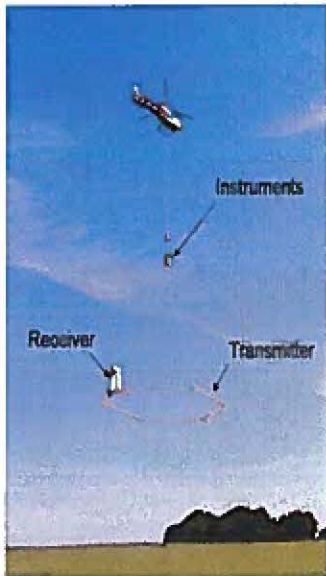


Airborne Electromagnetic Geophysical Study along the I-80 Corridor and Southern Municipal Wellfields within Albany County near Laramie, WY

Dr. Brad Carr, UW Dept. of Geology and Geophysics &
UW Near-Surface Geophysics Instrument Center (UWNSG)

Objective



The proposed work has four overriding objectives: (1) to facilitate acquisition (thru a geophysical contractor) of airborne electromagnetic (EM) data along the I-80 corridor and southern municipal wellfields for Albany County and the City of Laramie respectively, (2) to process, invert and visualize airborne EM geophysical data in both 2D & 3D leading to the creation an integrated structural geologic and geophysical model of the subsurface that coincides with the survey area along I-80 and the southern municipal wellfields, 3) to build and implement an example of a subsurface groundwater flow model in a format (e.g. MODFLOW) that could be used by either Albany County or the City of Laramie to conduct more advanced groundwater or contaminant flow modeling studies, and (4) to collect useful for the teaching and research mission of the University of Wyoming Dept. of

Geology and Geophysics and the UW Near-Surface Geophysics Instrument Center - UWNSG. In addition, we hope that the proposed project will help establish/maintain a mutually beneficial technical and workforce partnership between Albany County, WY/City of Laramie, WY and UWNSG.

Proposed Work

Work will be conducted within the area defined below (Figure 1) which encompasses a corridor along Interstate 80 and west to the City of Laramie municipal wellfields of Pope and Soldier Springs. The data acquisition will be subcontracted to an experienced geophysical contractor who will also provide field and initial data reduction services. UW personnel (PI and one research assistant) will conduct advanced processing, interpretation and model generation (for both structural/geophysical and groundwater flow models).

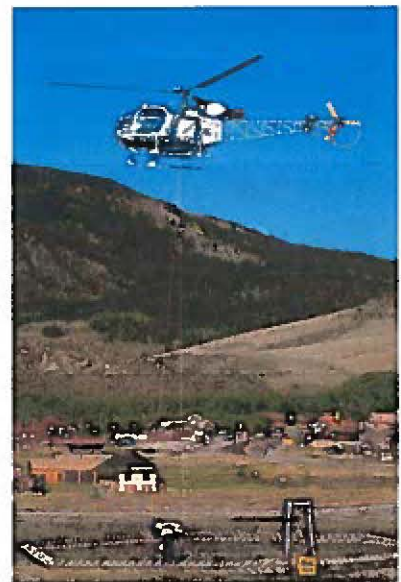
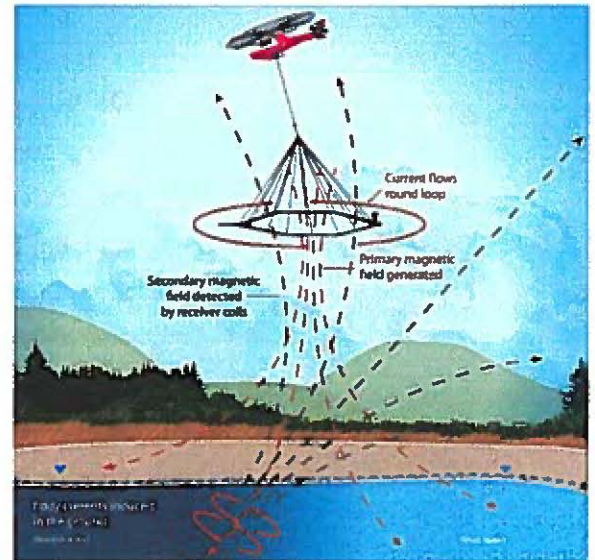
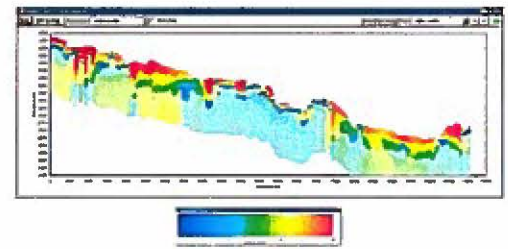




Figure 1. 2019 I-80 Airborne Electromagnetic Survey area. Blue lines are the flight tracklines for the helicopter survey. The I-80 WyDOT right of way is not covered due to FAA regulations. However, both sides of I-80 immediately outside of the interstate right of way will be covered. Tracklines are shown at 100 m (~330 ft.) intervals over the survey area. This is a preliminary map of the survey area for budget estimation purposes. The final flight transects will be modified to avoid/minimize any overflight of residential areas and infrastructure (e.g. powerlines).



Proposed Timetable

- Recruiting:** MS graduate research assistant dedicated to the project
- Training:** AGU-SEG Airborne Geophysics Workshop in Davie, FL – June 9-13, 2019 for PI and RA to prepare for data analyses.
- Data Acquisition:** Aug. 2019 by AGF (WY licensed company). 2-4 days, no lower than 100-150 ft ags or crossing over houses, quarries, acquisition directly over I-80
- Year 1:** Process data, Create 2D profiles, 3D data cube, Interpret 3D data for structure and GW flow paths and create 3D geologic model from surface to ~ 1200-1400 ft. bgs.
- June 2020:** Year 1 summary report to the County and the City.
- Year 2:** Import 3D geologic model to a MODFLOW format and construct a predictive model of two scenarios (e.g. 1) movement of subsurface fluids from I-80, and 2) general recharge times to the southern city wellfields).
- June 2021:** Final project report to the County and the City.

