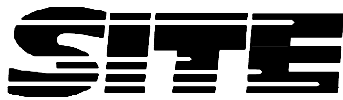




FACTS

March 1998



SITE Demonstration at McClellan Air Force Base Site IC 31
Visitors' Day on April 29, 1998 at 9:00 a.m.
at McClellan Air Force Base, Sacramento, California

Process Technologies Incorporated Photolytic Destruction Technology

Introduction

The U.S. Environmental Protection Agency (EPA) identifies new methods for hazardous waste cleanup through its Superfund Innovative Technology Evaluation (SITE) Program. Created in 1986, this program evaluates innovative treatment technologies that may significantly reduce the toxicity, mobility, or volume of hazardous wastes. The primary goal of the SITE Program is to evaluate innovative technologies in order to generate performance, cost, and reliability information. This information can then be used by decision-makers to evaluate cleanup alternatives for sites with similar hazardous waste contamination.

One technology to be demonstrated under the SITE Program is the photolytic destruction system developed by Process Technologies Incorporated (PTI) of Boise, Idaho. An 8-week evaluation will take place at Site IC 31 at McClellan Air Force Base (AFB), located near Sacramento, California. A primary objective of the demonstration is to determine how effectively the technology destroys volatile organic compounds (VOC) emitted in the off gas from the soil vapor extraction (SVE) system currently treating contaminated soil at the base. The demonstration is part of an interagency partnership based on a Memorandum of Understanding between government agencies and private companies, including the Strategic Environmental Research and Development Program, the California Environmental Technology Partnership, the EPA SITE Program, and the Clean Sites Public-Private Partnership Program. This fact sheet presents a brief discussion of the SITE Program, the PTI technology, McClellan AFB Site IC 31, the technology evaluation objectives, and the scheduled Visitors' Day.

The SITE Program

The EPA SITE Program evaluates innovative technologies under actual, full-scale field conditions to generate reliable, real-time performance and cost data on a technology. Evaluations are usually conducted at Superfund sites, EPA or other government testing and evaluation facilities, active federal installations, or privately-owned sites undergoing cleanup.

The SITE Program strives to achieve the following objectives:

- Identify and promote the development and commercial use of innovative and alternative treatment technologies
- Generate accurate information for potential end-users to consider when selecting remediation methods
- Develop policies that encourage selection of available alternative treatment remedies for cleanup

Technology Description

The PTI Photolytic Destruction Technology to be evaluated at McClellan AFB is designed to remove VOCs from an SVE unit in operation at the test site. Figure 1 highlights the process flow of VOC-contaminated vapors from the SVE unit through the PTI treatment system. PTI's treatment system consists of a Concentration Unit (CU) and a Photolytic Destruction Unit (PDU). The CU is best applied to high flow, low concentration VOC vapor streams. Conversely, the PDU is best applied to low flow, high concentration VOC vapor streams. By sequentially combining the CU and the PDU technologies, PTI has created a system that can treat a variety of VOC-contaminated vapor streams.

McClellan AFB Demonstration Site

The CU consists of an adsorber, a desorber, and a condenser. The adsorber contains small beads that capture the VOCs in the off gas from the SVE unit. The treated off gas is discharged from the adsorber to the atmosphere. In the desorber, the VOC-laden beads are heated by steam to evaporate the VOCs in order to produce a concentrated VOC vapor stream and regenerate the beads. The concentrated VOC vapor stream from the desorber flows to the condenser where organics and water vapor condense and are removed from the vapor stream. The noncondensable vapor stream from the condenser is then processed through the PDU. The regenerated beads are returned to the adsorber and reused.

The PDU uses a proprietary technology developed by PTI. The PDU consists of low-pressure ultraviolet (UV) lamps, which produce low-wavelength, high-energy UV light to destroy VOCs in the noncondensable vapor stream. A proprietary reagent material, located in close proximity to the UV lamps, converts free radicals formed by photodissociation to stable inorganic salts. The treated gas from the PDU passes through a scrubber that removes acidic gases formed in the PDU. The off gas from the scrubber is returned to the adsorber.

McClellan AFB is located about 6 miles northeast of downtown Sacramento, California. The main base facility consists of 2,949 contiguous acres. The current primary mission of the base is management, maintenance, and repair of aircraft, electronics, and communications equipment. The base is also engaged in a wide variety of operations involving the use, storage, and disposal of hazardous materials. Approximately 250 waste sites, potential release locations, and other areas on the base warrant investigation. Soil contamination consists primarily of chlorinated hydrocarbons, for which the base has several operating remediation systems in place, including SVE systems. Site IC 31 was selected for this demonstration because of the types and concentrations of VOCs present in site soils. Site IC 31 is located in the southeast corner of the base and covers an area of 6.7 acres (see Figure 2).

Technology Demonstration

EPA will evaluate the PTI technology during the 8-week demonstration, from early March through April or early May 1998. The demonstration will be divided into two phases. Phase 1 will involve mobilization and installation activities,

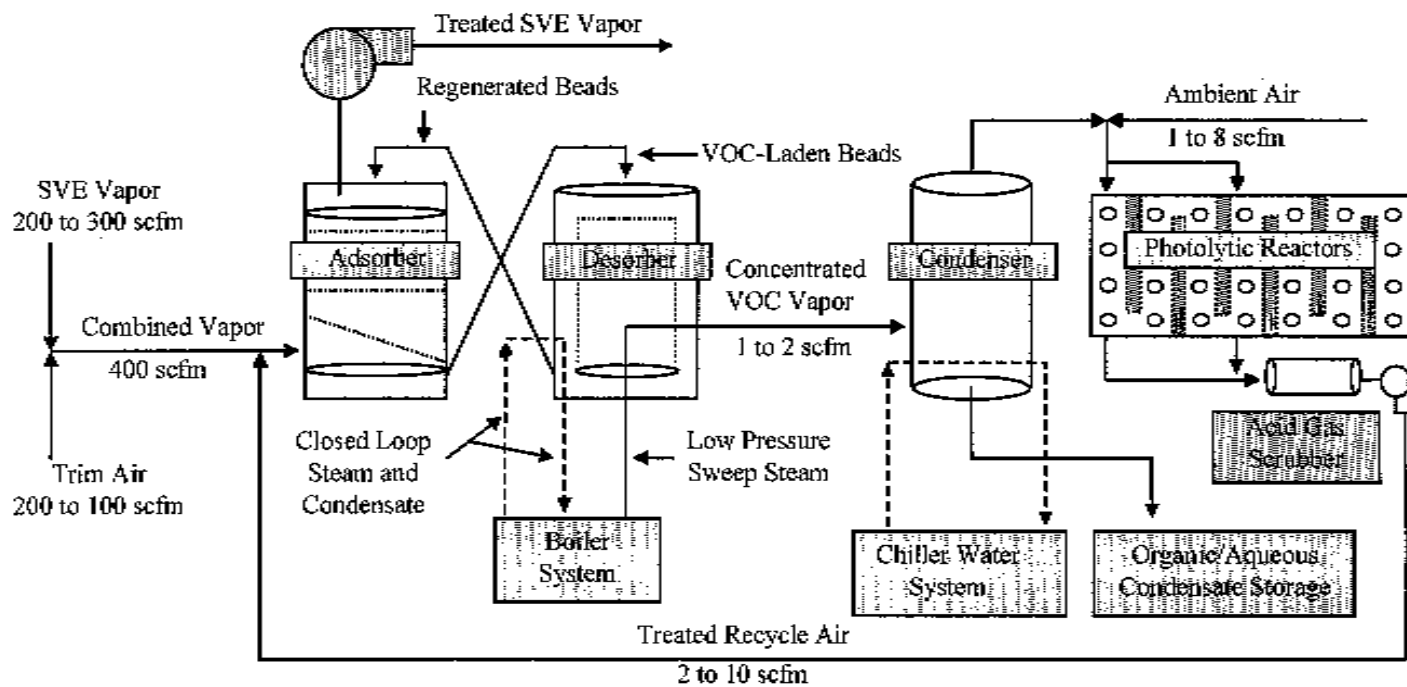


Figure 1. Process Flow Diagram of PTI Photolytic Destruction Technology

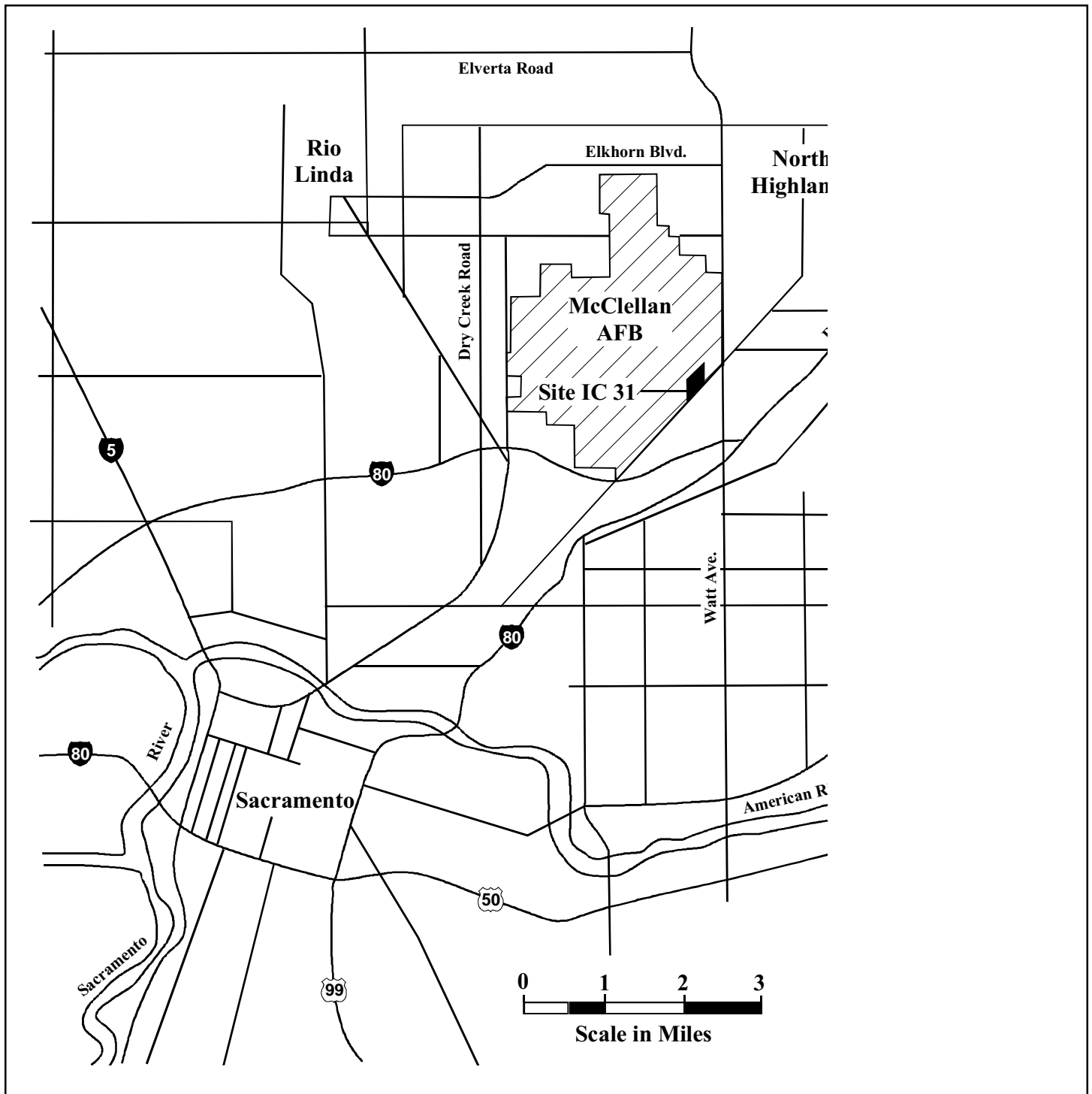


Figure 2. *McClellan Air Force Base Site Map*

followed by parametric testing for a 3-week period. This testing will be used to determine the system’s optimal operating conditions. After review of the Phase 1 sampling and analytical data, Phase 2, Preferred Operating Conditions Testing, will begin. The system will operate under steady-state conditions for a 5-week period. During Phase 2, samples will be collected and analyzed to determine the effectiveness of the system in meeting the following demonstration objectives:

- Evaluate whether the PTI system can achieve 95 percent overall removal of total non-methane organic compounds in the feed gas stream
- Determine the percent removals achieved by the PTI system for critical VOCs in the feed gas stream
- Estimate VOC treatment costs for a 1,000-standard cubic feet per minute (scfm) PTI system

With input from the Public-Private Partnership, PTI has prepared a detailed Work Implementation Plan that outlines the procedures for evaluating the technology. The SITE Program is responsible for determining and maintaining quality assurance standards throughout the demonstration, specifically during sample collection and analysis. The overall purpose of the demonstration is to obtain performance, cost, and reliability data about the PTI technology so that potential users can judge the technology's applicability to other sites.

After the demonstration is complete, EPA will publish the results in several reports summarizing performance results and cost information generated during the demonstration.

Visitors' Day

The SITE Program and McClellan AFB will host a Visitors' Day on Wednesday, April 29, 1998. The Visitors' Day will include presentations about the SITE Program, PTI's Photolytic Destruction Technology, McClellan AFB Site IC 31, and the technology evaluation. Visitors will also be able to view the technology evaluation activities at Site IC 31. Those interested in attending the Visitors' Day must preregister **by Friday, April 17, 1998** in order to provide time for security clearance. To preregister, please complete and return the enclosed preregistration form. If you require additional information, contact Cynthia Loney at (513) 241-0149 or by e-mail at "loneyc@ttemi.com".

Additional Information

Questions or comments about the SITE Program or the demonstration should be directed to:

Mr. Paul dePercin
U.S. Environmental Protection Agency
National Risk Management Research Laboratory
26 West Martin Luther King Drive
Cincinnati, OH 45268
Telephone: (513) 569-7797

Specific questions about McClellan AFB or Site IC 31 should be directed to:

Mr. Craig Burnett
McClellan AFB Environmental Management
5050 Dudley Boulevard
Suite 3, Building 269E
McClellan AFB, CA 95652-1389
Telephone: (916) 643-3672 ext. 327

Specific questions about the PTI Photolytic Destruction Technology should be directed to:

Mr. John Ferrell or Mr. Michael Swan
Process Technologies Incorporated
1160 Exchange Street
Boise, ID 83716-5762
Telephone: (208) 385-0900 ext. 224 or 223



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF RESEARCH AND DEVELOPMENT
NATIONAL RISK MANAGEMENT RESEARCH LABORATORY
CINCINNATI, OHIO 45268

March 26, 1998

You are invited to participate in a Visitors' Day for an upcoming evaluation of an innovative photolytic destruction technology. This demonstration is sponsored by the U.S. Environmental Protection Agency (EPA), the U.S. Department of Defense (DOD), the Strategic Environmental Research and Development Program (SERDP), the California Environmental Technology Partnership, and the Clean Sites Public-Private Partnership. The Visitors' Day will be held at McClellan Air Force Base (AFB) located near Sacramento, California on April 29, 1998. The Visitors' Day is scheduled to last from 9:00 a.m. until 1:30 p.m.

The photolytic destruction system was developed by Process Technologies Incorporated (PTI) of Boise, Idaho. The evaluation will take place at McClellan AFB Site IC 31. A primary objective of the 8-week evaluation is to determine how effectively the technology destroys volatile organic compounds (VOC) emitted in the off gas from the soil vapor extraction (SVE) system currently treating contaminated soil at the base (see the enclosed fact sheet).

The Visitors' Day will begin with registration at 8:15 a.m., followed by presentations from 9:00 a.m. to noon about the SITE Program, the McClellan AFB and Site IC 31, the PTI technology, and the project evaluation. During these presentations, you will receive technology and demonstration information. There will also be an opportunity to view the technology in operation. Interested participants will be escorted to the demonstration area where representatives from EPA, McClellan AFB, PTI, and the evaluation team will be present to informally discuss the demonstration activities. Participants will then be escorted back to the auditorium where the Visitors' Day will adjourn at approximately 1:30 p.m.

All participants must preregister. Please bring photo identification to the facility on April 29. If you plan to attend, fill out and return (by mail or fax) the enclosed preregistration form. Preregistration forms must be received by **Friday, April 17, 1998**. If you are not a U.S. citizen, please preregister by **Wednesday, April 15, 1998** to allow adequate time for a visitor's badge to be issued. Information about hotel accommodations and directions to McClellan AFB auditorium and registration area will be faxed to you with your registration confirmation.

Please circulate this information in your office or community. We look forward to seeing you on April 29, 1998.

Sincerely,

A handwritten signature in cursive script, appearing to read "Paul dePerlin".

Paul dePerlin

U.S. Environmental Protection Agency
National Risk Management Research Laboratory
Superfund Technology Demonstration Division

Preregistration Information for the SITE Program Visitors' Day at McClellan Air Force Base

Please complete one form for each registrant (feel free to duplicate this form). Preregistration must be received by **Friday, April 17, 1998**. If you are not a U.S. citizen, please preregister by **Wednesday, April 15, 1998** to allow adequate time for a visitor's badge to be issued. All Visitors' Day participants must preregister to attend. Valid photo identification (such as a driver's license) is required to receive a visitor's badge. Attire for the Visitors' Day is casual and should be appropriate for a field construction site.

Full Name (First, Middle, Last): _____

Title: _____

Organization: _____

Address: _____

City, State, Zip Code: _____

Telephone Number: _____

Fax Number: _____

E-mail Address: _____

Social Security Number: _____

Date of Birth: _____

Are you a U.S. Citizen? Yes No

If not, what is your citizenship? _____

Do you need handicap access? Yes No

Please mail or fax this form to: Cynthia Loney

Tetra Tech EM Inc.
625 Eden Park Drive
Suite 100
Cincinnati, OH 45202
Telephone: (513) 241-0149
Fax: (513) 241-0354

or e-mail this information to: loneyc@ttemi.com