CHAPTER 9

The RACER Project

RACER stands for Risk Analysis, Communication, Evaluation and Reduction and it is a new tool and a new process for managing risks from the Los Alamos National Laboratory (LANL). RACER is an effort to develop an open and easy to understand process for reducing the risks to the public from LANL. The RACER project differs from past risk studies that have been conducted at LANL in that the work is being done by the Risk Assessment Corporation (RAC) under a contract with Colorado State University, whereas previous risk studies at LANL have been carried out by the LANL or its contractors. CEMRC has been collaborating in this effort under contracts to CSU and RAC. The independence of the CSU/RAC/CEMRC scientists from LANL provides additional assurance to the public and regulators that an open and unbiased assessment of the data will be provided. Unlike earlier studies, RACER is designed to integrate risks from the entire LANL site.

The goal of the RACER project is to develop a process and tools that can be used to guide the efforts to reduce risk from LANL. These tools will be used together within the RACER process (Fig. 9.1) to identify and rank the sources of public health risk from LANL and to help select the best way to reduce these sources of risk. The sources include smoke stacks, waste burial grounds, and areas where radioactive materials or chemicals have been released into the soil. The RACER process will take into account not only cost, but other issues that are important to people who live in the region such as the need to protect cultural resources or wildlife habitat.

CEMRC has contributed to the design and implementation of several of the tools created for the RACER project. One of these tools provides access to the LANL environmental sample data through a Web interface (http:racerdb.nmsu.edu) (Fig. 9.2). The data are stored in a MySQL database and data can be selected through a series of forms. The data are then displayed either as a table (Fig. 9.3) or a graph (Fig. 9.4). The RACER database is the first implementation of a system that can provide access to environmental data collected by the many environmental management at LANL and the New Mexico Environment Department. It includes data from LANL Meteorology and Air Quality, LANL Remediation Services, LANL Water Quality and Hydrology, the NMED Oversight Bureau, and the NMED Casa Grande File Project. These data provide contaminant concentrations in air, surface water, ground water, storm water, soil, sediment, natural vegetation, wildlife, and various potential food sources. The data include organic, inorganic and radionuclide contaminants. Most data are identified with geographic locations, thus enabling the data to be mapped and subjected to spatial analyses.

RAC is currently designing an extension to the web site that will enable spatial oriented analyses to be conducted using a web-based browser. CEMRC will be collaborating to provide support for this web interface as well. The system will be implementing a web-based version of a tool previously implemented using ACCESS databases and an integrated GIS tool called MapSelect (Fig. 9.5). MapSelect and the underlying database scheme was developed by CEMRC to

allow investigators to easily and rapidly select and display data for display on a map. It is designed to run on MS Windows. MapSelect can display industry-standard ERSI shape files (i.e., map layers), such as those produced by ArcInfo and used by ArcView and related products. In addition, data selected from the database can be displayed in a map layer. MapSelect provides interactive capabilities for selecting, grouping or clustering, and summarizing data using the map interface. Points, polygons and lines can be created by MapSelect and stored in the database or as new shape files. MapSelect is integrated into several of the RACER tools for both analyzing data and for evaluating risks.

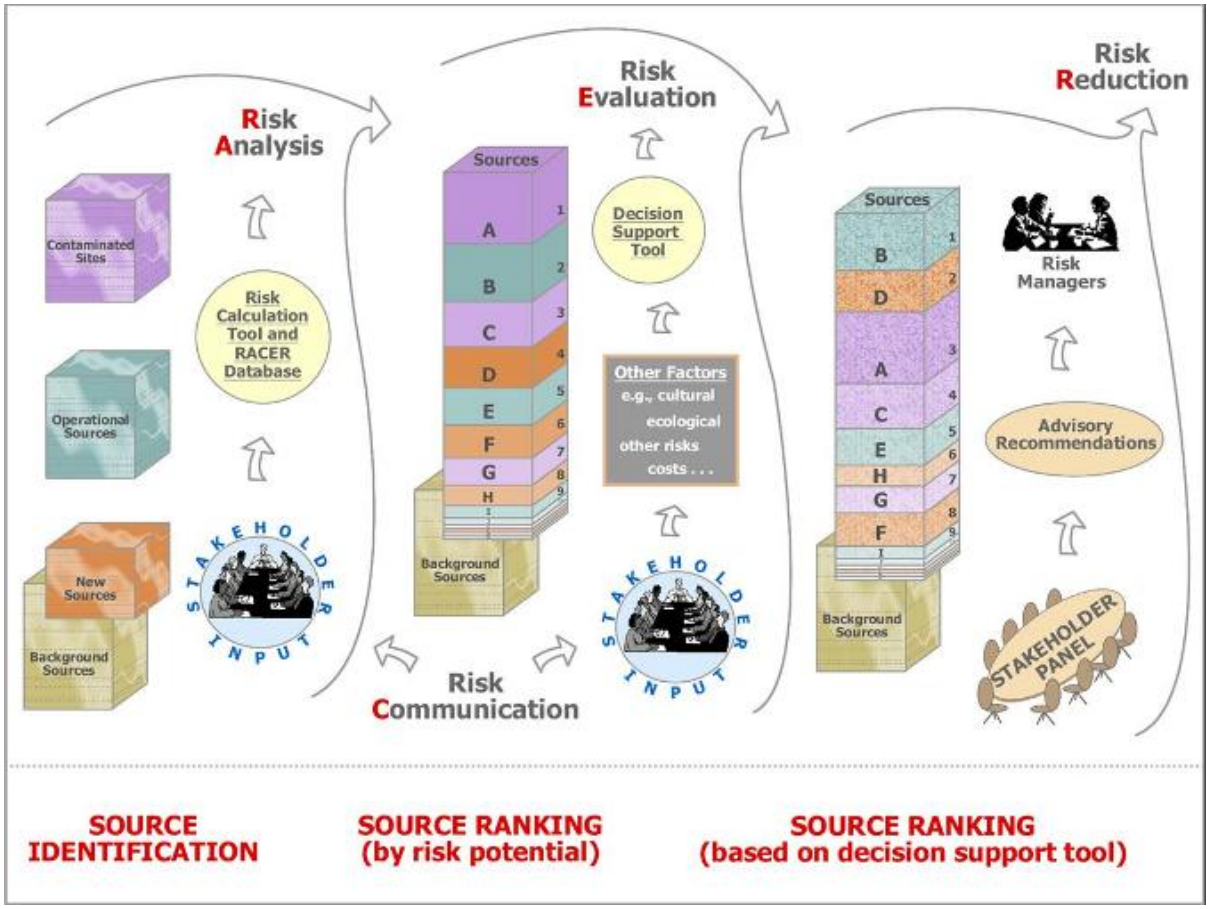


Figure 9.1: The RACER Project is Designed to Both Assess Risks and to Help Manage and Reduce Those Risks

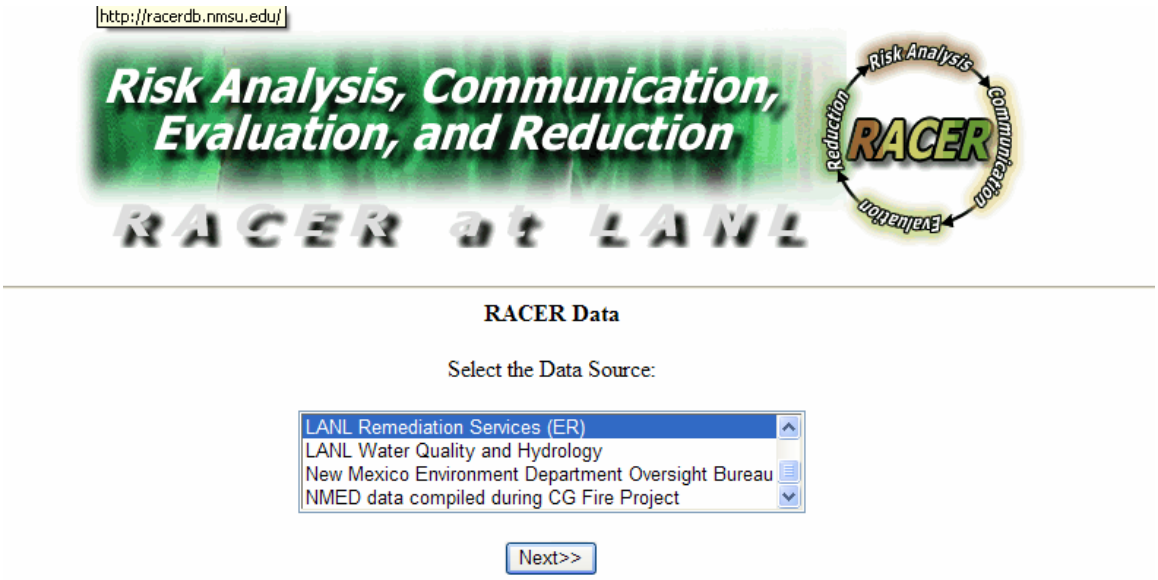
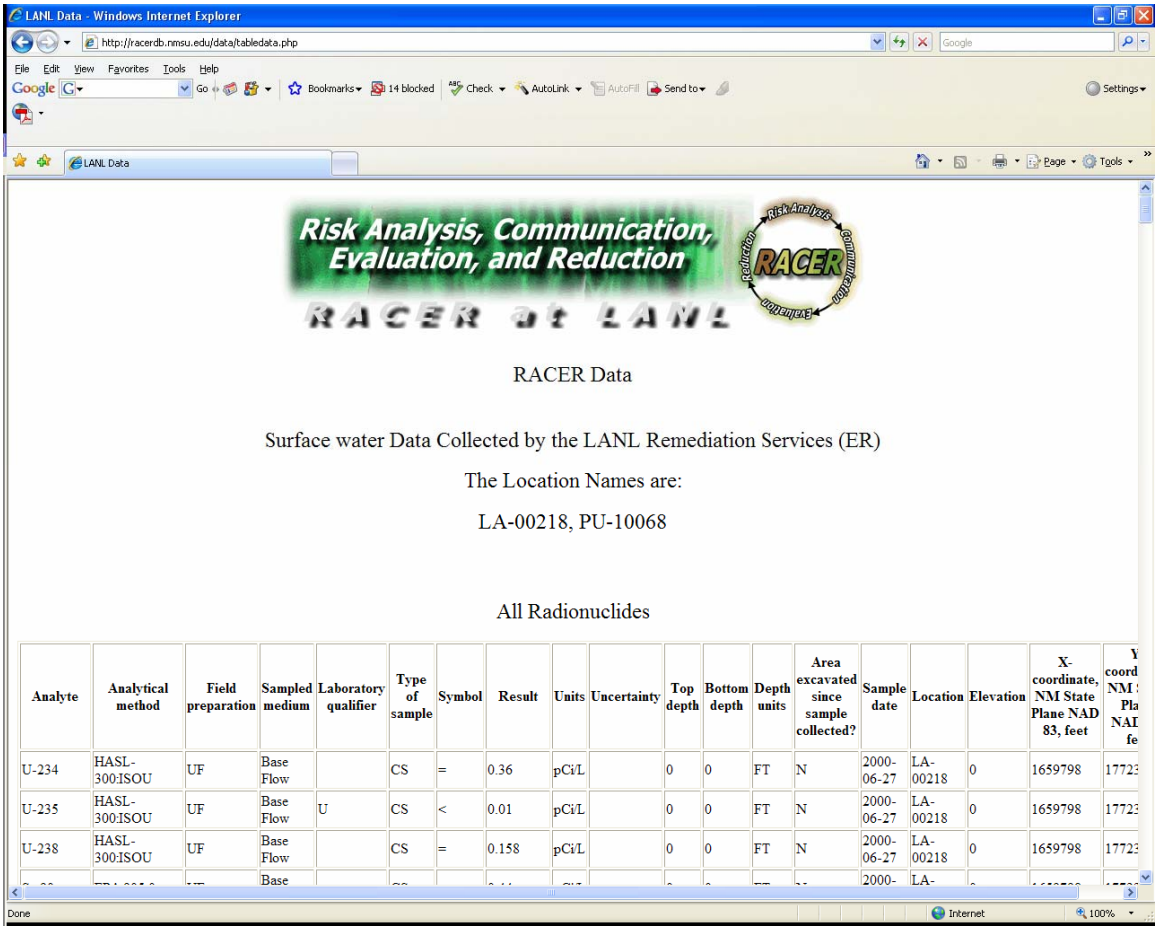


Figure 9.2: The Web-based Interface to the RACER Database Developed by CEMRC



Analyte	Analytical method	Field preparation	Sampled medium	Laboratory qualifier	Type of sample	Symbol	Result	Units	Uncertainty	Top depth	Bottom depth	Depth units	Area excavated since sample collected?	Sample date	Location	Elevation	X-coordinate, NM State Plane NAD 83, feet	Y coord NM Pla NAI fe
U-234	HASL-300:ISOU	UF	Base Flow		CS	=	0.36	pCi/L		0	0	FT	N	2000-06-27	LA-00218	0	1659798	17723
U-235	HASL-300:ISOU	UF	Base Flow	U	CS	<	0.01	pCi/L		0	0	FT	N	2000-06-27	LA-00218	0	1659798	17723
U-238	HASL-300:ISOU	UF	Base Flow		CS	=	0.158	pCi/L		0	0	FT	N	2000-06-27	LA-00218	0	1659798	17723

Figure 9.3: Typical Tables of Data Selected from the RACER Online Database

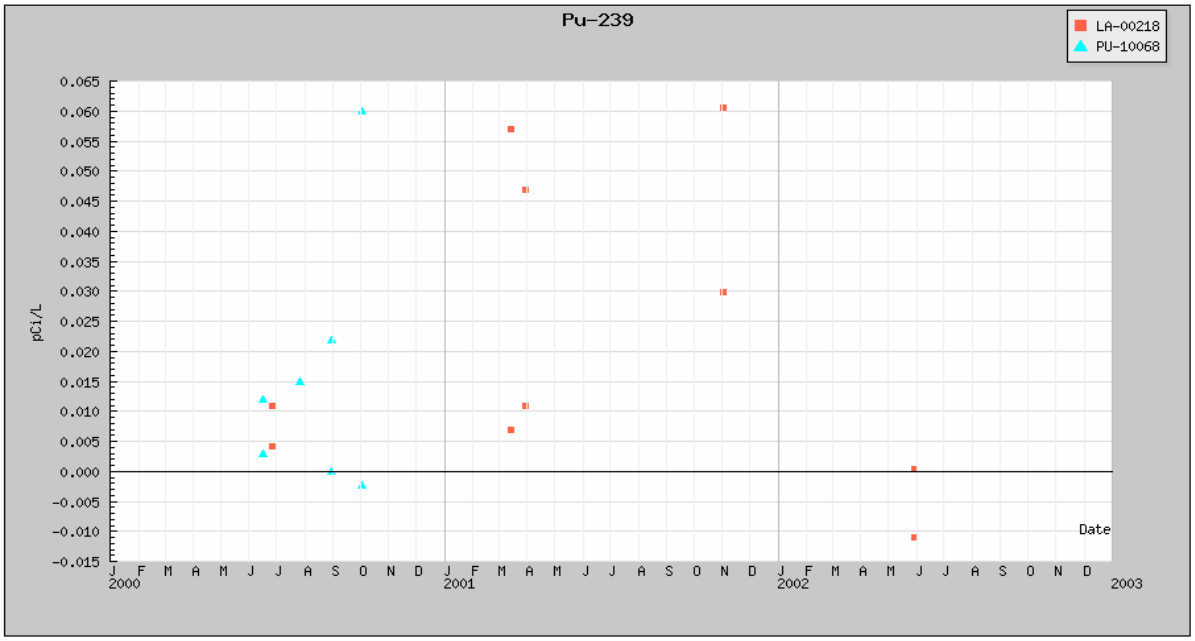


Figure 9.4: Typical Timeseries Graph Produced Using the RACER Online Database Tool

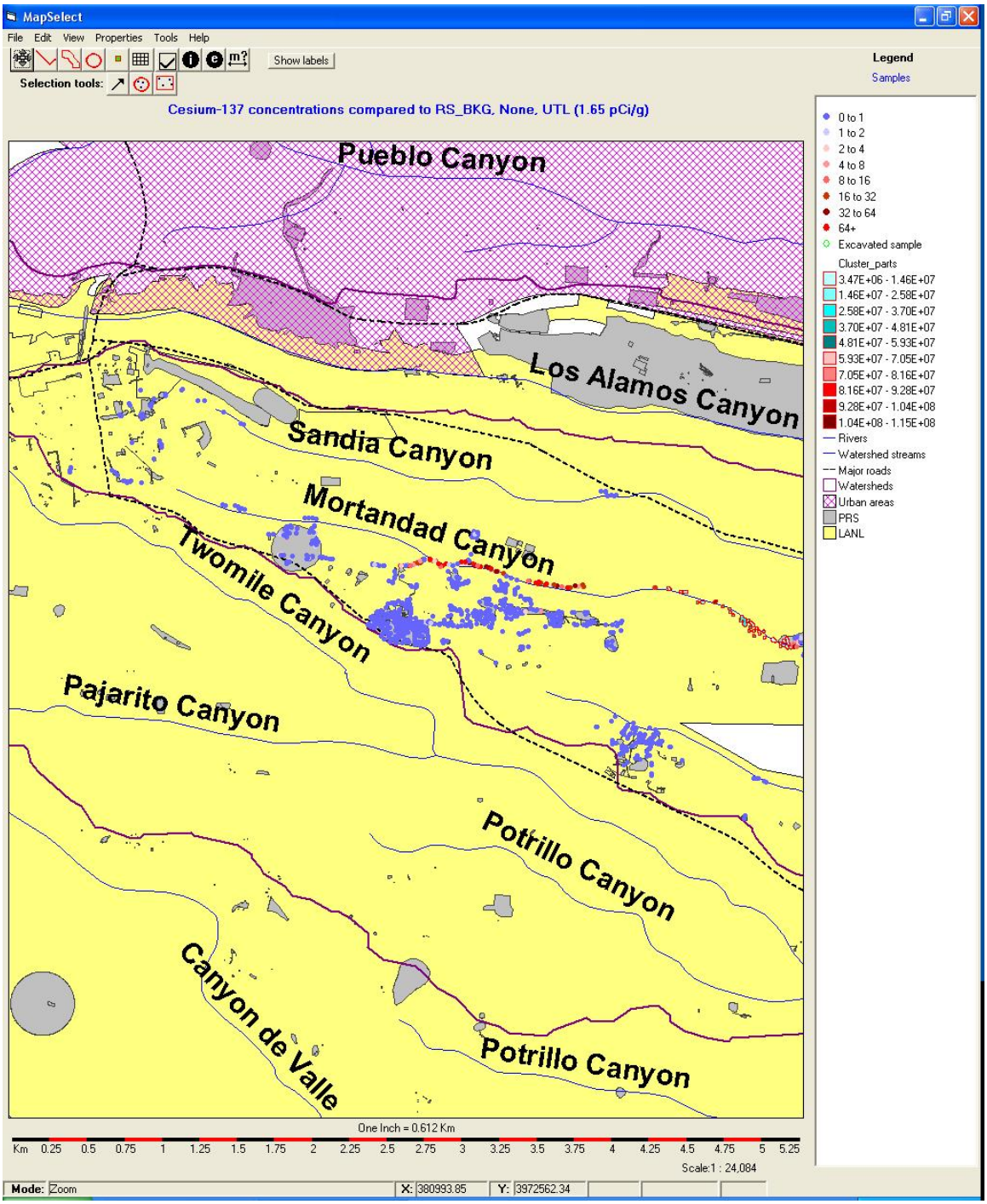


Figure 9.5: MapSelect is Integrated with the RACER Database to Provide Mapping and Spatial Analyses Functions