

### 3.2.3.3 Additional Wildlife Observations

In September, a dead crow (*Corvus brachyrhynchos*) was observed dangling from the top of a spruce tree at the Site. Closer inspection revealed there was fishing line wrapped around the foot of the bird. Evidently the crow picked up the fishing line on its foot at one of the nearby reservoirs (since fishing is not allowed at the Site). The line was probably dangling from its foot when it landed on the branch. When it attempted to take off the line probably got caught in the tree branch, and the more the bird tried to free itself, the more it wrapped itself around the branch. Finally its foot was so tightly entangled around the branch that the bird could not move and eventually died on the branch. The bird was removed from the tree and disposed of.

In October, the carcass of a dead hawk (unknown species) was found near the bottom of the OLF. The cause of death was unknown. The hawk was turned over to USFWS.

### 3.2.4 Summary

The Ecology Program at the Site conducts monitoring of the ecological resources to ensure regulatory compliance and to preserve, protect, and manage those resources. Proactive management of the natural resources is critical to the long-term sustainability of the ecosystems at the Site. Noxious weeds continue to be a top priority, as does the revegetation of the COU. Data from 2009 documented the continuing establishment of vegetation at revegetation locations; several met success criteria. Noxious weed control activities and additional revegetation activities were conducted during 2009 to improve and enhance the vegetation at the Site. The monitoring results continue to provide useful information for management activities. Full, detailed reports and analyses for each field monitoring effort are presented as stand-alone reports on the accompanying Ecology DVD.

## 3.3 Data Management

### 3.3.1 Water Data

Data from samples submitted to an analytical laboratory are received in both hard copy and electronic data deliverable formats. The electronic data are loaded into an Oracle-based relational database. The environmental monitoring data are accessible using the SEEPro application. The hard-copy analytical reports are archived in the records library in Grand Junction, Colorado, along with the original field data forms and other relevant hard-copy forms or documents containing project data. Well construction and lithology logs are maintained for previously drilled wells and are produced for all new wells drilled. These logs are archived in the records library and can also be accessed electronically via the SEEPro database and the Geospatial Environmental Mapping System.

SEEPro uses Oracle software for data management and Microsoft Access for data retrieval and display. It compiles water quality, air quality, field parameter, sample-tracking, sample location, and water-level data for groundwater, surface water, boreholes, soils, and sediment samples. Field parameter data include such information as sample location, sample date, pH, turbidity, conductivity, and temperature. Chemical information (Chemical Abstracts Service registry numbers, analytical results, and detection limits) is also included. Data managers follow specific procedures for verification of database information received from subcontractors or verification

of data input directly into SEEPro. These procedures provide quality assurance (QA) documentation, which ensures that available data have been incorporated and entered or uploaded properly into SEEPro. Data integrity is maintained with standardized error checking routines used when loading data into SEEPro. Other procedures address database system security and software change control.

The Site field data are entered through the FieldPar field data entry system. This system is a data entry module that is compatible with the SEEPro database and is used in the office by field personnel. The samplers verify data entered into FieldPar before loading the data into the main SEEPro database.

Spatial information for air and water data features is located in the LM GIS database. Some of the data features included are monitoring locations, potentiometric surfaces, plume configurations, streams/creeks, lakes/ponds, topographic contours, and historical Site facilities. This system uses an ESRI ArcGIS suite of software to store and present data. Automated monitoring locations and other sample location data features are derived from location information stored in the SEEPro database.

Analytical results for water samples for the fourth quarter of CY 2009 are provided in Appendix B.

### **3.3.2 Ecology Data**

Ecological data have been collected at the Site for many years. Since the early 1990s ecological data have been kept in electronic files for easier access, retrieval, and analysis. In the mid-1990s, the Sitewide Ecological Database (SED) was established as a master data set for the various types of ecological data collected at the Site. The SED is a Microsoft Access database that contains all quality-assured ecological data for RFETS from early 1993 through the end of 2001. Data that did not meet the QA objectives are not included in the database. Ecology data in the SED include vegetation monitoring, weed control and controlled burn vegetation monitoring, wildlife surveys (including birds, small mammals, frogs, insects, and fish), Preble's meadow jumping mouse habitat characterization and telemetry tracking, a small amount of soil characterization survey data (for revegetation issues), and a few other types of ecological data. The SED does not contain data on potential contaminants, nor is it linked to any GIS or other spatial tool. The data in the SED are primarily observational or catch-and-release; they are considered raw data taken directly from field logbooks and datasheets. The SED is not intended as a reference for the layperson. It is a repository of quality-assured raw field data collected by Site ecologists and cannot be taken out of context of the methods used to collect the data. Data collection methods are not stored in the database, they are described in reports and field sampling plans.

From 2002 to the present, the ecology data have been stored as separate data sets by sample type, event, and year. Depending on the data set, the data may be in a Microsoft Access database or in a Microsoft Excel spreadsheet format. The nonspatial electronic ecology data are stored on the servers at the Site in Westminster, Colorado, or on backup electronic media.

Spatial ecology data for the Site are available for several data types and are stored in the GIS on the servers in Grand Junction, Colorado. The types of ecological spatial data that are available include annual weed distribution data (for selected species), annual weed control locations, biocontrol release locations, vegetation and wildlife monitoring locations (transect end points

and sample points), vegetation community classifications, Preble's meadow jumping mouse habitat, wetland locations, wildfire/prescribed burn locations, Preble's meadow jumping mouse and wetland mitigation work, and rare plant locations. These data are available in various ArcGIS® compatible formats. In addition to these types of spatial data, orthorectified aerial and satellite imagery is also available for the Site for different time frames, including pre- and post-closure.

### 3.4 Validation and Data Quality Assessment

Data validation and verification (V&V) during CY 2009 was performed by Legacy Management Support contractor personnel at the Grand Junction, Colorado, office. Data quality assessment (DQA) is performed by personnel at the Site. The following section distinguishes DQA from data validation, and discusses the technical basis, equations, and criteria used for DQA of water.

#### 3.4.1 General Discussion

Data validation is the principal means of assessing the usability of water analytical data. Validation also improves overall data quality by allowing the laboratory coordinator to closely monitor laboratory performance and to provide feedback to each laboratory regarding its ability to produce quality data that meets subcontract requirements. The laboratory coordinator may also use the results of data validation to direct analytical work to laboratories that demonstrate superior performance by generating timely, high-quality analytical data for the Site.

Data validation is a rigorous data review performed by the laboratory coordinator or designee on all of the water analytical data generated by the Site. Additionally, the Site lead may request a secondary detailed validation on a case-by-case basis. Data validation is currently performed as specified in Stoller *Environmental Procedures Catalog*, "Standard Practice for Validation of Laboratory Data." This procedure is based on the following EPA documents:

- EPA 2010, *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*, USEPA-540-R-10-011, October;
- EPA 2008, *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review*, USEPA-540-R-08-01, June;
- EPA 2001, *USEPA Contract Laboratory Program National Functional Guidelines for Low Concentration Organic Data Review*, EPA-540-R-00/006, June; and
- EPA 1997, *Evaluation of Radiochemical Data Usability*, Office of Environmental Management, ES/ER/MS-5, April.

All water analytical data collected by the Site are considered valid unless data validation identifies analytical problems that require the data to be qualified. When it is necessary to qualify individual data records, standard qualifier codes (alphanumeric validation codes) are applied.

Common data qualifiers used by LM are defined below. Refer to *Environmental Procedures Catalog*, "Standard Practice for Validation of Laboratory Data" for formal definitions.

- U The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.