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Consolidation Coal Company
P.O. Box 566
Sesser, IL 62884
(618) 625-2041

RECEIVED
OCT 15 2006
DIV. OF OIL, GAS & MINING

October 06, 2006

Pamela Grubaugh-Littig
Utah Division of Oil, Gas and Mining
Coal Program
1594 West North Temple, Suite 1210
Box 145801
Salt Lake City, Utah 84114-5801

Re: Emery Mine
Electromagnetic Gradiometer Detection of Coal Mine Voids
Stolar/MSHA/Consol research project

Dear Mrs. Grubaugh-Littig:

Per conversations with your staff, consider this an informational submittal outlining the above referenced project. Consol was chosen by MSHA and Stolar Research Corporation to participate in a study to detect underground mine voids as they relate to mine mapping and locating underground works. The first phase of this project was to calibrate their equipment based on the varying geology of the Emery mine. The attached report titled 'Electromagnetic Gradiometer Detection of Coal Mine Voids (Quick Look Report)' outlines this phase. The final step is to drill at the location that their study detected a mine void. This drilling will encompass two holes that will be drilled to a depth of approximately 180 feet to determine if there is a mine void. This drilling is not to be considered exploration drilling, or in any way associated with the mining operation. This project will be conducted with formal MSHA approval. The surface is controlled in fee by Consol, and is over old mined out areas that were mined prior to 1960. The drill holes will be sealed to the surface with concrete and the site reclaimed and reseeded.

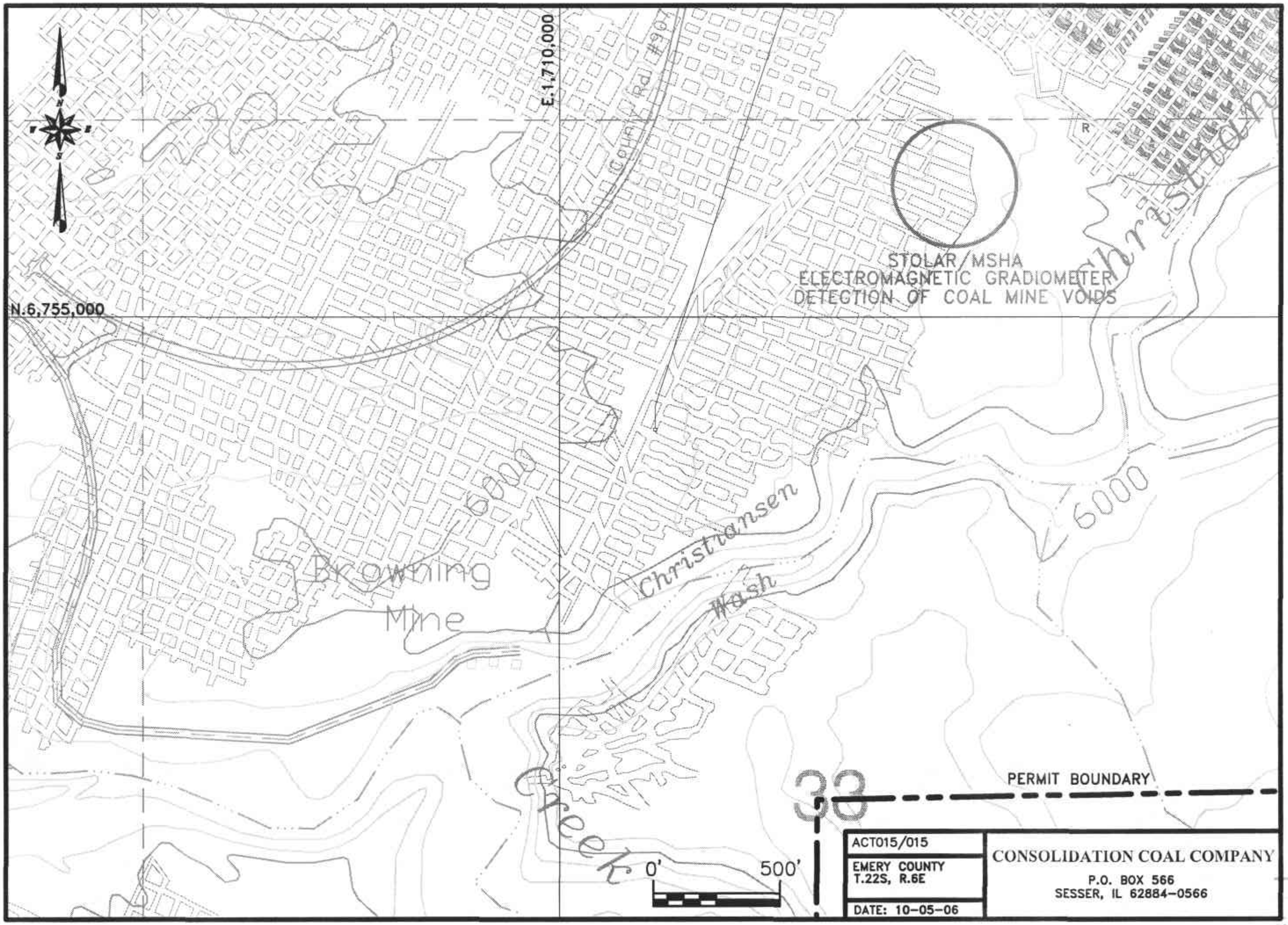
If you have any questions concerning this information, please call me at (618) 625-6850.

Sincerely,

John Gefferth
Environmental Engineer

CC: Steve Demczak – DOGM-Price Field Office-with attachments
Attachments

JAG/stolaremery.doc


E.1,710,000
N.6,755,000
STOLAR/MSHA
ELECTROMAGNETIC GRADIOMETER
DETECTION OF COAL MINE VOIDS
Christiansen Wash
Browning Mine
Creek
6000
PERMIT BOUNDARY
33
0'
500'
ACT015/015
EMERY COUNTY
T.22S, R.6E
DATE: 10-05-06
CONSOLIDATION COAL COMPANY
P.O. BOX 566
SESSER, IL 62884-0566

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Electromagnetic Gradiometer Detection of Coalmine Voids

Quick Look Report

Field tests were conducted from February 28th to March 2nd, 2006 at the Emery Mine near Salina, Utah. The Emery mine is a Consol Energy property at which the current MSHA demonstration program for DeltaEM will be entirely performed. Initial data collection and de-bugging activity over the mine's active workings have been completed. The goal of this particular test was to survey over a section of old, abandoned mine workings to identify voids.

The DeltaEM gradiometer surveys were carried out over the location above Emery Mine as shown in Figure 1. The estimated overburden is around 200 feet at this site. The locations were selected for ease of accessibility and for variations in depth of over-burden. The surveys were non-intrusive to both the environment and any on-going mine activities.

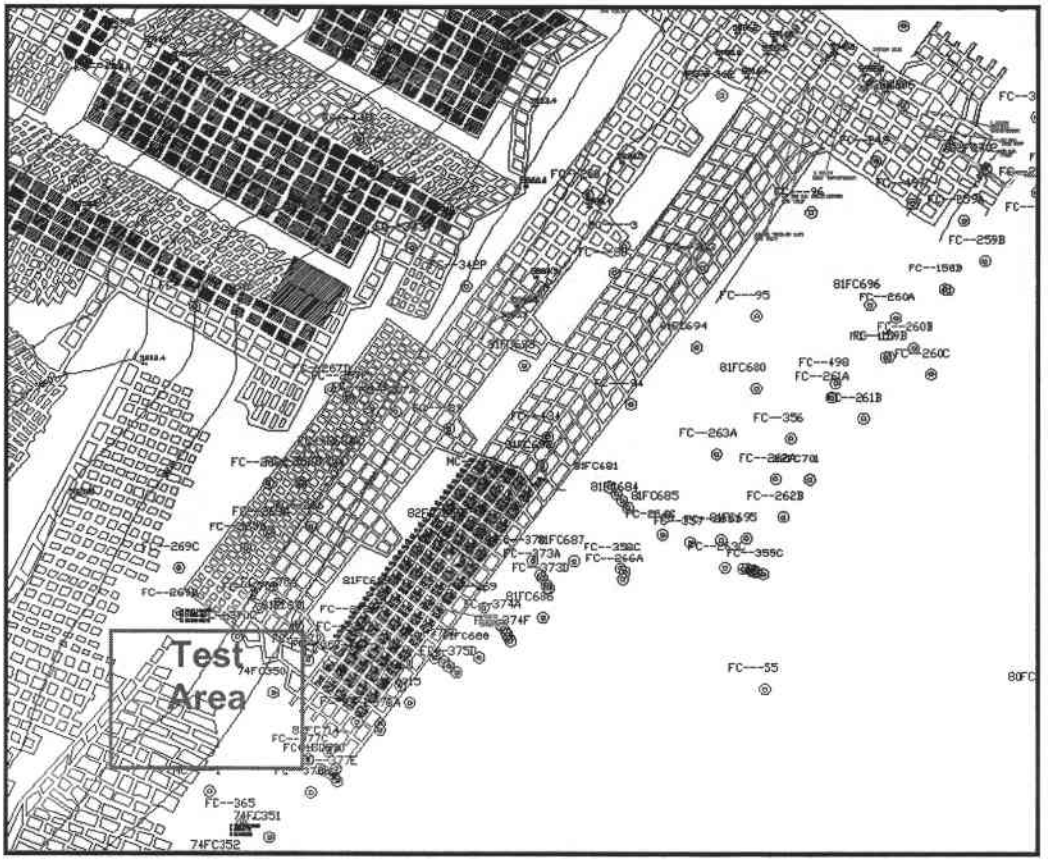

Figure 1. *Emery Mine gradiometer survey location*

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The traverse response plots are shown in Figures 2 and 3. Both plots were along the same survey line and both operated at the 2-kHz frequency. However, two different transmit antennas were utilized. The first plot was with the 31-foot diameter loop antenna operating at 3.0 amps of loop current and located 400 feet away. The second plot was with the 30-inch diameter loop antenna operating at 2.5 amps of loop current and located 300 feet away.

The plots display signal magnitude (Mag), and the receiver synchronization automatic gain control (Sync AGC). The sync AGC signal is from the primary wave of the local source transmitter. The sync AGC signal is inversely proportional to signal strength and should be fairly constant. The Average Mag (11) signal has been added for smoothing.

The resulting plots show the locations at which the gradiometer response peaked and nulled. The detection can be characterized by peaking in the profile. The peaks indicate the approximate location of the underground anomaly surface projection on the traverse line. The Mag signal peaking has been identified and labeled in the green text boxes as distance from the start. The starting point for both plots is the SW Marker shown in Figure 4.

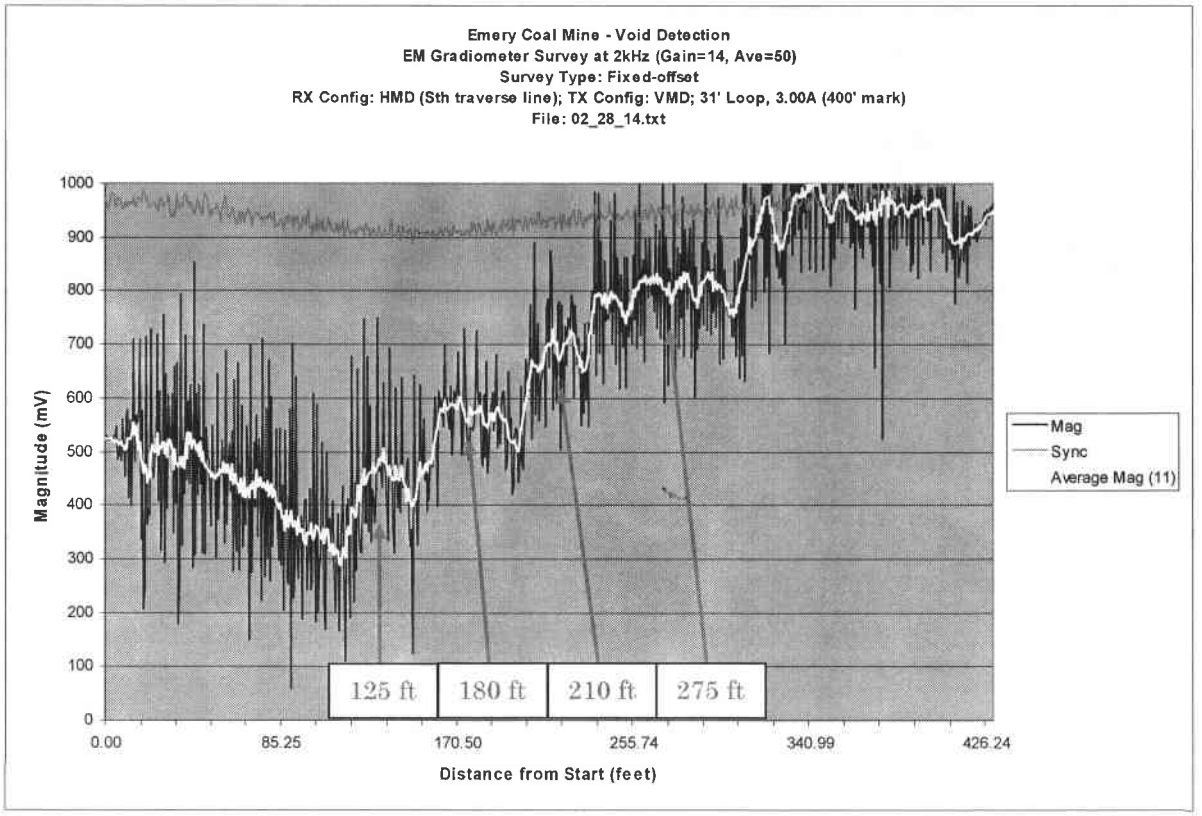

Figure 2. *Gradiometer response plot 1*

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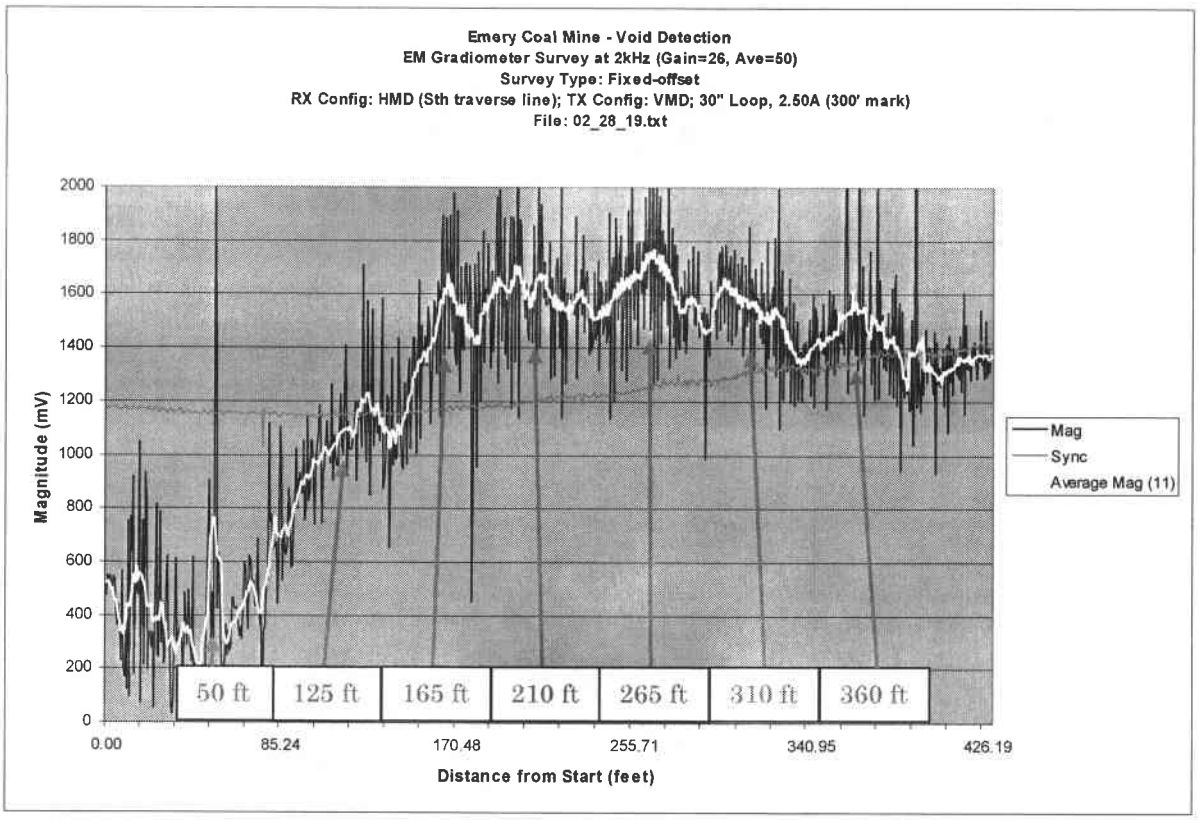

Figure 3. *Gradiometer response plot 2*

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Figure 4 is the scaled GPS plan view of the gradiometer survey path over Line B of the old mine workings test site area. GPS spatial data points were taken by the DeltaEM gradiometer in degrees-minutes-seconds as geodetic latitude and longitude in the WGS 1984 datum. All of the identified voids from the plots of Figures 2 and 3 have been placed on the survey path. ***The 50-foot and 125-foot locations have been initially selected as locations for confirmation drilling.***

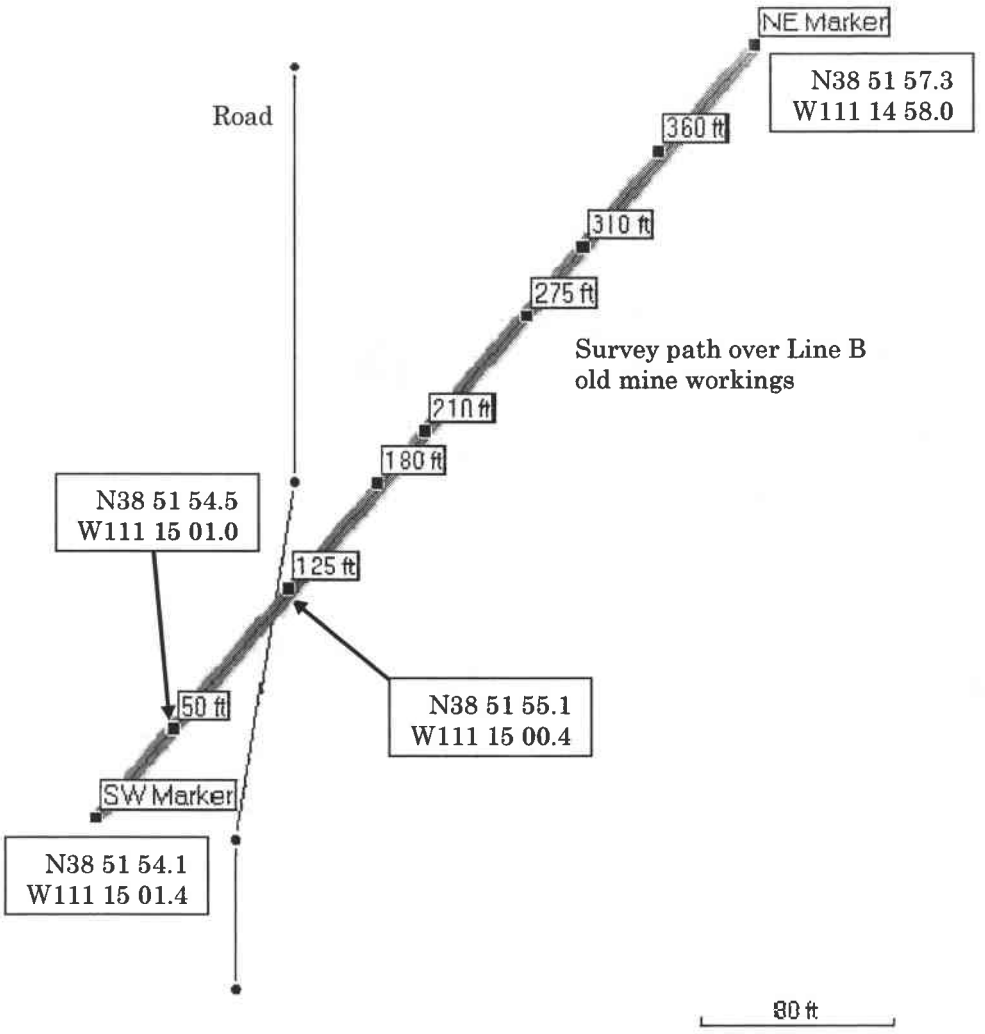

Figure 4. *GPS scaled plan view with identified void locations (distance away from SW Marker)*

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Figure 5 shows the test site surface location and the survey path line.

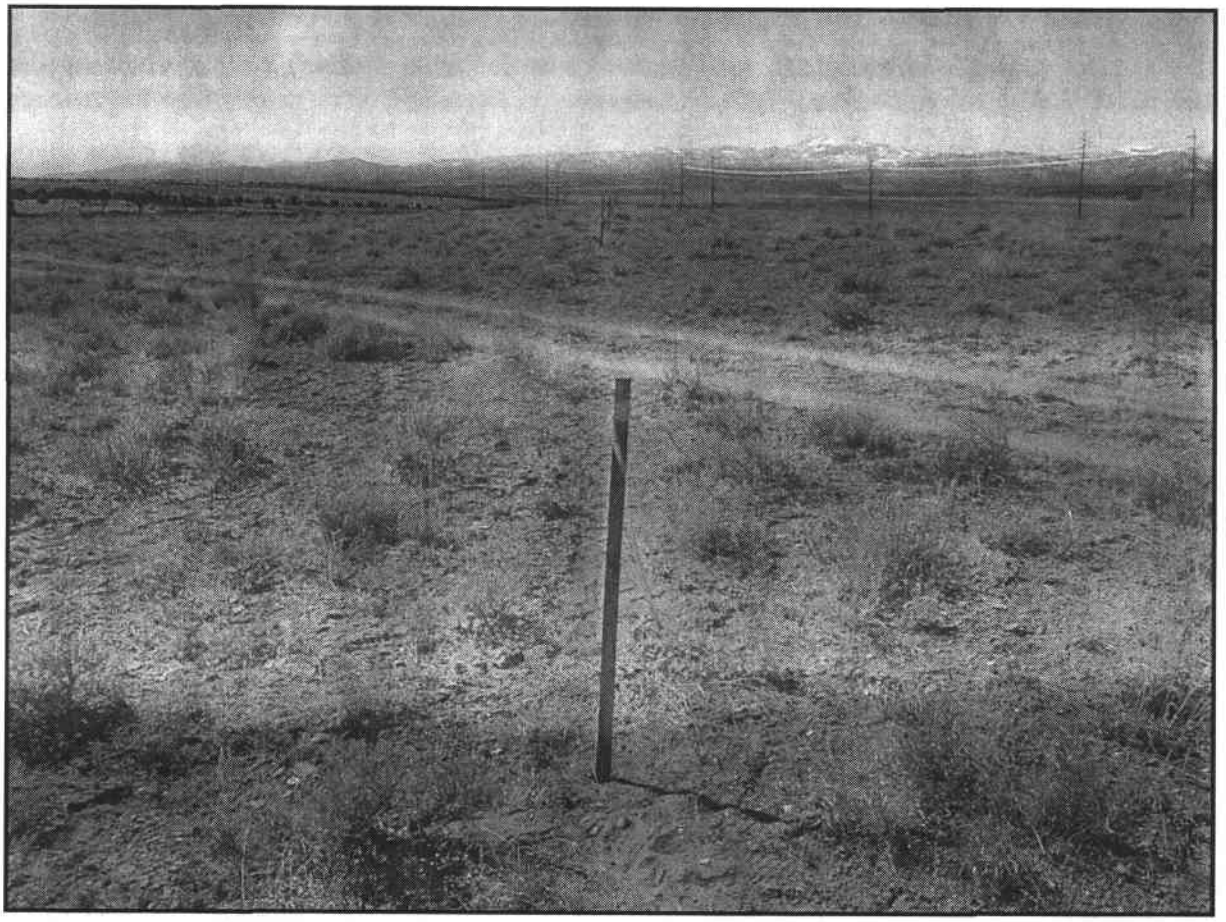

Figure 5. *Test site surface location over the Emery Coal mine*

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The survey path line with identified void locations of Figure 4 has been roughly overlaid on the coal mine workings and is shown in Figure 6.

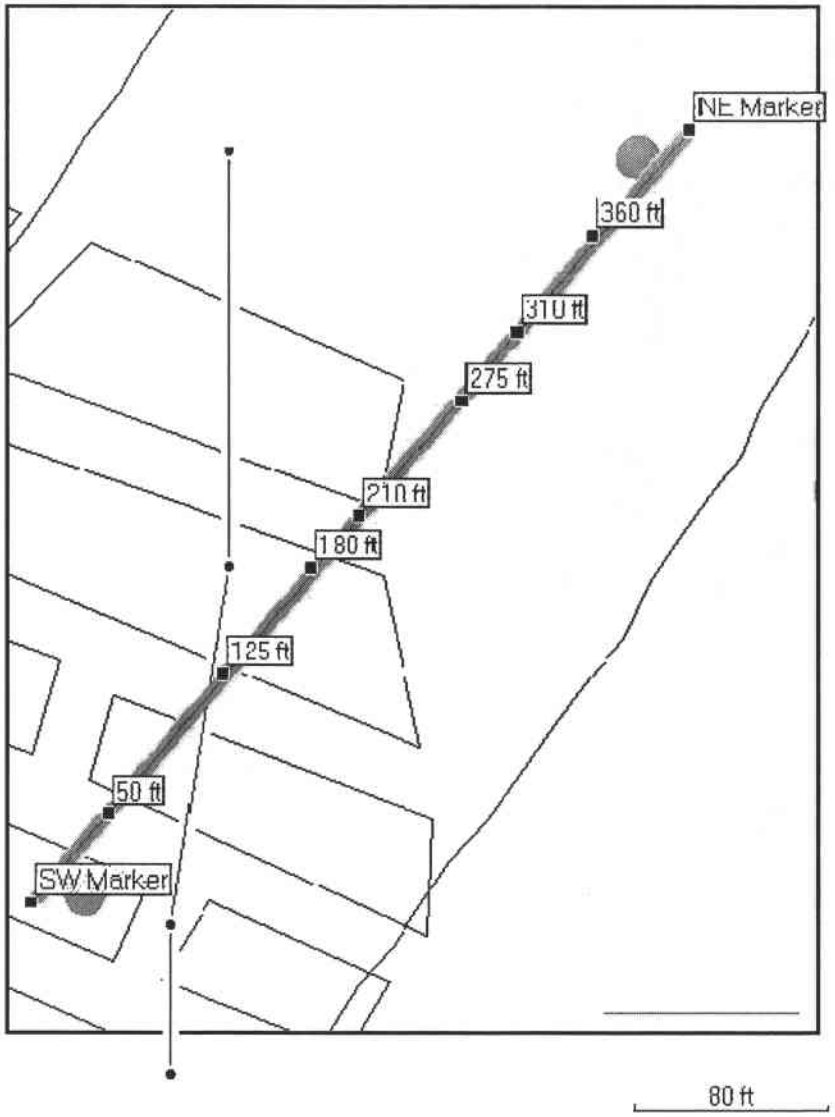

Figure 6. *Overlay of survey path with void locations on mine workings*