

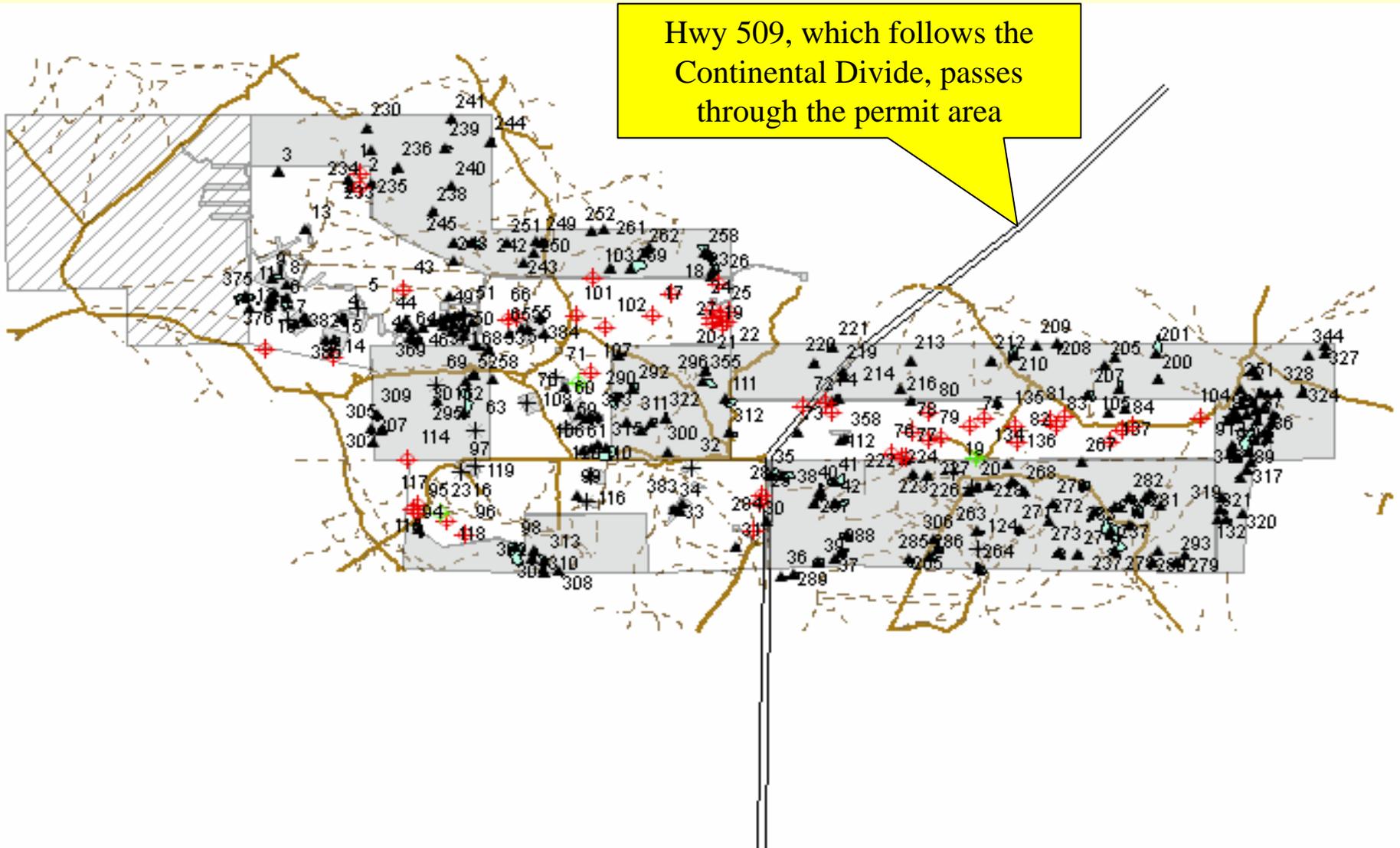
Using Mobile GIS to Protect and Inspect Cultural Resources at the El Segundo Mine, NM

Dave Clark

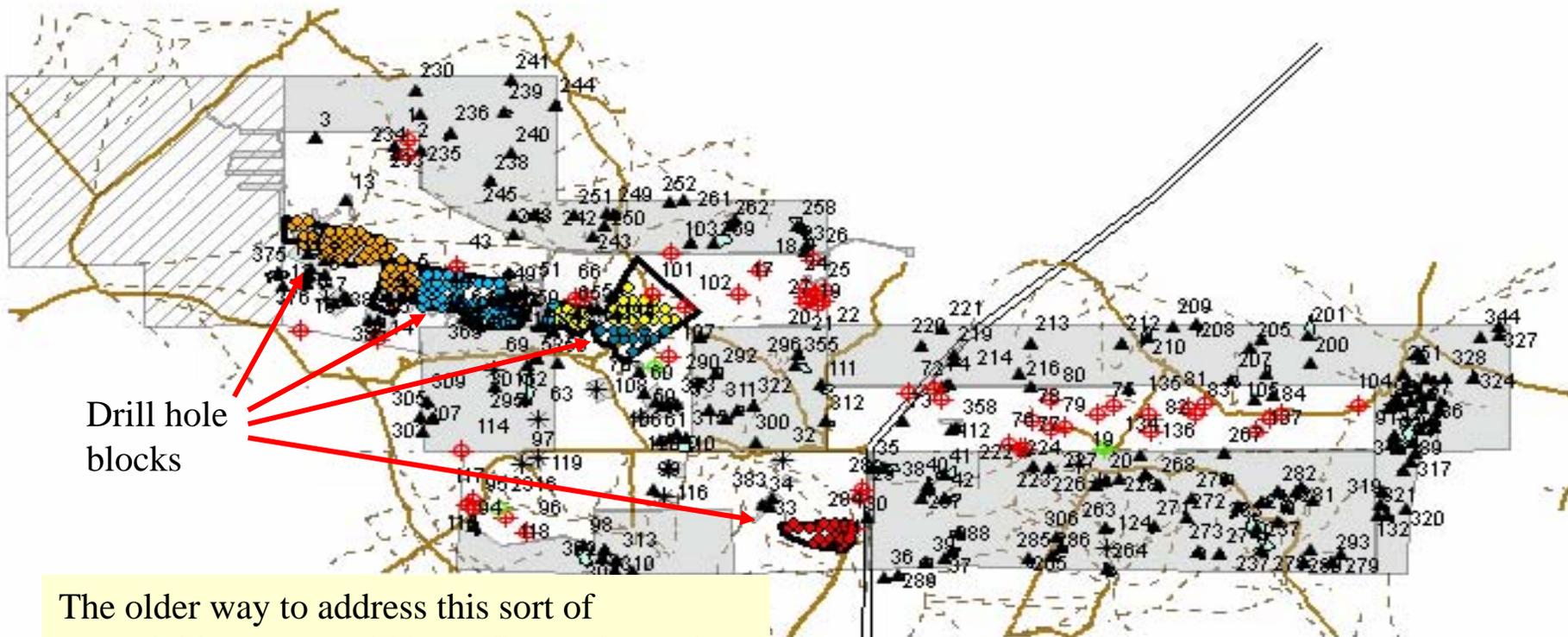
NM Mining and Minerals Division

APR 26 2006

El Segundo is Lee Ranch Coal Company's recently permitted "Second" coal mine in New Mexico. As is typical in the San Juan Basin, a number of sites were identified by the cultural resource survey.



This spring, an intensive core drilling program was scheduled for the boxcut areas on that portion of the permit area west of Hwy 509. The archeology consultant and the operator provided GIS coverage of cultural resource sites, access roads, boxcut areas, and drill hole locations (to name just a few layers).

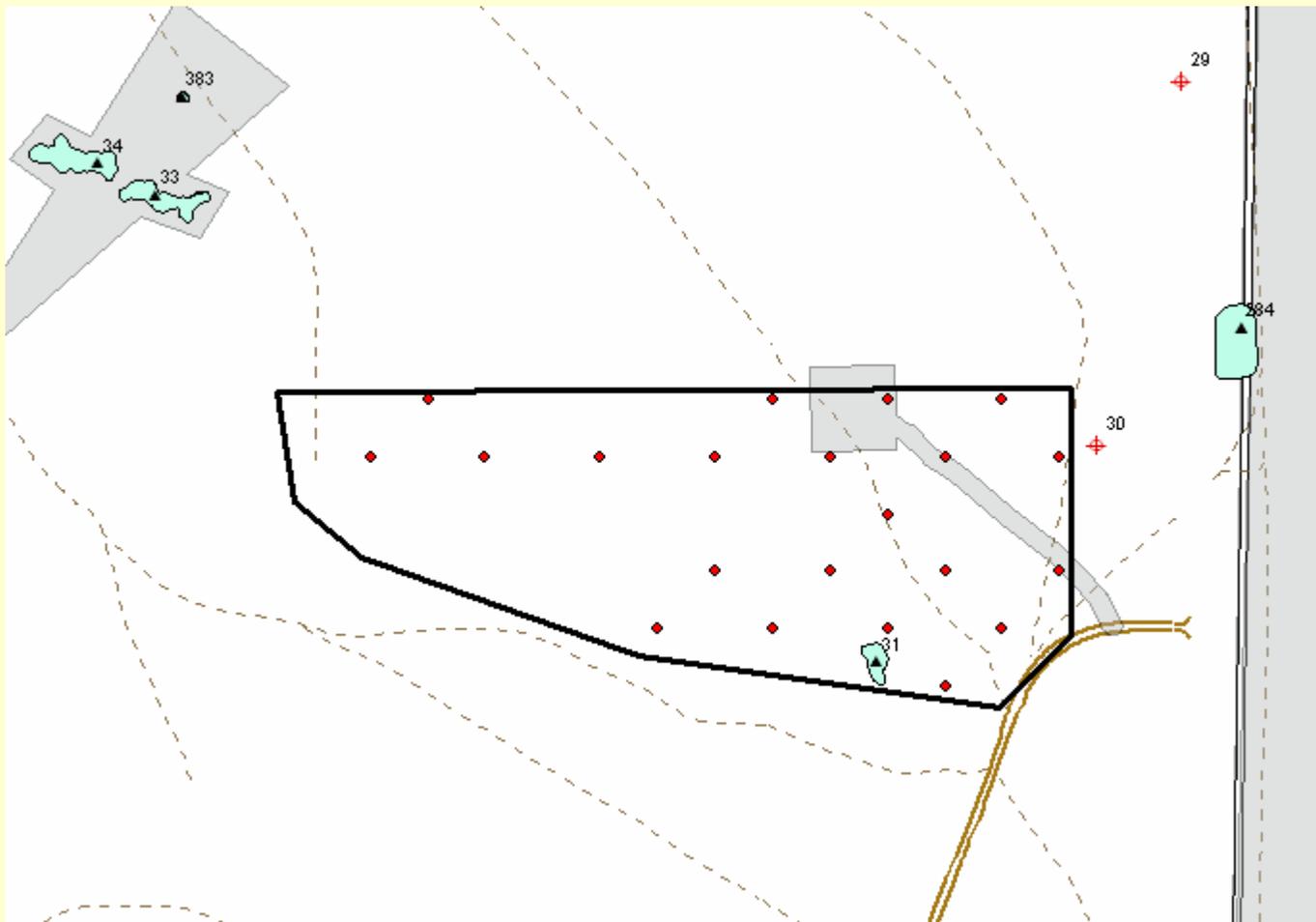


Drill hole
blocks

The older way to address this sort of potential impact would be to flag or fence the archeology sites, prior to mitigation, which may lead the curious or the savvy directly to places that are required to be protected and kept confidential.

With GIS technology, only the core holes are flagged, and only those who need to know where the arch sites are located have that information (at their fingertips).

Zooming in on a boxcut area, we see the drill hole pattern in red and archeology site 31, in close proximity to the drilling activity (the county road adjacent to the drilling block will be re-located prior to mining).



- Layers**
- Site Components
 - Recording Project
 - ▲ SW 459
 - ▲ SW 495
 - ✚ SAR 028
 - ✚ San Juan College
 - ✚ Unable to Relocate
 - Site Boundaries
 - New Drill Holes
 - ◆ First Group
 - ◆ Second Group
 - ◆ Third Group
 - ◆ Fourth Group
 - ◆ Fifth Group
 - Drill Hole Blocks
 - IOs and IFs
 - ID
 - IF
 - IO
 - Mining Sequence
 - Layer
 - 2008
 - 2009
 - 2010
 - 2011
 - 2012
 - 2013
 - 2014
 - 2015
 - 2016

Clicking on the site component with the info tool provides some basic data (this view is in ArcMap, ArcPad on the pocket PC is similar).

Identify Results

Layers: <Top-most layer>

Location: (497655.409441 1688895.373764)

Field	Value
FID	350
Shape	Point
NUMR	31
COMP_CLASS	Limited Activity
TYPE_CODE	2
NO_COMP	1
COMP_NO	1
CULT_TEMP	LPII-EPIII
H_P	p

So the archeologists proceed in front of the drillers and mitigate sites within the boxcut areas. My job is to verify initially that the drill holes have not been located directly on the arch sites, and in the field that the access routes and drilling activity have not impacted nearby sites. Below, I am approaching a drill hole in a boxcut area near a county road and Hwy 509. A wireless GPS receiver is indicating my position on an ArcPad map on my pocket PC.



The drillers are nearing completion of this spring's project...



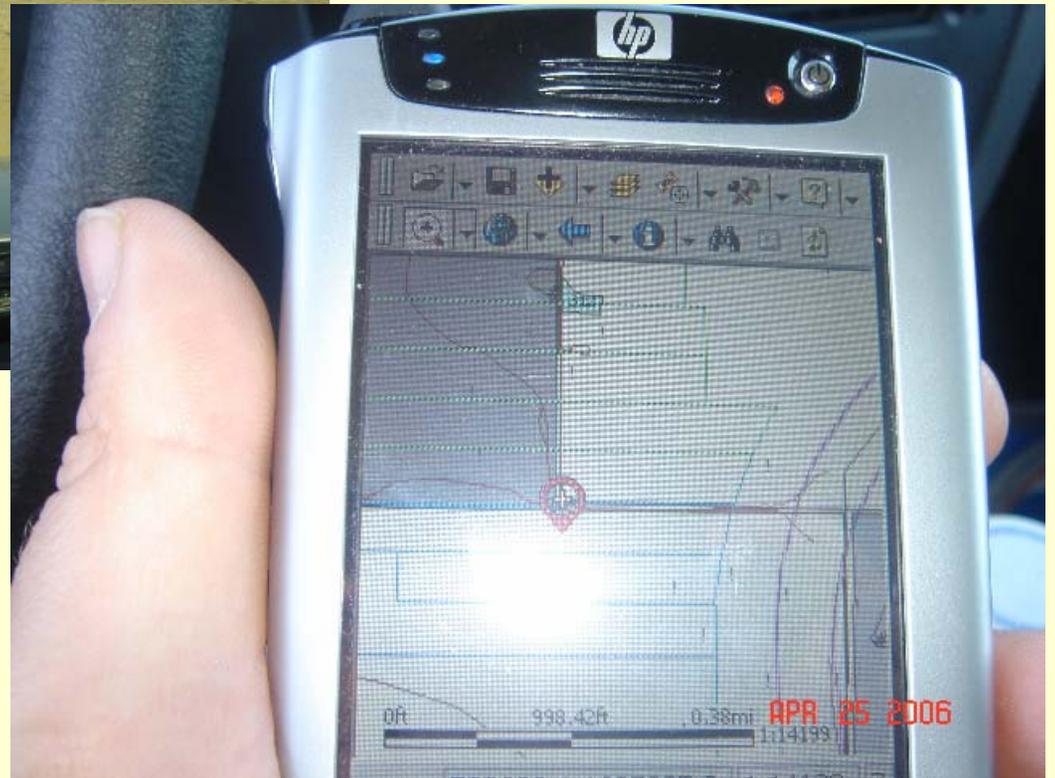
Examining a coal core...



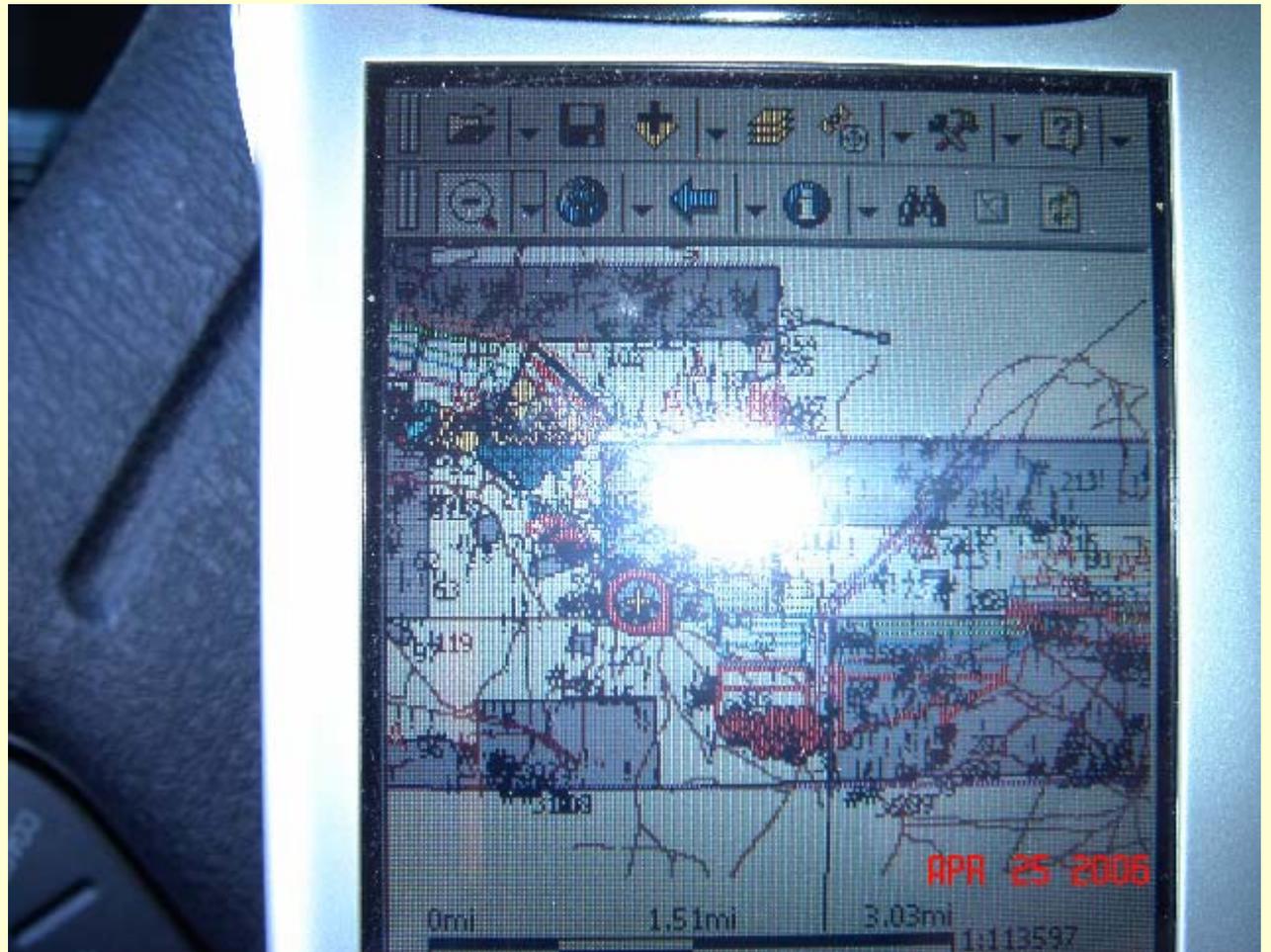
...and backfilling the drill hole.



Navigating to the next boxcut area to the northwest...



Approaching the next drilling block... pardon the camera flash.



This was the most dramatic cultural resource site that I visited...categorized by the archeologists as a habitation...but when I was there it was only inhabited by a rattlesnake, and this is as close as I got.

No problems were identified with the drilling program at El Segundo. Thanks, OTT, for providing equipment that helps get the job done efficiently.

