



Abandoned Mine Reclamation Program PROJECT SUMMARY

CRAWFORD MAINTENANCE PROJECT

Project Location and Background

The Crawford Mountains Mine Reclamation-Maintenance Project site is located approximately five miles northwest of the town of Randolph, Utah. The Crawford Mountains were mined from 1902 through 1972 for phosphate ore. The geologic structure is a syncline (“U”) shaped plunging to the south. The mines were developed initially by driving crosscuts across both limbs of the syncline starting from the Bear River Valley. Both limbs of the syncline were mined from drifts that follow the strike of the phosphate rock’s synclinal limbs. The dip of the phosphate beds ranges from relatively flat to 70 degrees depending on the geologic structure and location on the east or west limb of the syncline. Raises or vertical (following the dip of the phosphate beds) shafts were developed on 150 to 250-foot centers to the surface from the drifts or haulage level. Each raise consisted of a completely lagged manway and ore chute(s). The mines operated in a stope method whereby the ore was removed from the back (roof) dropped to a pillar and pushed to an ore chute conveying the ore to the haulage level. Infiltration of meteoric water concentrates phosphates in the upper reaches of the mines. The incentive of recovering as much of this concentrated phosphate ore led to thin crown pillars (ground surface mine roof). Internal failure of either manways or crown pillars created 63 deep openings into the mine that were reclosed in this project.

The AMRP first inventoried the Crawford mines in 1991. Reclamation at the mines took place between 1992 and 2000 in a series of eight projects, totaling \$2.77 million.

The photos to the right show a CAT349E excavator closing what was likely a manway near the Brazier Canyon road. Note the surface expression of the west limb of the syncline extending up and to the left from the excavator.

The AMRP in the Division of Oil, Gas and Mining, Utah Department of Natural Resources, was created in 1983 to address physical safety hazards associated with abandoned mines as authorized by the Surface Mining Reclamation and Control Act (SMCRA) of 1977. The Program is funded by The Utah Coal Producers who pay an abandoned mine reclamation fee to the Office of Surface Mining (OSM) on each ton of coal mined in Utah.

Rich County, Utah

AMR/033/910



Owners: Crawford Mountain Properties,
Phosphate Industries Inc.
Project Engineering: Spectrum
Project Construction: E. T. Technologies, Inc
AMRP Project Manager: Louis Amoldt, Mark Wright



Abandoned Mine Reclamation Program PROJECT SUMMARY

Crawford Mountains Maintenance, 2014 -- Construction Summary

E. T. Technologies, Inc. out of Salt Lake City, Utah was awarded the contract for the project. The Crawford Maintenance work included the excavation and placement of 159,659 cubic yards of backfill in 63 features.

CR29a as found during construction (top),
CR29a after touch with trackhoe (middle).

PROJECT HIGHLIGHTS:

Project Cost: Bid Amount \$295,712.51
Final Amount \$312,893.90

Change Orders: 1- \$17,181.39
additional features added and
quantity adjustments.

Project Dates: Start: September 15, 2014
Finish: October 1, 2014
13 Work Days

Accomplishments: Backfill placed: 156,659 cyds
Features Closed: 63
Revegetation: ~ 15 ACRES



CR29a a crown pillar failure prior to reclamation, note the multiple pillars at depth (left), closure complete (right).



Crawford Mountains Maintenance Project
AMLIS Keys: UT103, 104, 117, 127,128, 136, 153, 160
Construction Cost: \$313117.31