MARSSIM Innovative Characterization

Nevada Test Site
In Partnership with the Office of Science & Technology

Introduction

In FY2001 the DOE Office of Science and Technology (OST) and the Deactivation and Decommissioning Focus Area (DDFA) partnered with the Nevada Test Site (NTS) in support of an Accelerated Site Technology Deployment (ASTD) project. This project provides for the deployment of the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) techniques for NTS environmental management activities.

Technical Need

While portions of the MARSSIM methodology have been used at the NTS and other EM sites, typically the methodology has been used to characterize and/or release 2-D surfaces (interior of buildings) and surface soil. There has been no systematic application of MARRSIM for subsurface soil characterization or exterior building and roof surveys. The NTS deployment of MARSSIM will concentrate on non-standard applications where there are potential cost savings when compared to the NTS baseline method of sampling and laboratory analysis.

In addition to the MARSSIM surveys, there is an immediate need to develop more cost-effective methods to characterize containerized waste. The baseline NTS waste characterization methodology requires a minimum of five samples to be collected from each B-25 box.

System Description

This ASTD project will apply MARSSIM for non-standard applications including development and implementation of a 3-D statistical approach for characterizing subsurface soil. The results of this effort will be to reduce the number of sampling locations and/or an increase in the confidence of the subsurface characterization data. The MARSSIM will also be deployed for rooftop and building exterior release surveys at the Reactor Maintenance, Assembly, and Disassembly (R-MAD) Building D&D site, to reduce the necessity of using the baseline instrument surveys that are now required for the site release of each individual waste load.

In addition to deploying the potentially cost-reducing MARSSIM methodology, Brookhaven National Laboratory will provide technical assistance for the deployment of the In Situ Object Counting System (ISOCS). The ISOCS deployment will focus primarily on waste characterization, but will also be deployed as an integrated technology as part of the MARSSIM roof top survey. By deploying the ISOCS system and applying isotope scaling factors developed from characterization sample results, real-time waste characterization of B-25 boxes and 55-gallon drums can be accomplished.

Benefits

The primary benefit is reduction in NTS environmental management costs by employing methodologies that will streamline and minimize sampling programs. This will result in schedule acceleration while maintaining data quality requirements.

Status

The MARSSIM final release survey has been completed and data has been compiled, validated, and tabulated. In addition, Bechtel Nevada (BN) staff have deployed of the ISOCS for free release of materials removed from the R-MAD building and the adjacent R-MAD Decontamination Building. In the wake of the terrorist activities of September 11, 2001 further deployment activities were put on hold. These activities have been tentatively rescheduled for the week of October 29, 2001 and include deployment of ISOCS for waste calibration of 55-gallon drums, waste calibration of B-25 boxes, and in-situ measurements of contaminated duct work.

Project Funding (in Thousands)

Funding Source	FY01
OST	$350

For more information about deployment of the MARSSIM Characterization at the Nevada Test Site, contact:

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