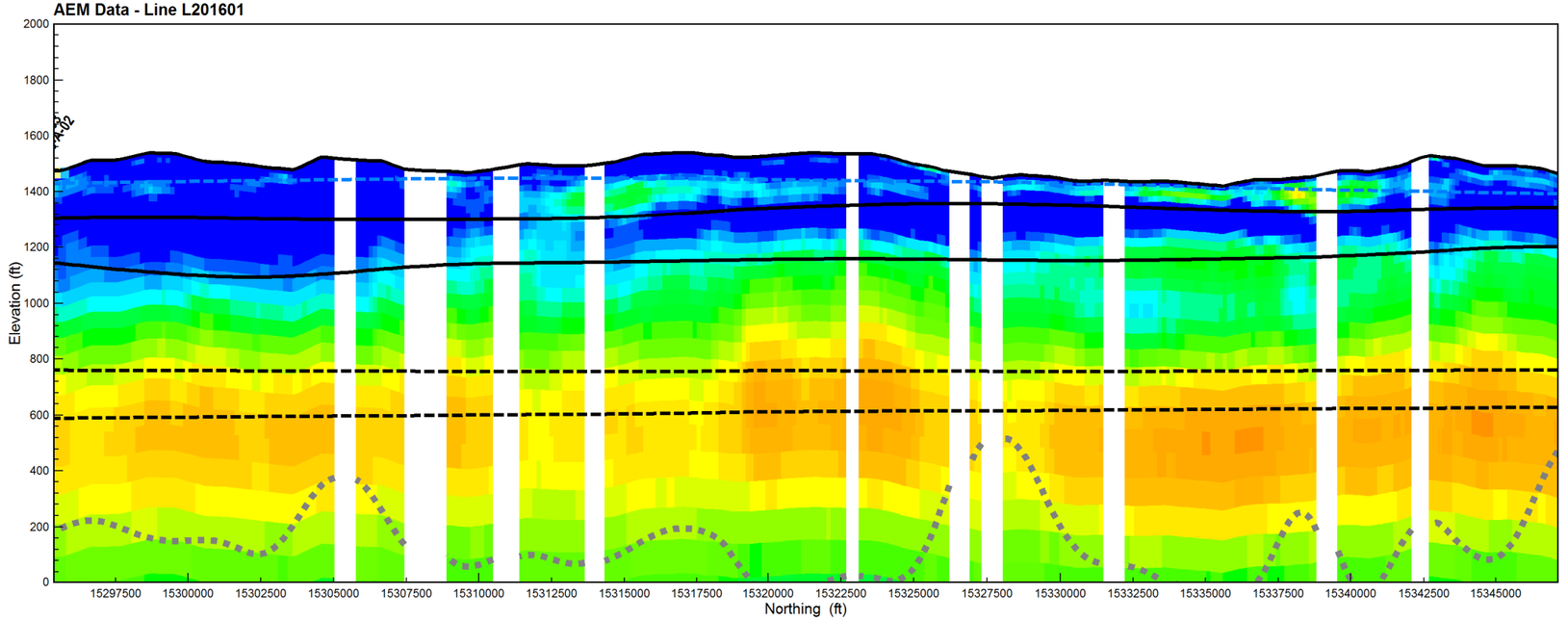
Airborne Geophysical Surveys
Resistivity and Geologic Interpretation Sections

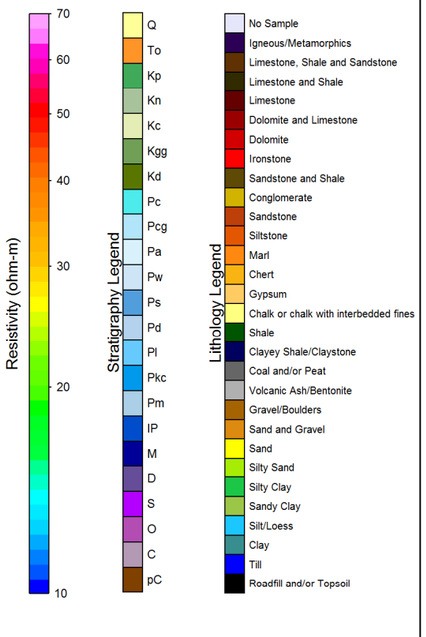
Fall 2014 Grid and Reconnaissance Flights

Flight Line L201501

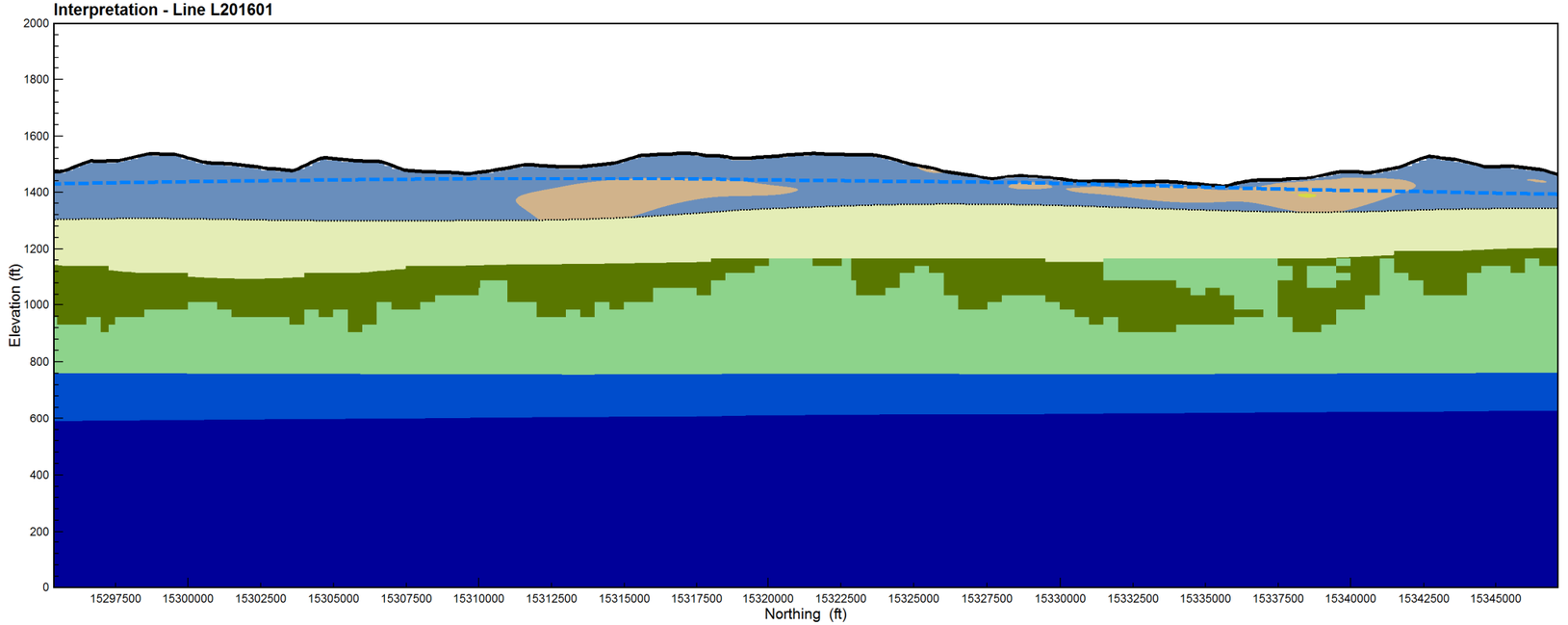
XRI
EXPLORATION RESOURCES INTERNATIONAL

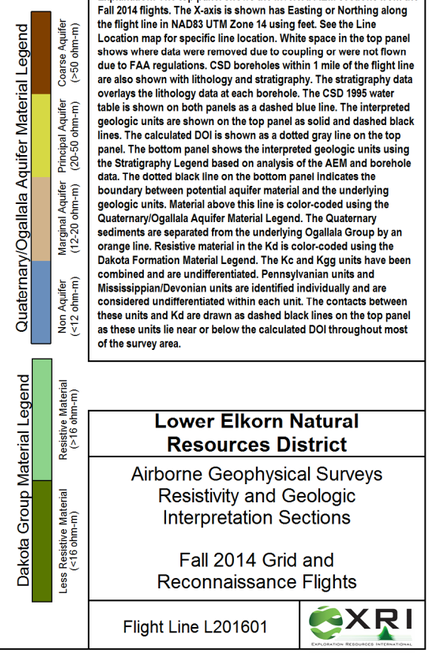
AEM Data - Line L201601





Interpretation - Line L201601





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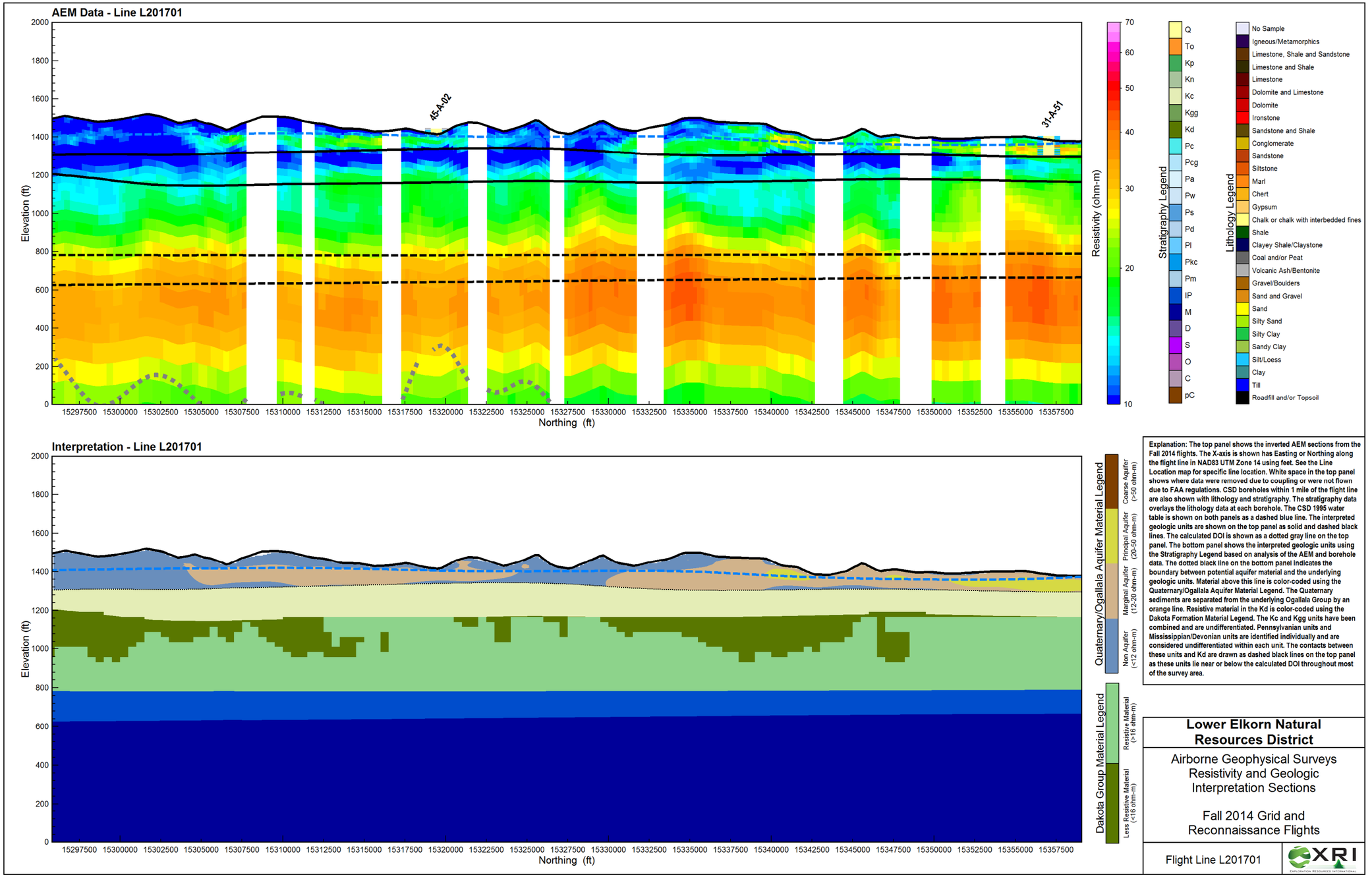
Lower Elkorn Natural Resources District

Airborne Geophysical Surveys
Resistivity and Geologic Interpretation Sections

Fall 2014 Grid and Reconnaissance Flights

Flight Line L201601

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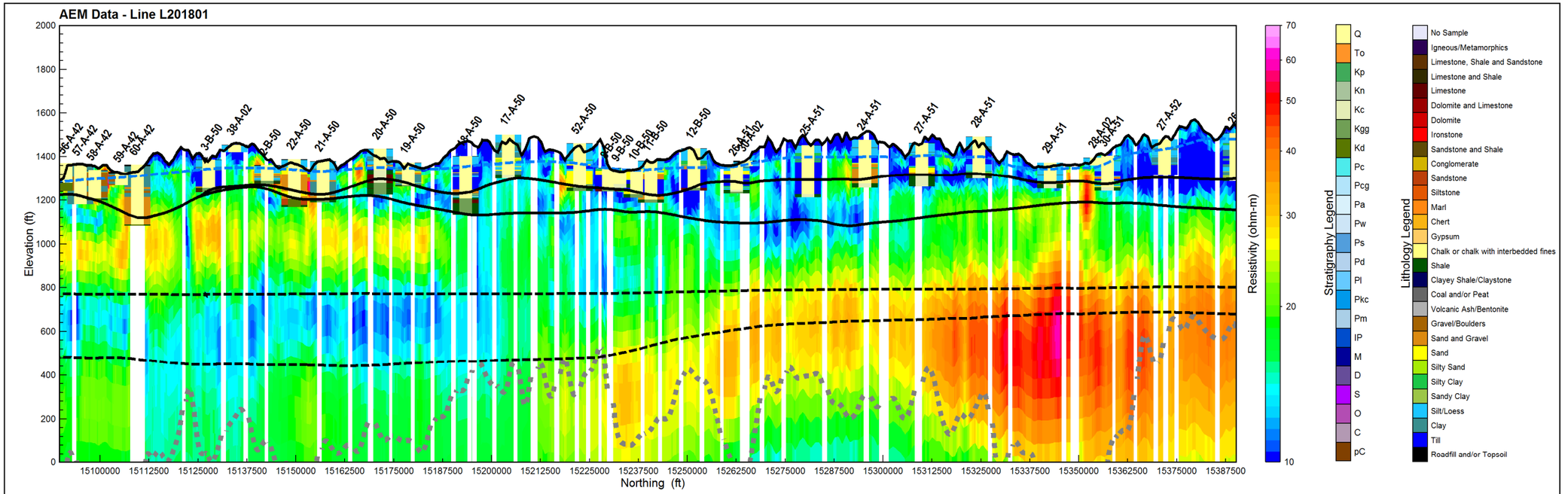
Lower Elkorn Natural Resources District

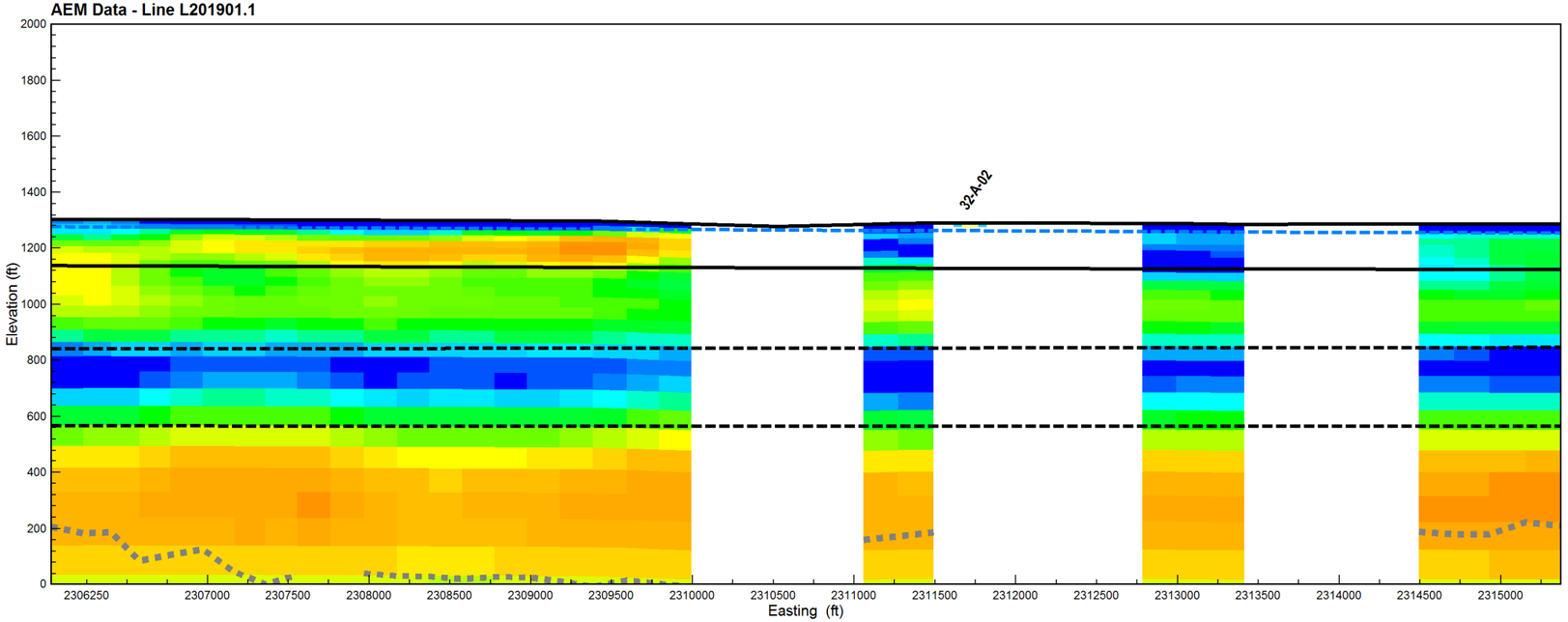
Airborne Geophysical Surveys
Resistivity and Geologic Interpretation Sections

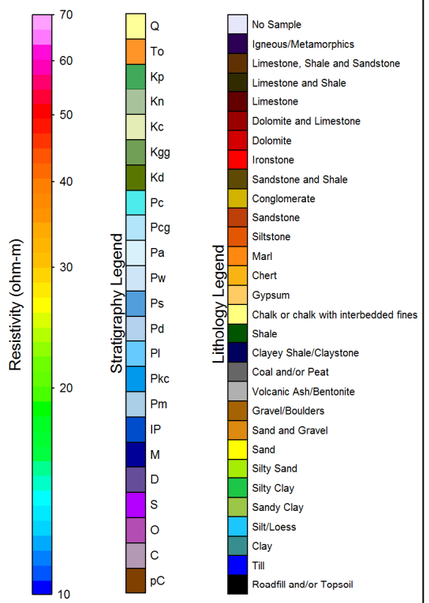
Fall 2014 Grid and Reconnaissance Flights

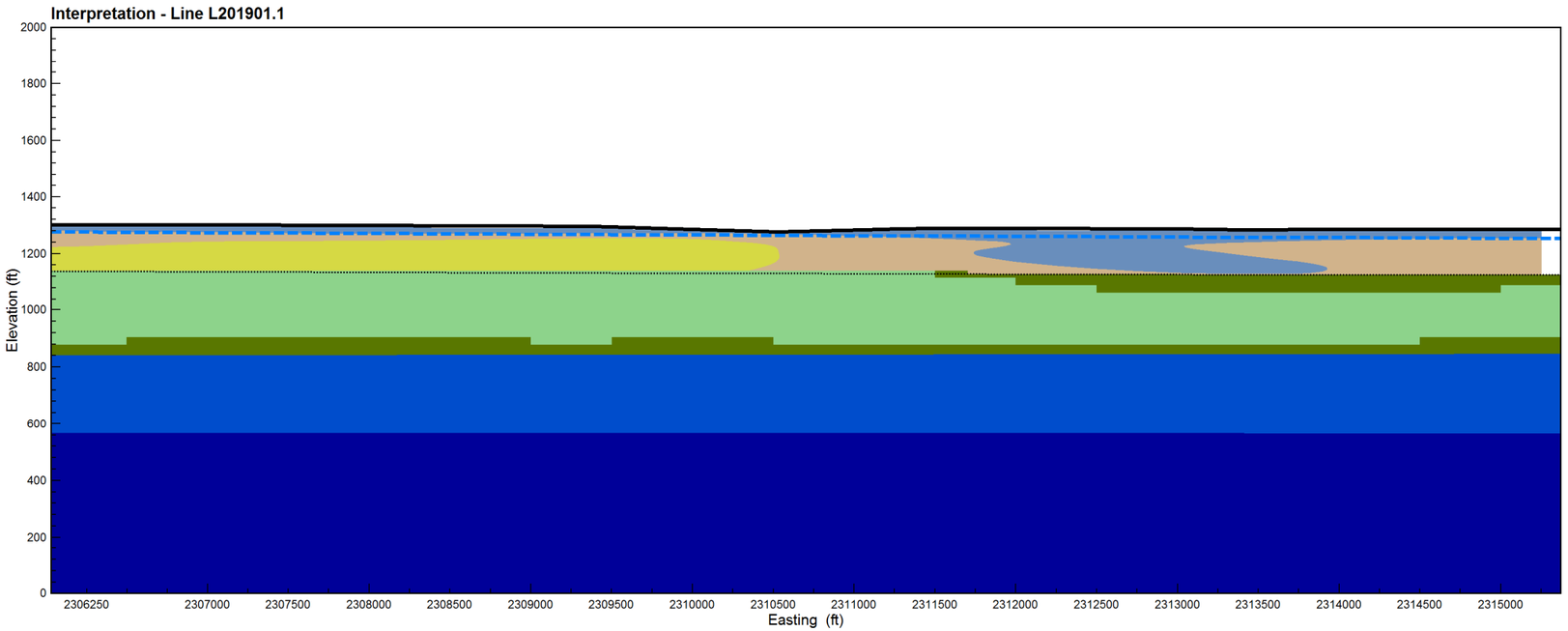
Flight Line L201701

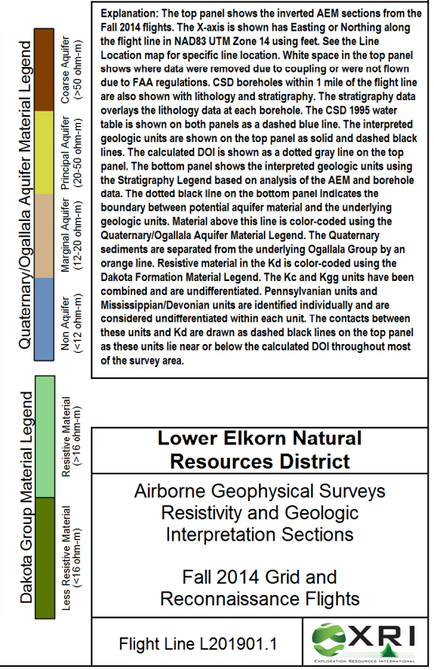
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AEM Data - Line L201801
Elevation (ft)
Northing (ft)
Resistivity (ohm-m)
Stratigraphy Legend
Q
To
Kp
Kn
Kc
Kgg
Kd
Pc
Pcg
Pa
Pw
Ps
Pd
Pl
Pkc
Pm
IP
M
D
S
O
C
pC
Lithology Legend
No Sample
Igneous/Metamorphics
Limestone, Shale and Sandstone
Limestone and Shale
Limestone
Dolomite and Limestone
Dolomite
Ironstone
Sandstone and Shale
Conglomerate
Sandstone
Siltstone
Marl
Chert
Gypsum
Chalk or chalk with interbedded fines
Shale
Clayey Shale/Claystone
Coal and/or Peat
Volcanic Ash/Bentonite
Gravel/Boulders
Sand and Gravel
Sand
Silty Sand
Silty Clay
Sandy Clay
Silt/Loess
Clay
Till
Roadfill and/or Topsoil
Interpretation - Line L201801
Quaternary/Ogallala Aquifer Material Legend
Coarse Aquifer (>50 ohm-m)
Principal Aquifer (20-50 ohm-m)
Marginal Aquifer (12-20 ohm-m)
Non Aquifer (<12 ohm-m)
Dakota Group Material Legend
Resistive Material (>16 ohm-m)
Less Resistive Material (<16 ohm-m)
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Lower Elkorn Natural Resources District
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Resistivity and Geologic
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Fall 2014 Grid and
Reconnaissance Flights
Flight Line L201801
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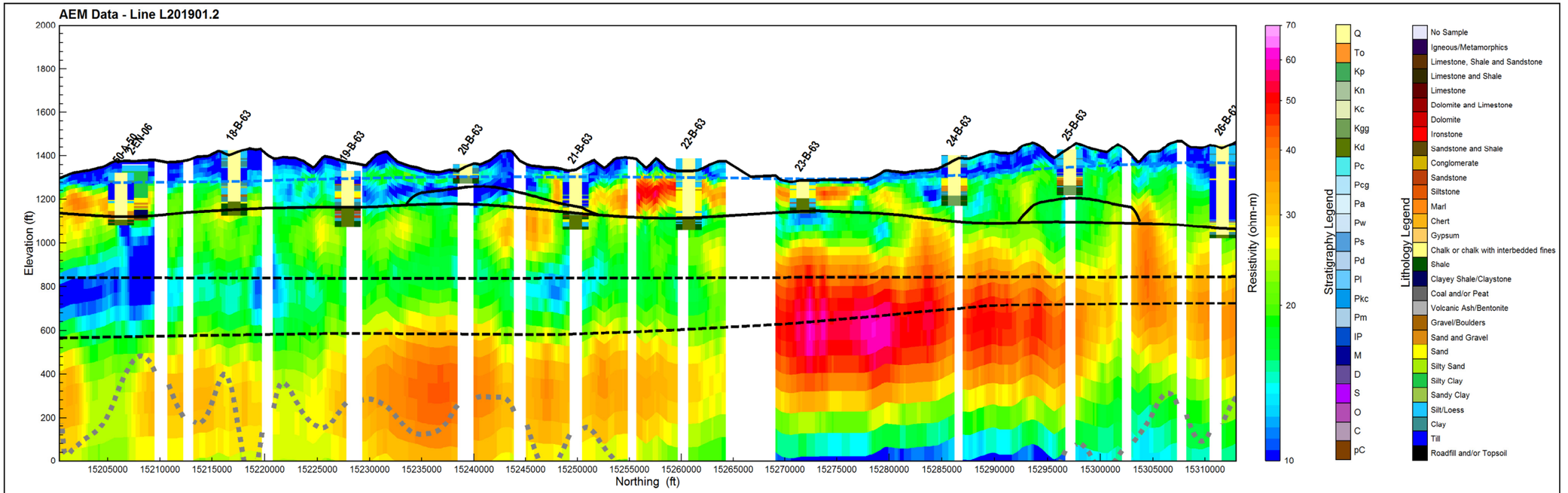
Lower Elkorn Natural Resources District

Airborne Geophysical Surveys
Resistivity and Geologic Interpretation Sections

Fall 2014 Grid and Reconnaissance Flights

Flight Line L201901.1

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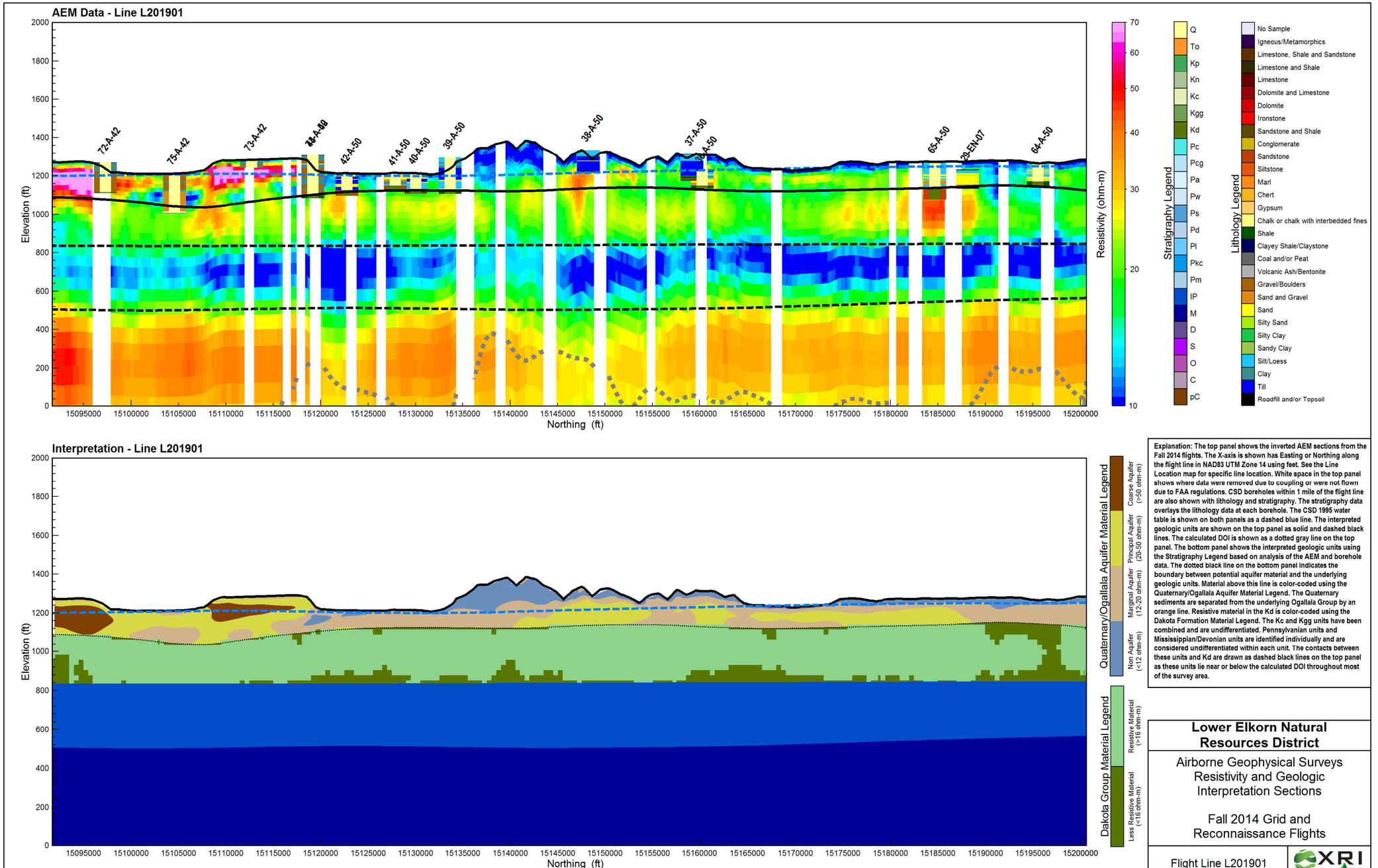
Lower Elkorn Natural Resources District

Airborne Geophysical Surveys
Resistivity and Geologic Interpretation Sections

Fall 2014 Grid and Reconnaissance Flights

Flight Line L201901.2

EXPLORATION RESOURCES INTERNATIONAL



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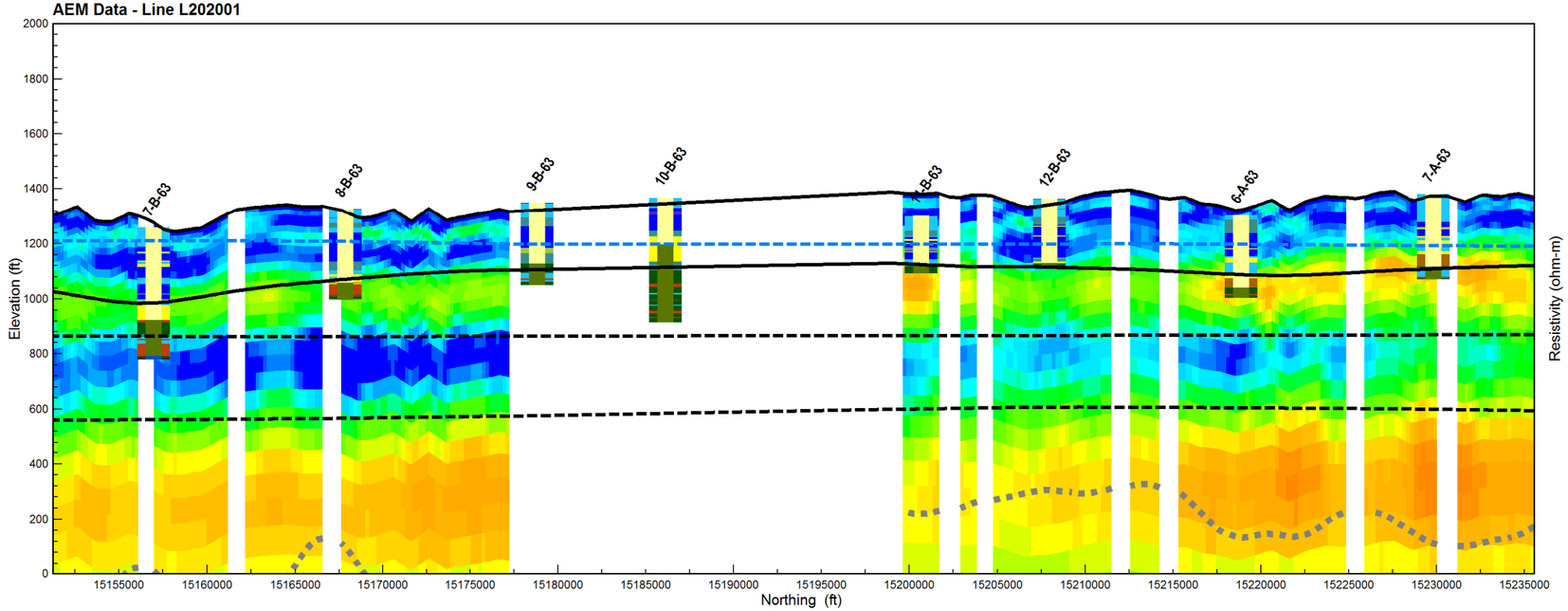
Lower Elkorn Natural Resources District

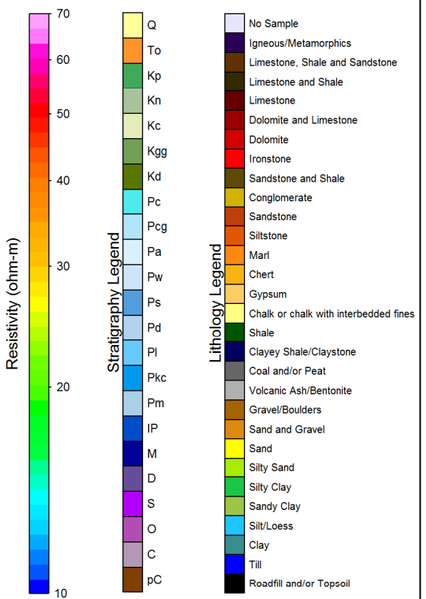
Airborne Geophysical Surveys
Resistivity and Geologic Interpretation Sections

Fall 2014 Grid and Reconnaissance Flights

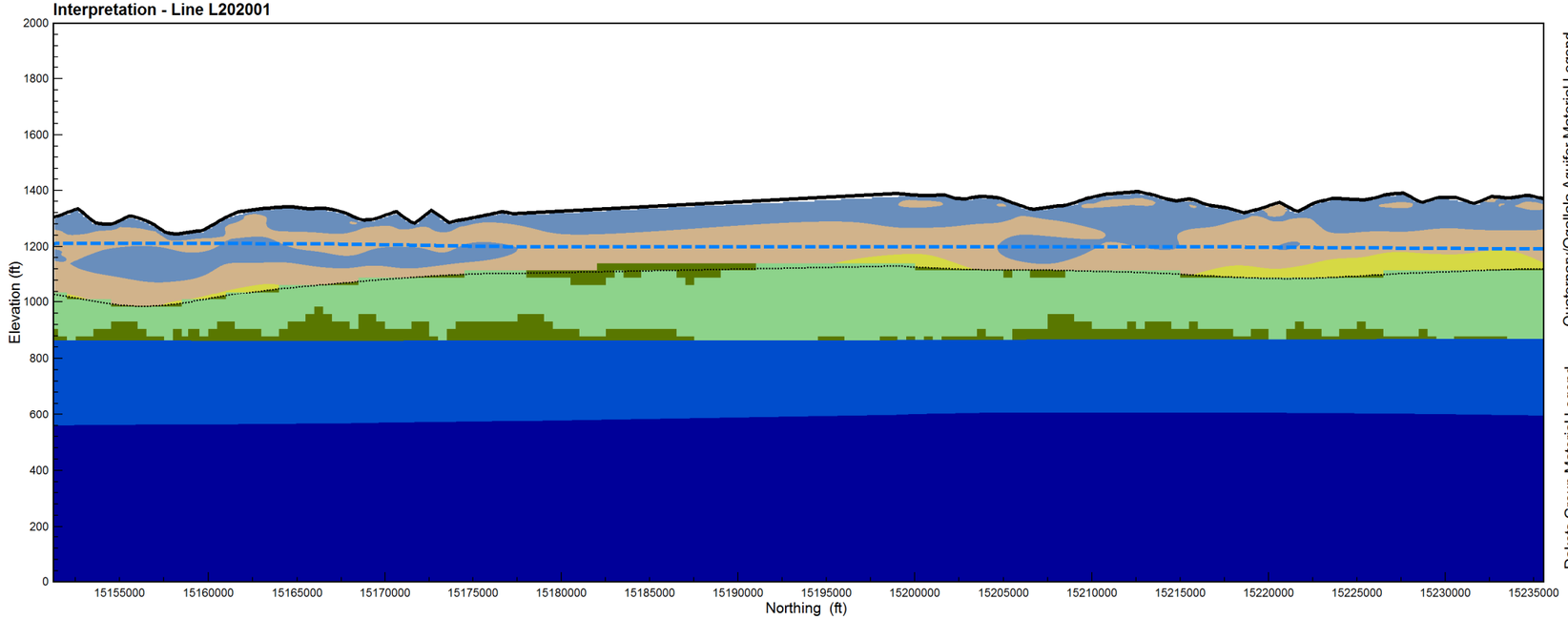
Flight Line L201901

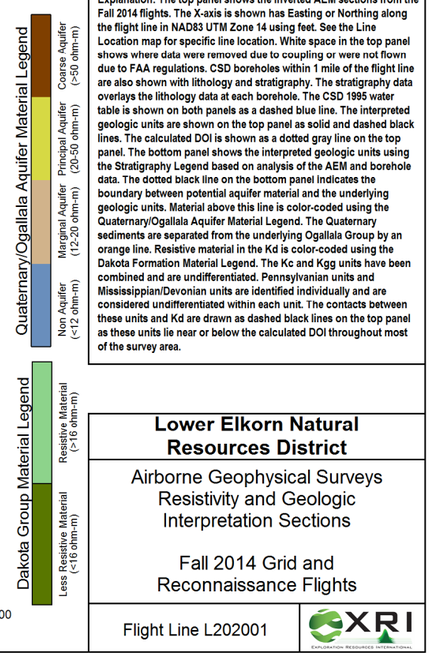
AEM Data - Line L202001





Interpretation - Line L202001





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Fall 2014 Grid and Reconnaissance Flights

Flight Line L202001

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