

# Chapter 3

## Remedial Progress

The Agency's progress during FY97 illustrated its continuing commitment to accelerating and completing cleanups at Superfund sites. The Agency started more than 102 remedial actions (RAs) to construct remedies, and completed construction activities to place 88 sites in the construction completion category. To date under the Superfund program, the Agency has placed a total of 498 National Priorities List (NPL) sites in the construction completion category. This chapter describes the remedial progress during the fiscal year. Specifically, this chapter provides information on:

- Status on all remedial actions undertaken in FY97, as required by CERCLA Section 301(h)(1)(F);
- Remedies selected during FY97, as required by CERCLA Section 301(h)(1)(A);
- FY97 results of five-year reviews under CERCLA Section 121(c) at sites where contamination remained after the initiation of the RA, as required by CERCLA Section 301(h)(1)(E); and
- FY97 efforts to develop and use innovative treatment technologies, including an evaluation of newly developed and achievable permanent treatment technologies, as required by CERCLA Section 301(h)(1)(D).

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### 3.1 Remedial Process

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The remedial process complements the removal process (see Chapter 2) by addressing more complicated, long-term evaluation and response for

hazardous waste sites on the NPL. The remedial process is preceded by the site evaluation process, which consists of the discovery or identification of a potential site, the preliminary assessment of the site, and the site inspection (SI). During the SI, the site is evaluated for possible listing on the NPL. If a site is listed on the NPL after the SI, the Trust Fund can be used to finance clean-up activities at the site under the remedial authority of CERCLA.

The remedial process to clean up NPL sites is comprised of the following activities:

- The remedial investigation/feasibility study (RI/FS) to determine the type and extent of contamination and to evaluate and develop remedial clean-up alternatives;
- The record of decision (ROD) to identify the remedy selected, based on the results of the RI/FS and public comment on the clean-up alternatives;
- The remedial design (RD) to develop the plans and specifications required to construct the selected remedy;
- The remedial action (RA) to implement the selected remedy, from the start through the completion of construction of the remedy; and
- Operation and maintenance (O&M) to ensure the effectiveness and/or integrity of the remedy. O&M occurs after implementation of a response action.

A Remedial Project Manager (RPM) oversees all remedial activities and related enforcement

activities. Regional coordinators at EPA Headquarters assist RPMs by reviewing remedial and enforcement activities and by answering technical and policy questions.

### 3.2 Fiscal Year 1997 Remedial Status

The Agency's progress during the fiscal year in initiating RAs and completing construction activities to classify sites as construction completions indicates its continuing commitment to accelerate the cleanup of NPL sites. By the end of FY97, work had occurred at 98 percent of the 1,405 NPL sites. In addition, over 156 sites were deleted from the NPL. Exhibit 3.2-1 illustrates the status of the work at NPL sites, showing sites by the most advanced stage of activity accomplished. The following sections of this chapter highlight progress made at the sites during FY97.

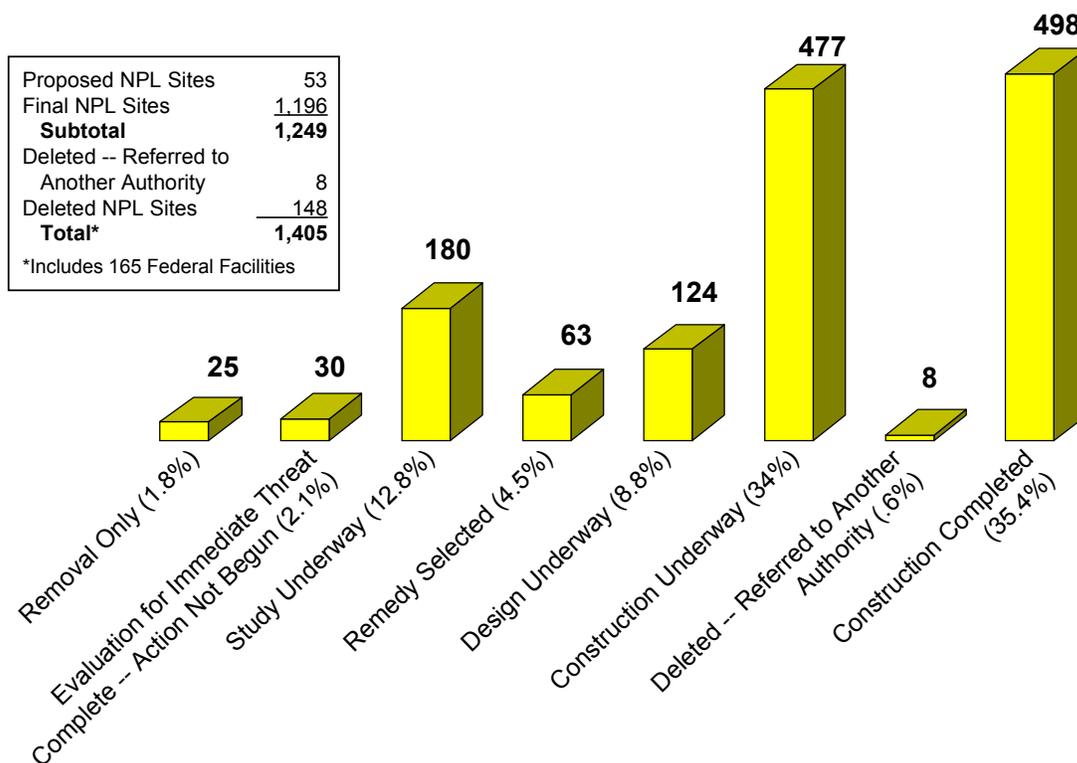
#### 3.2.1 Construction Completions

Responding to the recommendations of the 1991 30-Day Study and the 1993 Superfund Administrative Improvements Task Force, the Agency has worked to accelerate and complete cleanup at NPL sites. The Agency completed construction activities at 88 sites during FY97, bringing the total number of sites in the construction completion category to 498. More than 44 percent of the construction completions have been achieved in the past three years.

#### 3.2.2 New Remedial Activities

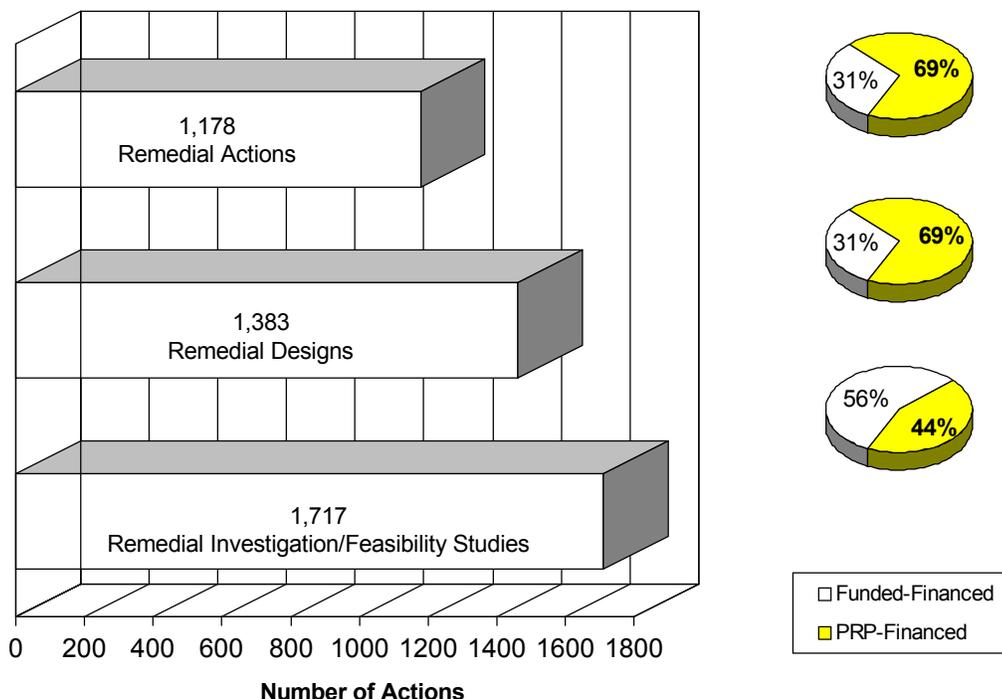
As shown in Exhibit 3.2-2, the Agency or potentially responsible parties (PRPs) had undertaken approximately 1,777 RI/FSs, 1,460 RDs, and 1,178 RAs since the inception of the Superfund program through the end of the FY97.

**Exhibit 3.2-1  
Work Has Occurred at Over 85 Percent of the National Priorities List Sites**



Source: CERCLIS (as of September 30, 1997).

**Exhibit 3.2-2**  
**Remedial Accomplishments Under the Superfund Program**  
**for Fiscal Year 1980 Through Fiscal Year 1997**



Source: CERCLIS (as of September 30, 1997).

The remedial activities started during FY97 reflect the Agency's continued emphasis on accelerating the pace of cleanup and focusing resources on RAs. New remedial activities undertaken this fiscal year include:

*RI/FS Starts:* The Agency or PRPs started 41 RI/FSs during FY97, including 23 (56 percent) financed by EPA and 18 (44 percent) financed by PRPs. For comparison, in FY96 the Agency or PRPs started 36 RI/FSs, including 26 (72 percent) financed by EPA and 10 (28 percent) financed by PRPs.

*RD Starts:* The Agency or PRPs started 72 RDs during FY97, including 22 (31 percent) financed by EPA and 50 (69 percent) financed by PRPs. For comparison, in FY96 the Agency or PRPs started 74 RDs, including 20 (27 percent) financed by EPA and 54 (73 percent) financed by PRPs.

*RA Starts:* The Agency or PRPs started 102 RAs during FY97. EPA financed 32 (31 percent) and PRPs financed 70 (69 percent). For comparison, in FY96,

the Agency or PRPs started approximately 116 RAs, including 34 (29 percent) financed by EPA and 82 (71 percent) financed by PRPs.

### 3.2.3 In Progress Remedial Activities

At the end of FY97, 1,793 RI/FS, RA, and RD projects were in progress at 815 sites. For comparison, at the end of FY96 1,766 RI/FS, RA, and RD projects were in progress at 845 sites. Projects in progress at the end of FY97 included 1,494 RI/FS and RA projects and 299 RD projects. As required by CERCLA Sections 301(h)(1)(B),(C), and (F), a listing of the RI/FS and RA projects in progress at the end of FY 97 is provided in Appendix A, along with a projected completion schedule for each project. A listing of all RDs in progress at the end of FY97 is provided in Appendix B.

Of the 1,494 RI/FS and RA projects in progress at the end of FY97, 55 percent were on schedule, ahead of schedule, started during the fiscal year, or had no previously published completion schedule,

**Exhibit 3.2-3  
Projects in Progress at National Priorities List Sites  
by Lead for Fiscal Year 1996 and Fiscal Year 1997**

	RI/FS		RDs		RAs	
	FY96	FY97	FY96	FY97	FY96	FY97
Fund-Financed—State-Lead	20	24	20	15	37	43
Fund-Financed—Federal-Lead <sup>1</sup>	136	138	77	80	110	137
Fund-Financed—EPA Performs Work at Site <sup>2</sup>	8	8	0	0	2	3
PRP-Financed and PRP-Lead	161	126	192	144	268	295
Mixed Funding—Monies from Fund and PRPs	3	3	0	1	6	13
PRP-Financed—State Order and EPA Oversight <sup>3</sup>	22	23	11	13	29	29
State Enforcement	2	2	1	0	0	0
Federal Facility	450	484	69	46	142	166
<b>Total</b>	<b>802</b>	<b>808</b>	<b>370</b>	<b>299</b>	<b>594</b>	<b>686</b>
<sup>1</sup> Includes remedial program-lead projects and enforcement program-lead projects. <sup>2</sup> Projects at which EPA employees, rather than contractors, perform the site cleanup work. <sup>3</sup> Projects where site cleanup work is financed and performed by the PRPs under state order, with EPA oversight.						

Sources: CERCLIS (as of September 30, 1997); *Progress Toward Implementing Superfund Fiscal Year 1996*.

and 45 percent were behind schedule. These projects include 211 on schedule, 30 ahead of schedule, 299 started during the fiscal year, 279 that had no previously published completion schedule, and 675 that were behind schedule. Exhibit 3.2-3 compares the number of projects in progress at NPL sites at the end of FY97 with the number in progress at the end of FY96, by lead.

PRPs were conducting 421 of the RI/FS and RA projects in progress at the end of FY97, including 126 RI/FSs and 295 RAs. Of these 421 PRP-financed projects, 49 percent were on schedule, ahead of schedule, started during the fiscal year, or had no previously published completion schedule, and 51 percent were behind schedule. Projects include 58 on schedule, 4 ahead of schedule, 85 started during the fiscal year, 60 that had no previously published completion schedule, and 214 that were behind schedule.

### 3.3 Remedial Selection

The Agency signed 168 RODs in FY97, including 43 new and amended RODs for PRP-financed sites, 34 RODs for Fund-financed sites, and 91 RODs for federal facility sites. For comparison, in FY96, 156 RODs were signed, including 44 new and amended RODs for PRP-financed sites, 31 RODs for Fund-financed sites, and 81 RODs for federal facility sites. The ROD documents the results of all studies performed on the site, identifies each remedial alternative that the Agency considered, and explains the basis for selecting the remedy. The ROD is signed after the RI/FS is completed and the public has had the opportunity to comment on the remedial alternatives that are being considered to clean up the site.

The Agency selected a variety of remedies in FY97 RODs, based on a careful analysis of

characteristics unique to each site and the proximity of each site to people and sensitive environments (wetlands and endangered wildlife are examples of environmental resources that are taken into consideration when evaluating remedies). Congress, with the enactment of SARA, indicated that EPA should give preference to permanent remedies, such as treatment, rather than temporary remedies, such as containment.

To fulfill the statutory requirement of CERCLA Section 301(h)(1)(A) to provide an abstract of each feasibility study (i.e., ROD), the National Technology Information Service (NTIS) can provide requested RODs. Appendix C provides detailed information on how to make these ROD requests.

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### **3.4 Facilities Subject to Review Under CERCLA Section 121(c)**

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Certain remedies, such as containment remedies, allow hazardous substances, pollutants, or contaminants to remain on site if they do not pose a threat to human health or the environment. CERCLA Section 121(c), as amended by SARA, requires that any post-SARA remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site be reviewed at least every five years after the initiation of such remedial action. Such reviews assure that human health and the environment are being protected by the selected remedial action. These five-year reviews are referred to as “statutory” reviews. Section 121(c) requires the Agency to report to Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result.

As a matter of policy, EPA also conducts a five-year review for sites where hazardous substances, pollutants, and contaminants will not remain on site upon completion of the remedy, but where the remedy will take longer than five years. These policy reviews are conducted every five years until the remedial action is complete and achieves cleanup levels that allow for unlimited use and unrestricted exposure. Additionally, at least one policy review is conducted for pre-SARA sites where upon attainment of the ROD cleanup levels, the remedial

action will not allow for unlimited use and unrestricted exposure.

“Policy” reviews were announced in Office of Solid Waste and Emergency Response (OSWER) Directive 9355.7-02, May 23, 1991, *Structure and Components of Five-Year Reviews*. Guidelines for the conduct of five-year reviews were further articulated in two supplemental directives in 1994 and 1995. The determination of whether a site requires a statutory or policy five-year review is generally made based on information provided in the ROD.

FY97 was the seventh year in which sites were eligible for five-year review. Headquarters data indicated that a total of 105 sites required five-year reviews in FY97. A total of 76 five-year reviews were completed in FY97, as illustrated in Exhibit 3.4-1. Thirty-two of the 76 reviews were due in prior fiscal years. Seventeen reviews were completed early and were due in later fiscal years. Headquarters data initially suggested that four of the reviews were not required. However, the Regions identified these sites as requiring reviews and submitted reports.

Of the 76 sites that were reviewed during FY97, 62 required statutory reviews and 14 required policy reviews. EPA determined that the remedies continue to protect human health and the environment at 72 of the 76 sites. Ongoing remedies are included among those considered protective. For the four remaining sites, the review reports either did not make a protectiveness determination or stated that remedies do not currently protect human health and the environment. These four sites are addressed below:

- 1) The Oak Grove Sanitary Landfill stated that the state ranking of the site with the designation of D indicates protectiveness in accordance with state regulations.
- 2) The Aberdeen Proving Ground (APG), White Phosphorus Dump Zone (WPDZ) report stated: “Institutional controls in place at APG restrict trespass of any kind. As the access controls have been in existence for approximately eighty years, the risk posed from human exposure remain low.”

3) The Enterprise Avenue Landfill report determined that the site is not protective of human health and the environment since post-deletion investigations discovered contaminated soils and contaminated shallow groundwater aquifers that put a deeper, sole-source aquifer at risk. The EPA and the City of Philadelphia are taking steps to make the remedy protective.

4) The Saegertown Industrial Area report deemed operable unit 1 not protective of human health and the environment, but stated that operable unit 2 is protective. The report noted that data being generated by new monitoring wells will be evaluated to determine if the selected remedy at operable unit 1 should be modified due to contamination west of French Creek.

**Exhibit 3.4-1  
Sites at Which Five-Year Reviews  
Were Conducted During Fiscal Year 1997**

<b>Region</b>	<b>State</b>	<b>Site Name</b>	<b>Review Date</b>	<b>Type</b>
1	NH	Auburn Road Landfill (2 <sup>nd</sup> review) <sup>1</sup>	9/29/97	Statutory
1	MA	Hanscom Field/Hanscom Air Force Base <sup>4</sup>	9/15/97	Statutory
1	NH	Keefe Environmental Services (2 <sup>nd</sup> review) <sup>2</sup>	9/29/97	Statutory
1	CT	Kellogg-Deering Well Field (2 <sup>nd</sup> review) <sup>2</sup>	9/30/97	Policy
1	ME	Winthrop Landfill (2 <sup>nd</sup> review) <sup>2</sup>	9/30/97	Policy
2	NJ	Bog Creek Farm <sup>3</sup>	9/26/97	Statutory
2	NY	Forest Glen Mobile Home Subdivision <sup>3</sup>	9/26/97	Statutory
2	NY	Katonah Municipal Well <sup>3</sup>	9/30/97	Statutory
2	NJ	Lipari Landfill <sup>3</sup>	9/3/97	Statutory
2	NY	Old Bethpage Landfill <sup>3</sup>	9/30/97	Statutory
2	NY	Sinclair Refinery <sup>1</sup>	9/30/97	Statutory
2	NJ	South Brunswick Landfill <sup>3</sup>	9/17/97	Statutory
2	PR	Upjohn Facility <sup>3</sup>	11/18/96	Statutory
2	NJ	White Chemical Corp. <sup>3</sup>	9/30/97	Statutory
3	MD	Aberdeen Proving Ground - WPDZ <sup>2</sup>	7/11/97	Statutory
3	PA	Ambler Asbestos Piles <sup>1</sup>	5/27/97	Statutory
3	VA	Avtex Fibers Inc. <sup>3</sup>	11/18/96	Statutory
3	PA	Bendix Flight Systems Division <sup>2</sup>	7/23/97	Policy
3	PA	Brown's Battery Breaking <sup>1</sup>	9/8/97	Statutory
3	VA	Defense General Supply Center <sup>2</sup>	9/29/97	Statutory
3	DE	Dover Air Force Base <sup>1</sup>	7/24/97	Statutory
3	PA	Enterprise Avenue <sup>4</sup>	7/14/97	Policy
3	WV	Fike Chemical <sup>3</sup>	10/28/96	Statutory
3	PA	Havertown PCP Site <sup>3</sup>	7/3/97	Statutory
3	PA	Heleva Landfill (2 <sup>nd</sup> review) <sup>2</sup>	8/26/97	Statutory
3	PA	Hranica Landfill <sup>2</sup>	4/16/97	Statutory
3	PA	Industrial Lane <sup>2</sup>	6/10/97	Statutory
3	PA	Publicker Industries <sup>4</sup>	10/2/96	Statutory
3	VA	Rhinehart Tire Fire Dump <sup>3</sup>	9/12/97	Statutory
3	PA	Saegertown Industrial Area <sup>2</sup>	8/6/97	Statutory
3	VA	Saltville Waste Disposal Ponds <sup>3</sup>	9/30/97	Statutory

Region	State	Site Name	Review Date	Type
4	TN	Amnicola Dump <sup>2</sup>	9/30/97	Statutory
4	TN	Lewisburg Dump <sup>1</sup>	9/26/97	Statutory
4	NC	Martin Marietta-Sodyeco Inc. <sup>3</sup>	10/30/96	Statutory
4	KY	Newport Dump (2 <sup>nd</sup> review) <sup>2</sup>	9/23/97	Statutory
5	IL	Acme Solvent Reclaiming Inc. (Morristown Road) <sup>2</sup>	9/30/97	Statutory
5	OH	Alsco Anaconda <sup>1</sup>	6/23/97	Statutory
5	MN	Arrowhead Refinery Co. <sup>3</sup>	9/30/97	Policy
5	OH	Bower's Landfill <sup>3</sup>	7/23/97	Statutory
5	OH	E.H. Schilling Landfill <sup>2</sup>	9/29/97	Statutory
5	WI	Eau Claire Municipal Well Field <sup>3</sup>	9/29/97	Statutory
5	MI	Forest Waste Products <sup>3</sup>	3/28/97	Statutory
5	IN	Main Street Well Field <sup>2</sup>	9/30/97	Policy
5	MN	Oak Grove Sanitary Landfill <sup>1</sup>	9/16/97	Statutory
5	WI	Oconomowoc Electroplating Co. Inc. <sup>3</sup>	9/29/97	Policy
5	MI	Ott/Story/Cordova Chemical <sup>3</sup>	8/13/97	Statutory
5	IL	Outboard Marine Corp./Johnson <sup>3</sup>	9/30/97	Statutory
5	OH	Pristine Inc. <sup>3</sup>	5/28/97	Statutory
5	MI	Rose Township Dump <sup>1</sup>	7/18/97	Statutory
5	IN	Seymour Recycling Corp <sup>3</sup>	3/27/97	Statutory
5	MN	University of Minnesota <sup>1</sup>	6/6/97	Statutory
5	MI	Velsicol Chemical Mich <sup>4</sup>	8/27/97	Policy
5	IL	Wauconda Sand & Gravel Co. <sup>3</sup>	5/30/97	Statutory
5	WI	Wheeler Pit <sup>1</sup>	4/8/97	Statutory
6	AR	Mid-South Wood Products <sup>3</sup>	6/16/97	Statutory
6	NM	United Nuclear Corp. <sup>3</sup>	6/30/97	Statutory
7	KS	Arkansas City Dump <sup>3</sup>	8/22/97	Statutory
7	IA	E.I. DuPont Nemours (County Road X23) <sup>1</sup>	6/19/97	Statutory
7	MO	Fulbright Landfill <sup>3</sup>	12/9/96	Statutory
7	NE	Hastings Groundwater Contamination <sup>2</sup>	5/27/97	Statutory
7	KS	Johns' Sludge Pond (2 <sup>nd</sup> review) <sup>3</sup>	5/6/97	Policy
7	IA	Northwestern States Portland Cement Co. <sup>1</sup>	6/25/97	Statutory
7	MO	Solid State Circuits <sup>2</sup>	12/12/96	Policy
7	MO	Syntex Facility-Verona <sup>3</sup>	9/30/97	Statutory
8	CO	Chemical Sales Co. OU1 (2 <sup>nd</sup> review) <sup>1</sup>	9/29/97	Statutory
8	UT	Monticello Mill Tailings (DOE) <sup>1</sup>	2/13/97	Statutory
8	UT	Monticello Radioactivity Contaminated Properties <sup>3</sup>	2/13/97	Statutory
8	UT	Rose Park Sludge Pit (2 <sup>nd</sup> review) <sup>1</sup>	8/5/97	Policy
9	CA	Micro Storage/Intel Magnetics <sup>1</sup>	10/31/96	Policy
9	CA	Synertek (Building #1) <sup>1</sup>	10/31/96	Policy
10	WA	Fort Lewis Logistic Center (Includes Landfill #4) <sup>1</sup>	9/30/97	Statutory
10	OR	Gould Inc. <sup>1</sup>	9/26/97	Statutory
10	WA	Lakewood Site <sup>1</sup>	9/24/97	Policy

Region	State	Site Name	Review Date	Type
10	WA	Northside Landfill <sup>1</sup>	9/19/97	Statutory
10	ID	Pacific Hide & Fur Recycling Co. <sup>3</sup>	9/25/97	Statutory
10	WA	Silver Mountain Mine <sup>1</sup>	7/16/97	Statutory

1) Due in FY97; 2) Early -- due after FY97; 3) Late -- due prior to FY97; 4) Review Not Previously Required.

Source: Five-Year Review Program Implementation and Management System (November 20, 1998).

### 3.5 Superfund Innovative Technology Evaluation Program

The SITE program, which completed its 12th year in FY97, was established in direct response to legislative mandate under the Superfund Amendments and Reauthorization Act (SARA). The program is considered the pioneer and model program for demonstrating and evaluating full-scale, viable, innovative treatment technologies at hazardous waste sites.

In response to a comprehensive program review, in FY96 the SITE program shifted from a technology-driven focus to a more integrated approach driven by the needs of the waste remediation community. The new goals of the program are to interact with the user community, understand its needs, integrate those needs with EPA's research mission, and expeditiously address those needs.

The next generation of SITE can be defined by the following operating principles.

**Matching the site needs with innovative technology solutions:** Sites will be solicited and prioritized based on (1) the demonstration needs of the user, and (2) the research focus areas identified by EPA (such as groundwater treatment, *in situ* treatment, and metals in soil treatment).

**Conducting technology field demonstrations:** SITE will rapidly conduct field demonstrations of high technical quality to verify performance of remediation technologies. The resulting data and reports are intended for use by site owners and government decision-makers in selecting remediation options. The data reports add credibility to technology vendors for promoting their processes.

**Information transfer:** Information transfer activities ensure that valuable technical information is disseminated to increase awareness and promote products evaluated under the program for use at site cleanups. Information transfer activities consist of technical networking, publications, electronic distribution, Internet, and conference exhibits.

**Program quality planning:** Overall program direction and strategies will be evaluated each year based on responses from the user community. Information gathered through networking with the user community will be incorporated into the program planning process.

Exhibit 3.5-1 displays three of the four components of the program with the number of FY97 accomplishments. These components include the demonstration program, emerging technology program, and the characterization and monitoring program. The fourth component, technology transfer, involves publication and distribution of SITE program results.

	FY97 Projects	Cumulative Projects
Demonstration Program	9	95
Emerging Technology Program	7	66
Characterization and Monitoring Program	6	37

Source: Technology Innovation Office.