

# APPENDIX D

TREATMENT TECHNOLOGIES:  
SUMMARY OF STATUS REPORT UPDATES,  
CHANGES, DELETIONS



## **Explanation of Appendix D: Summary of Status Report Updates, Changes, and Deletions**

This Appendix describes the updates, changes, and deletions made to the database supporting Treatment Technologies for Site Cleanup: Annual Status Report (ASR). The appendix is divided into ten tables, one for each edition of the ASR beginning with the Second Edition (September 1991). Within each table is a description of the updates, changes, and deletions made to the database supporting the ASR from one edition to the next.

These updates, changes, and deletions are generated primarily through contacts with Remedial Project Managers (RPMs) and review of earlier Records of Decisions (RODs), ROD amendments, and Explanations of Significant Differences (ESDs) to identify changes in treatment remedies and mistakes in the database. Due to the large number of new projects based on information gathered from RODs, ROD amendments, and ESDs published since the last edition of the ASR (272 for the 11<sup>th</sup> edition), the tables in Appendix D do not describe these new projects.

The purpose of Appendix D is to document changes in the ASR database and thereby document changes in treatment remedies at Superfund sites. For each updated, changed, or deleted project, the appendix lists: site identifying information; the specific update, change, or deletion; an explanation of why the update, change, or deletion was made; and a site contact, usually the remedial project manager (RPM).

When new projects are discovered through site contacts and have not yet been documented in a ROD, ROD amendment, or ESD, they are recorded in Appendix D with the specific treatment technology listed in the “Added” column. When a remedy changes from a treatment remedy to one that does not include treatment, the project based on that remedy is listed in Appendix D with a “Yes” in the “Deleted” column. The non-treatment remedy replacing the treatment remedy is described in the “Comments” column. When a remedy changes from one treatment technology to another treatment technology, the new technology is listed in the “Changed To” column.

The database supporting the ASR contains information on specific projects for the treatment of contamination sources and contaminated groundwater at Superfund sites. The database does not track other types of remedies, such as off-site disposal in a landfill or monitored natural attenuation. Therefore, when a remedy is changed from treatment to non-treatment, the project created in the database for that treatment remedy is deleted. Appendix D also shows that project as being deleted.

Each Superfund site may have multiple waste types and multiple areas of contamination, requiring multiple, separate treatments. For each distinct waste type and each distinct area of contamination treated, the ASR database contains a separate treatment project. When a waste is treated through a treatment train, the ASR database contains a separate treatment project for each step in the treatment train. Appendix D reflects this organization or treatment remedies based on specific projects, and may contain multiple rows for the same site. For example, at the Caroll and Dubies Sewage Disposal site in New York, a 1995 ROD indicated that three separate and distinct technologies (bioremediation, soil vapor extraction, and solidification/stabilization treatments) would be used to treat three distinct wastes. Therefore, three separate projects were created in the ASR database for the Caroll and Dubies Sewage Disposal site. However, the remedy was changed for all of these wastes to off-site disposal. Therefore, all three projects were deleted from the ASR database, and Appendix D contains three entries for the Caroll and Dubies Sewage Disposal site, one for each deleted project.

The eleventh edition of the report adds information about 272 new treatment projects selected for remedial actions in FY 2000, FY 2001, and FY 2002 Records of Decision (RODs), ROD Amendments, and Explanations of Significant Differences (ESDs). These are not listed in Appendix D.

Changes to projects from the tenth edition are listed below.

## Eleventh Edition (September 2003): Additions, Changes, and Deletions from the Tenth Edition (February 2001)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 10TH EDITION)	11TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
1	Linemaster Switch Corporation, CT (7/21/1993)	Soil Vapor Extraction		Yes		This remedy is a component of the multi-phase extraction system at this site. Therefore, this project has been deleted.	William Lovely 617-918-1240 lovely.william@epa.gov
1	New Bedford Harbor, MA (4/27/1999)	Solidification/stabilization			Physical Separation	The site contact indicated that a ROD Amendment changed the remedy to dewatering followed by off-site disposal.	Jim Brown 617-918-1308 brown.jim@epa.gov
1	Otis Air National Guard Area of Contamination CS16 and CS17 OU11, MA (5/5/1999)	Solidification/stabilization		Yes		The site contact indicated that remedy was changed to excavation and off-site disposal.	Bob Lim 617-918-1392 lim.robert@epa.gov
1	Otis Air National Guard Fuel Spill No 9 OU10, MA (7/6/1999)	Solidification/stabilization		Yes		The site contact indicated that remedy was changed to excavation and off-site disposal.	Bob Lim 617-918-1392 lim.robert@epa.gov
1	Otis Air National Guard – Fuel Spill 12, MA (9/25/1995)	Air Sparging	Yes				Bob Lim 617-918-1392 lim.robert@epa.gov
1	Otis Air National Guard OU 8, MA (8/16/1999)	Solidification/stabilization		Yes		The site contact indicated that remedy was changed to excavation and off-site disposal.	Bob Lim 617-918-1392 lim.robert@epa.gov
2	Brewster Well Field – OU 2, NY (9/29/1988)	Incineration	Yes				Lisa Wong 212-637-4267 wong.lisa@epa.gov
2	Cosden Chemical Coatings, NJ (9/30/1992)	Solidification/stabilization		Yes		A FY 1998 ESD changed the remedy to off-site treatment and/or disposal.	Edward Finnerty 212-637-4367 finnerty.ed@epa.gov
2	General Motors/Central Foundry Division, NY (3/31/1992)	Thermal Desorption			Solidification/ stabilization	Community relations issues	Anne Kelly 212-637-4397 kelly.anne@epa.gov
2	FAA Technical Center – Area B Navy Fire Testing Facility, NJ (9/20/1996)	Air Sparging (in situ) – Groundwater		Yes		Based on subsequent investigations, the groundwater plume was found to be more extensive than initial investigations indicated. The costs to implement this technology became prohibitive.	Bill Roach 212-637-4335 roach.bill@epa.gov
2	FAA Technical Center – Area B Navy Fire Testing Facility, NJ (9/20/1996)	Soil Vapor Extraction		Yes		Based on subsequent investigations, the groundwater plume was found to be more extensive than initial investigations indicated. The costs to implement this technology became prohibitive.	Bill Roach 212-637-4335 roach.bill@epa.gov

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

## Eleventh Edition (September 2003) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 10TH EDITION)	11TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
2	Love Canal, NY (7/1/1982)	Vertical Engineered Barrier		Yes		Slurry wall was considered but not installed.	Damian Duda 212-637-4269 duda.damian@epa.gov
2	Reynolds Metals Company Study Area (RMC), NY (9/27/1993)	Incineration (off-site)			Solidification/ stabilization	Community relations issues	Anne Kelly 212-637-4397 kelly.anne@epa.gov
2	Vineland Chemical Co., Inc. – OU 1, NJ (9/29/1989)	Flushing (in situ)		Yes		The site contact indicated that the remedy was not implemented because it was determined that the technology would not be effective.	Matthew Westgate 212-637-4422 westgate.matthew@epa.gov
3	Browns Battery Breaking Site – OU 2, PA (7/2/1992)	Chemical Treatment	Yes				Christopher J. Corbett 215-814-3220 corbett.chris@epa.gov
3	Brown's Battery Breaking Site – OU 2, PA (7/2/1992)	Passive Treatment Wall		Yes		The site contact indicated that in situ chemical treatment was determined to work better.	Christopher J. Corbett 215-814-3220 corbett.chris@epa.gov
3	Eastern Diversified Metals, PA (3/29/1991)	Solidification/stabilization		Yes		A FY 2001 ROD was issued changing the remedy to capping.	John Banks 215-814-3214 banks.john_d@epa.gov
3	Naval Surface Warfare Center, Site 17, VA (9/30/1998)	Phytoremediation		Yes		The site contact indicated that this technology is not actually phytoremediation but rather an alternative landfill cover.	Paul Leonard 215-814-3350 leonard.paul@epa.gov
3	Ordnance Works Disposal Areas, WV (9/30/1999)	Thermal Desorption			Physical Separation	The site contact indicated that the remedy was not conducted. The coal tar was removed and used as a fuel (classified as physical separation).	Christian Matta 215-814-2317 matta.christian@epa.gov
3	Revere Chemical, PA (12/27/1993)	Vertical Engineered Barrier		Yes		Following SVE treatment of the soil, it was not necessary to install a VEB.	Ruth Scharr 215-566-3191 scharr.ruth@epa.gov
3	Seagertown Industrial Area, PA (1/29/1993)	Air Sparging			Bioremediation (in situ) – Groundwater	The site contact indicated that the technology was changed to enhanced bioremediation.	Christopher J. Corbett 215-814-3220 corbett.chris@epa.gov
3	Saegertown Industrial Area, PA (1/29/1993)	Soil Vapor Extraction		Yes		The site contact indicated that a ROD Amendment has been issued that selects bioremediation.	Christopher J. Corbett 215-814-3220 corbett.chris@epa.gov

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## Eleventh Edition (September 2003) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 10TH EDITION)	11TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
3	Standard Chlorine of Delaware, Inc., DE (3/9/1995)	Bioremediation (ex situ) – Other			Thermal Desorption	The site contact indicated that the contingent remedy was implemented because the goals could not be met.	Hilary Thornton 215-814-3323 thornton.hilary@epa.gov
3	Tonolli Corp, PA (3/12/1999)	Bioremediation (ex situ) – Land Treatment		Yes		The site contact indicated that the remedy was not implemented at this site.	John Banks 215-814-3214 banks.john_d@epa.gov
4	Aberdeen Pesticide Dumps (Amendment), NC (9/30/1991)	Thermal Desorption		Yes		This project was listed as a duplicate entry.	Luis E. Flores 404-562-8807 flores.luis@epa.gov
4	Calhoun Park Area – OU 01, SC (9/30/1998)	Chemical Treatment – Oxidation/Reduction		Yes		The site contact indicated the technology changed to excavation and off-site disposal.	Terry Tanner 404-562-8797 tanner.terry@epa.gov
4	Carolina Transformer Co., NC (8/29/1991)	Solidification/stabilization		Yes		The site contact indicated that this technology was replaced by solvent extraction.	Luis E. Flores 404-562-8807 flores.luis@epa.gov
4	Homestead Air Force Base OU 28, FL (8/15/1999)	Solidification/stabilization		Yes		The site contact indicated that remedy was changed to excavation and off-site disposal.	Doyle Brittain 404-562-8549 brittain.doyle@epa.gov
4	Homestead Air Force Base – OU 02, FL (7/16/1998)	Solidification/stabilization		Yes		This technology was a contingent remedy and was to be implemented if excavated soils failed TCLP for lead. This technology was not necessary since the excavated soil passed the TCLP for lead.	Doyle Brittain 404-562-8549 brittain.doyle@epa.gov
4	JFD Electronics/Channel Master, NC (9/10/1992)	Solidification/Stabilization	Yes				Samantha Urquhart-Foster 404-562-8760 urquhart_foster.samantha@epa.gov
4	JFD Electronics/Channel Master, NC (9/10/1992)	Solidification/stabilization		Yes		The estimated volume of contaminated soil decreased from 1,250 cubic yards to 650 cubic yards. Treatment is no longer necessary, and soils will be excavated for off-site disposal.	Samantha Urquhart-Foster 404-562-8760 urquhart_foster.samantha@epa.gov

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## Eleventh Edition (September 2003) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 10TH EDITION)	11TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
4	Peak Oil/Bay Drum, FL (6/21/1993)	Bioremediation (in situ) – Other			Solidification/ stabilization	The site contact indicated that the technology was changed to solidification/stabilization followed by capping.	Wesley Hardegree 404-562-8938 hardegree.wes@epa.gov
4	Peak Oil/Bay Drum OU 2 – Site Wide Groundwater, FL (8/9/1993)	Bioremediation	Yes				Wesley Hardegree 404-562-8938 hardegree.wex@epa.gov
4	Peak Oil/Bay Drum – OU 1, FL (6/21/1993)	Flushing (in situ)		Yes		A FY 2001 ESD deleted this remedy.	Wesley Hardegree 404-562-8938 hardegree.wes@epa.gov
4	Savannah River Site USDOE OU 66, SC (9/28/1999)	Solidification/Stabilization	Yes				Ken Feely 404-562-8512 feely.ken@epa.gov
4	Savannah River Site – USDOE – OU 60, SC (9/28/1999)	Solidification/Stabilization	Yes				Ken Feely 404-562-8512 feely.ken@epa.gov
4	Shuron Inc – OU 01, SC (9/9/1998)	Solidification/stabilization		Yes		Based on the FY 1998 ROD, the cost-effectiveness of this technology versus excavation and off-site disposal was determined. Excavation and off-site disposal was selected as the remedy.	Ralph Howard 404-562-8829 howard.ralph@epa.gov
4	Smiths Farm OU2, KY (9/17/1993)	Bioremediation	Yes				Antonio Deangelo 404-562-8826 deangelo.antonio@epa.gov
5	ALGOMA MUNICIPAL LANDFILL, WI (9/29/1990)	Permeable Reactive Barrier	Yes				David Linnear 312-886-1841 linnear.david@epa.gov
5	American Chemical Services, Inc, IN (7/27/1999)	Vertical Engineered Barrier		Yes		Data entry error. This project was entered as a duplicate.	Kevin Adler 312-886-7078 adler.kevin@epa.gov
5	American Chemical Services, Inc. – offsite, IN (7/27/1999)	Soil Vapor Extraction		Yes		Data entry error. This project was entered as a duplicate.	Kevin Adler 312-886-7078 adler.kevin@epa.gov

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

## Eleventh Edition (September 2003) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 10TH EDITION)	11TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
5	Cliff/Dow Dump, MI (9/27/1989)	Incineration (off-site)		Yes		This remedy was changed to excavation and off-site disposal.	Kenneth Glatz 312-886-1434 glatz.kenneth@epa.gov
5	Conrail Rail Yard – OU 2, IN (9/9/1994)	Air Sparging (in situ) – Groundwater		Yes		The site contact indicated that during the remedial investigation, one hit of contamination was found. However, that one hit has been found since; therefore, the technology will not be implemented.	Brad Bradley 312-886-4742 bradley.brad@epa.gov
5	Macgillis and Gibbs/Bell Lumber and Pole – OU1, MN (9/30/1999)	Chemical Treatment – Oxidation/Reduction		Yes		This technology was listed as the preferred remedy in the FY 1999 ROD. However, no responses (bids) were received to implement the technology.	Darryl Owens 312-886-7089 owens.darryl@epa.gov
5	Macgillis and Gibbs/Bell Lumber and Pole – OU3, MN (9/30/1999)	Bioremediation (ex situ) – Biopile		Yes		Data entry error. This project should not have been listed for OU3, only for OU1.	Darryl Owens 312-886-7089 owens.darryl@epa.gov
5	Macgillis and Gibbs/Bell Lumber and Pole – OU3, MN (9/30/1999)	Chemical Treatment – Oxidation/Reduction		Yes		Data entry error. This project should not have been listed for OU3, only for OU1.	Darryl Owens 312-886-7089 owens.darryl@epa.gov
5	Moss-American Groundwater, WI (4/29/1997)	Bioremediation	Yes				Russell Hart 312-886-4844 hart.russell@epa.gov
5	Motor Wheel Disposal Site, MI (9/30/1991)	Vertical Engineered Barrier		Yes		Further study indicated the slurry wall was not necessary.	Heather Nelson 312-353-0685 nelson.heather@epa.gov
5	Organic Chemicals, Inc. – OU 2, MI (2/5/1997)	Solidification/stabilization		Yes		The site contact indicated an ESD was issued that states the actual volume of soil to be treated was too small to cost-effectively treat using this technology.	Thomas Williams 312-886-6157 williams.thomas@epa.gov
5	Sangamo Electric Dump/Crab Orchard National Wildlife Refuge – Explosives/Munitions Manufacturing Area OU, IL (2/19/1997)	Incineration	Yes				Nanjunda Gowda 312-353-9236 gowda.nanjunda@epa.gov
5	South Macomb Disposal Authority, MI (8/31/1991)	Vertical Engineered Barrier		Yes		Replaced slurry wall with expanded leachate collection system.	David Kline 517-373-8354 klined@state.mi.us

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

## Eleventh Edition (September 2003) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 10TH EDITION)	11TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
5	Springfield Township Dump, MI (9/29/1990)	Air Sparging	Yes				Kevin Adler 312-886-7078 adler.kevin@epa.gov
5	Springfield Township Dump – OU 01, MI (6/10/1998)	Solidification/stabilization		Yes		The FY 1998 ROD Amendment listed this technology as a contingent remedy. However, this technology will not be implemented.	Kevin Adler 312-886-7078 adler.kevin@epa.gov
5	Springfield Township Dump – OU 01, MI (6/10/1998)	Thermal Desorption		Yes		The FY 1998 ROD Amendment listed this technology as a contingent remedy. However, this technology will not be implemented.	Kevin Adler 312-886-7078 adler.kevin@epa.gov
5	Springfield Township Dump – 90ROD, MI (9/29/1990)	Solidification/stabilization		Yes		The site contact indicated that a ROD Amendment has been issued that deleted this technology.	Kevin Adler 312-886-7078 adler.kevin@epa.gov
5	Tar Lake – Pump & Treat, MI (9/29/1992)	Air Sparging	Yes				Thomas Bloom 312-886-1967 bloom.thomas@epa.gov
5	Thermo-Chem, Inc OU1, MI (9/30/1991)	Soil Vapor Extraction	Yes				Kenneth Glatz 312-886-1434 glatz.kenneth@epa.gov
6	Popile, AR (2/1/1993)	Bioremediation (in situ) – Groundwater		Yes		A FY 2001 ROD Amendment deleted this remedy.	Shawn Ghose 214-665-6782 ghose.shawn@epa.gov
6	Popile, AR (2/1/1993)	Bioremediation (ex situ) – Land Treatment		Yes		A FY 2001 ROD Amendment deleted this remedy.	Shawn Ghose 214-665-6782 ghose.shawn@epa.gov
6	Sheridan Disposal Services, TX (12/29/1988)	Bioremediation (ex situ) – Slurry Phase			Solidification/ stabilization	The site contact indicated that alternatives were to be evaluated due to the length of time that has passed.	Gary A. Baumgarten 214-665-6749 baumgarten.gary@epa.gov
7	Ace Services, KS (5/5/1999)	Bioremediation (in situ) – Groundwater			Pump and Treat	The FY 2001 ROD Amendment changed the remedy due to a change in the use of the treated water and because of an increase in the size of the contaminated plume.	Bob Stewart 913-551-7654 stewart.robert@epa.gov

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

## Eleventh Edition (September 2003) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 10TH EDITION)	11TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
7	Lake City Army Ammunition Plant Area 18 OU, MO (4/22/1999)	Multi-Phase Extraction		Yes		The site contact indicated that site conditions were identified for which the technology was not implementable.	Scott Marques 913-551-7131 Marquess.scott@epa.gov
7	Peoples Natural Gas, IA (9/16/1991)	Bioremediation (in situ) – Other		Yes		The site contact indicated that this remedy has been discontinued.	Diana Engeman 913-551-7746 engeman.diana@epa.gov
7	Valley Park Tce Wainwright OU1 Ex-situ SVE, MO (4/26/1996)	Soil Vapor Extraction	Yes				Steve Auchterlonie 913-551-7778 auchterlonie.steve@epa.gov
8	Rocky Mountain Arsenal OU 23, CO (5/3/1990)	Vertical Engineered Barrier		Yes		A ROD signed on 6/11/96 eliminated the VEB for groundwater containment.	Laura Williams 303-312-6660 williams.laura@epa.gov
9	Southern California Edison, Visalia Pole Yard, CA (6/10/1994)	Bioremediation	Yes				Shea Jones 415-972-3148 jones.shea@epa.gov
9	Tracy Defense Depot (USArmy) – OU 01, CA (4/14/1998)	Bioventing		Yes		The site contact indicated that this technology was not implemented.	Michael Work 415-972-3024
9	Williams Air Force Base – OU 2, AZ (8/16/1996)	Soil Vapor Extraction	Yes				Michael Wolfram 415-972-3027 wolfram.michael@epa.gov
10	Fort Lewis Logistics Center, WA (9/25/1990)	In Situ Thermal Treatment	Yes				Bob Kievit 360-753-9014 kievit.bob@epa.gov
10	Harbor Island – Soil and Groundwater OU, WA (9/30/1993)	Soil Vapor Extraction	Yes				Neil Thompson 206-553-7177 thompson.neil@epa.gov
10	Harbor Island (Lead) – Soil And Groundwater OU, WA (9/30/1993)	Thermal Desorption		Yes		This remedy was changed to excavation and off-site disposal.	Neil Thompson 206-553-7177 thompson.neil@epa.gov
10	Lockheed Shipyard Facility/ Harbor Island – OU 3, WA (6/28/1994)	Thermal Desorption		Yes		This remedy was changed to excavation and off-site disposal.	Neil Thompson 206-553-7177 thompson.neil@epa.gov
10	Union Pacific Railroad Tie Treatment – Vadose Zone Soils, OR (3/27/1996)	Bioremediation	Yes				Alan Goodman 503-326-3685 goodman.al@epa.gov

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

The tenth edition of the report adds information about 133 new treatment projects selected for remedial actions in FY 1998 and FY 1999 Records of Decision (RODs), ROD Amendments, and Explanations of Significant Differences (ESDs). These are not listed in Appendix D.

## Tenth Edition (March 2001): Additions, Changes, and Deletions from the Ninth Edition (April 1999)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 9TH EDITION)	10TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
1	New Bedford, MA (04/06/90)	Solidification/Stabilization		Yes		RODs from FY 1998 and 1999 changed the remedy from on-site incineration followed by solidification/stabilization to off-site disposal due to community concerns. The incineration portion of the remedy was deleted in the eighth edition based on information provided by the site contact, and does not appear in this table.	Jim Brown 617-573-5779 brown.jim@epa.gov
1	Silresim Chemical, MA (09/19/91)	Solidification/Stabilization		Yes		Specified in a FY 1991 ROD as a contingent remedy to treat soils not effectively treated by soil vapor extraction, but never implemented. Soil vapor extraction treatment is currently treating soil effectively.	Mark Otis 978-318-8895 e-mail address not available
1	Loring Air Force Base - OU 10, Entomology Shop, ME (removal action, no ROD date available)	Bioremediation (in situ) - Bioventing			Soil Vapor Extraction	The site contact indicated that the remedy was changed because bioventing was determined to be unsuitable due to site hydrogeology.	Mike Napilinski 617-918-1268 napilinski.mike@epa.gov
2	Carroll & Dubies Sewage Disposal, NY (03/31/95)	Bioremediation (in situ) - Lagoon		Yes		A FY 1998 ESD changed the remedy to off-site treatment and disposal because additional site investigation revealed that the waste could be easily separated from the underlying soil. The type of off-site treatment has not been determined.	Maria Jon 212-637-3967 jon.maria@epa.gov
2	Carroll & Dubies Sewage Disposal, NY (03/31/95)	Soil Vapor Extraction		Yes		A FY 1998 ESD changed the remedy to off-site treatment and disposal because additional site investigation revealed that the waste could be easily separated from the underlying soil. The type of off-site treatment has not been determined.	Maria Jon 212-637-3967 jon.maria@epa.gov
2	Carroll & Dubies Sewage Disposal, NY (03/31/95)	Solidification/Stabilization		Yes		A FY 1998 ESD changed the remedy to off-site treatment and disposal because additional site investigation revealed that the waste could be easily separated from the underlying soil. The type of off-site treatment has not been determined.	Maria Jon 212-637-396 jon.maria@epa.gov
2	Ellis Property, NJ (09/30/92)	Solidification/Stabilization		Yes		The site contact indicated that the remedy was changed to off-site disposal because additional site investigation revealed that the contaminant levels were lower than expected.	Richard Ho 212-637-4372 ho.richard@epa.gov
2	Ewan Property - OU 2, NJ (09/29/88)	Chemical Treatment - Groundwater		Yes		The site contact indicated that the remedy was changed to groundwater pump-and-treat because treatability studies indicated that in situ chemical treatment was not effective.	Stephen Cipot 212-637-4411 cipot.stephen@epa.gov

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

## Tenth Edition (March 2001) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 9TH EDITION)	10TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
2	Fried Industries, NJ (6/27/94)	Solidification/Stabilization		Yes		The site contact indicated that the remedy was changed to off-site disposal because additional site investigation revealed large amounts of contaminated debris. The use of solidification/stabilization on this debris would have been impractical.	Tom Porucznik 212-637-4370 porucznik.tom@epa.gov
2	GCL Tie And Treating - OU 2, NY (3/31/95)	Thermal Desorption		Yes		The site contact indicated that the sediments of OU 2 have been combined with the soils of OU 1 for treatment using thermal desorption. The work is documented in the 10th edition of the ASR as a single project. Therefore, the OU 2 project has been deleted.	Janet Cappelli 212-637-4270 cappelli.janet@epa.gov
2	GE Wiring Devices, PR (9/30/88)	Soil Washing			Incineration (off-site)	A FY 1999 ROD amendment changed the remedy because the cost of soil washing was too high.	Caroline Kwan 212-637-4275 kwan.caroline@epa.gov
2	Lipari Landfill, NJ (9/30/85)	Project not in 9th edition of the ASR. Original ROD did not include this project.	Dual-Phase Extraction			The site contact indicated that dual-phase extraction was added at this site to remove insoluble volatile organic compounds.	Fred Cataneo 212-637-4428 cataneo.fred@epa.gov
2	Reynolds Metals Company - Study Area, NY (09/27/93)	Thermal Desorption			Incineration (off-site)	The site contact indicated that the remedy was changed from on-site thermal desorption to off-site incineration because the cost of thermal desorption was too high.	Anne Kelly 212-637-4264 kelly.anne@epa.gov
2	Tutu Well Field - VI (8/5/96)	Bioremediation (in situ) - Other		Yes		ROD was misinterpreted. The technology used at the site was soil vapor extraction. This is not a distinct project, it is part of the Tutu Well Field Esso project, which is already listed in the ASR database.	Caroline Kwan 212-637-4275 kwan.caroline@epa.gov
3	Avco Lycoming, PA (12/30/96)	Chemical Treatment - Groundwater			Bioremediation (in situ) - Groundwater	ROD was misinterpreted. Technology used stimulates microbes to create an environment in which hexavalent chromium will be reduced to its trivalent state. This technology is more accurately identified as bioremediation.	Jill Lowe 215-814-5336 lowe.jill@epa.gov
3	Brodhead Creek, PA (3/29/91)	Incineration (off-site)		Yes		ROD was misinterpreted. Incineration is of non-aqueous phase liquids collected through in situ thermal treatment process, which is considered treatment of residuals, and not source treatment.	John Banks 215-814-3214 banks.john-d@epa.gov
3	Cryochem, Inc. - OU 3, PA (9/30/91)	Soil Vapor Extraction		Yes		A FY 1998 ESD eliminated the soil vapor extraction portion of the remedy because soil sampling showed that contaminant concentrations were below remediation goals and soil gas assessment showed that the contaminant levels were below typical levels for effective soil vapor extraction treatment.	Joseph McDowell 215-566-3192 mcdowell.joseph@epa.gov

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

## Tenth Edition (March 2001) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 9TH EDITION)	10TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
3	Delaware Sand & Gravel Landfill, DE (9/30/93)	Incineration (off-site)			Soil Vapor Extraction	The site contact indicated that the remedy was changed because the cost of incineration was too high.	Philip Rotstein 215-814-3232 rotstein.phil@epa.gov
3	Douglasville Disposal, PA (6/30/89)	Incineration (off-site)		Yes		A FY 1999 ROD amendment changed the remedy from a treatment train of incineration followed by solidification/stabilization to solidification/stabilization only, because this technology was determined to be as effective and less expensive.	Victor J. Janosik 215-814-3217 janosik.victor@epa.gov
3	Hunterstown Road, PA (8/2/93)	Incineration (off-site)		Yes		The site contact indicated that this remedy was not implemented because additional site investigations revealed that treatment was not required before off-site disposal of the waste.	John Banks 215-814-3214 banks.john-d@epa.gov
3	North Penn Area 6, PA (9/29/95)	In Situ Thermal Treatment (Hot Air Injection)		Yes		The site contact indicated that treatability testing revealed that treatment goals could not be met. A replacement remedy has not yet been selected.	Gregory Ham 215-566-3194 ham.greg@epa.gov
3	Ordnance Works Disposal Areas, WV (9/29/89)	Bioremediation (ex situ) - Land Treatment			Thermal Desorption	A FY 1999 ROD changed the treatment train of bioremediation followed by solidification/stabilization to thermal desorption because treatability studies revealed that the remedy could not meet cleanup goals.	Chris Matta 215-814-2317 matta.christian@epa.gov
3	Ordnance Works Disposal Areas, WV (9/29/89)	Solidification/Stabilization			Thermal Desorption	A FY 1999 ROD changed the treatment train of bioremediation followed by solidification/stabilization to thermal desorption because treatability studies revealed that the remedy could not meet cleanup goals.	Chris Matta 215-814-2317 matta.christian@epa.gov
3	Whitmoyer Laboratories - OU 3, PA (12/31/90)	Bioremediation (ex-situ) - Other			Thermal Desorption	The site contact indicated that the remedy was changed because additional site investigations revealed arsenic contamination, which could not be effectively treated with bioremediation.	Christopher Corbett 215-814-3220 corbett.chris@epa.gov
4	Aberdeen Pesticide Dumps, NC (9/30/91)	Incineration (off-site)			Thermal Desorption	The site contact indicated that the remedy was changed due to public protest. The remedy change will be documented in a future ROD amendment.	Randy McElveen 919-733-2801 e-mail address not available
4	American Creosote Works - OU 2 Phase 1, FL (2/3/94)	Project not in 9th edition of the ASR. Original ROD did not include this project.	Dual-Phase Extraction			ROD was misinterpreted.	Mark Fite 404-562-8927 fite.mark@epa.gov

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## Tenth Edition (March 2001) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 9TH EDITION)	10TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
4	Cape Fear Wood Preserving, NC (6/30/89)	Solidification/Stabilization		Yes		This remedy was part of a treatment train including thermal desorption. The site contact indicated that this remedy was not implemented because thermal desorption treatment met the cleanup goals without solidification/stabilization.	Jon Bornholm 404-562-8820 bornholm.jon@epa.gov
4	Cecil Field Naval Air Station - OU 2, Site 5, FL (6/24/96)	Air Sparging (in situ) - Groundwater		Yes		The site contact indicated that the remedy was changed to monitored natural attenuation because additional site investigations revealed contaminant concentrations much lower than expected.	Debbie Vaughn-Wright 404-562-8539 vaughn- wright.debbie@epa.gov
4	Cecil Field Naval Air Station - OU 2, Site 5, FL (6/24/96)	Bioremediation (ex situ) - Other			Incineration (off- site)	The site contact indicated that the remedy was changed to monitored natural attenuation because additional site investigations revealed contaminant concentrations much lower than expected.	Debbie Vaughn-Wright 404-562-8539 vaughn- wright.debbie@epa.gov
4	Creotox Chemical Products	Bioremediation (ex situ) - Land Treatment		Yes		The site contact indicated that the remedy was changed to off-site incineration because bioremediation could not meet the cleanup goals.	Samantha Urquhart-Foster 404-562-8760 urquhart- foster.samantha@epa.gov
4	Fullco Lumber Company, AL (5/8/95)	Bioremediation (ex situ) - Other		Yes		A report generated for the site indicated that bioremediation could not meet cleanup goals. A replacement remedy has not yet been selected.	Waynon Johnson 404-562-8769 johnson.waynon@epa.gov
4	Chevron Chemical Company, FL (5/22/96)	Air Sparging (in situ) - Groundwater		Yes		The site contact indicated that the remedy was unnecessary because monitored natural attenuation effectively met cleanup goals.	Bill Denman 404-562-8939 denman.bill@epa.gov
4	Chevron Chemical Company, FL (5/22/96)	Permeable Reactive Barrier		Yes		The site contact indicated that the remedy was unnecessary because monitored natural attenuation effectively met cleanup goals.	Bill Denman 404-562-8939 denman.bill@epa.gov
4	General Electric Company - Shepard Farm Site, NC (9/29/95)	Bioremediation (in situ) - Groundwater		Yes		The site contact indicated that the remedy was changed to pump-and-treat of groundwater because treatability testing indicated that bioremediation was not effective.	Giezelle Bennett 404-562-8824 bennett.giezelle@epa.gov
4	Palmetto Wood Preserving, SC (9/30/87)	Project not in 9th edition of the ASR. Original ROD did not include this project.	Chemical Treatment	Yes		The site contact indicated that chemical treatment was added to reduce chromium to its trivalent state prior to treatment by solidification/stabilization.	Al Cherry 404-562-8828 cherry.al@epa.gov

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## Tenth Edition (March 2001) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 9TH EDITION)	10TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
4	Tower Chemical Co., FL (7/9/87)	Incineration (on-site)		Yes		The site contact indicated that additional site investigations revealed different contaminants than expected and that incineration would not be appropriate. A revised remedy for the site has not yet been developed.	Galo Jackson 404-562-8937 jackson.galo@epa.gov
5	American Chemical Services, Inc., IN (9/30/92)	Thermal Desorption		Yes		A FY 1999 ROD changed the remedy to installation of an impermeable cap and off-site disposal of some wastes because additional site investigations revealed additional volumes of contaminated soil and debris, making thermal desorption impractical.	Kevin Adler 312-886-7078 adler.kevin@epa.gov
5	Conrail Rail Yard - OU 2, IN (9/9/94)	Soil Vapor Extraction		Yes		The site contact indicated that additional site investigations revealed that contaminant concentrations were lower than expected and soil vapor extraction was unnecessary.	Brad Bradley 312-886-4742 bradley.brad@epa.gov
5	Tar Lake, MI (9/29/92)	Solidification/Stabilization			Thermal Desorption	The site contact indicated that the remedy was changed to reduce costs.	Thomas Bloom 312-886-1967 bloom.thomas@epa.gov
5	Koppers Coke - Groundwater OU, MN (4/21/94)	Bioremediation (in situ) - Groundwater		Yes		The site contact indicated that the remedy was replaced with monitored natural attenuation because treatability testing revealed that bioremediation was not increasing the rate of degradation of contaminants.	Mark Rys 651-296-7706 mark.rys@pca.state.mn.us
5	Macgillis And Gibbs/ Bell Lumber And Pole - OU 1, MN (12/30/92)	Incineration (on-site)			Chemical Treatment Followed by Bioremediation	A FY 1999 ROD amendment changed the remedy to a treatment train consisting of chemical treatment followed by bioremediation (biopile) because incineration was too expensive and difficult to implement.	Darryl Owens 312-886-7089 owens.darryl@epa.gov
5	Macgillis And Gibbs/ Bell Lumber And Pole - OU 3, MN (9/22/94)	Incineration (on-site)		Yes	Chemical Treatment Followed by Bioremediation	A FY 1999 ROD amendment changed the remedy to a treatment train consisting of chemical treatment followed by bioremediation (biopile) because incineration was too expensive and difficult to implement.	Darryl Owens 312-886-7089 owens.darryl@epa.gov
5	Moss-American, WI (9/27/90)	Bioremediation (ex situ) - Slurry Phase			Thermal Desorption	A FY 1998 ROD replaced the treatment train of soil washing followed by slurry phase bioremediation with thermal desorption because the original remedy could not meet cleanup goals. The bioremediation project was changed to thermal desorption and the soil washing project was deleted.	Russell Hart 312-886-4844 hart.russell@epa.gov

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## Tenth Edition (March 2001) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 9TH EDITION)	10TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
5	Moss-American, WI (9/27/90)	Soil Washing		Yes		A FY 1998 ROD replaced the treatment train of soil washing followed by slurry phase bioremediation with thermal desorption because the original remedy could not meet cleanup goals. The bioremediation project was changed to thermal desorption and the soil washing project was deleted.	Russell Hart 312-886-4844 hart.russell@epa.gov
5	Refuse Hideaway Landfill, WI (6/28/95)	Bioremediation (in situ) - Groundwater		Yes		The site contact indicated that the remedy was changed to monitored natural attenuation because the contaminants are naturally attenuating.	Anthony Rutter 312-886-8961 rutter.anthony@epa.gov
6	Air Force Plant 4 - Building 181, TX (8/26/96)	Soil Vapor Extraction		Yes		The site contact indicated that the remedy was changed to dual phase extraction and combined with another project at the site already listed in the ASR.	George Walters 937-255-7716 george.walters@wpafb.af.mil
6	Atchison, Topeka, & Santa Fe Clovis/Santa Fe Lake - Tph Soil, NM (9/23/98)	Bioremediation (in situ) - Other		Yes		The site contact indicated that contaminated soil was combined with sediments in an existing ex-situ bioremediation unit at the site. No information is currently available on why this change occurred.	Tetra Sanchez 214-665-6686 sanchez.tetra@epa.gov
6	Baldwin Waste Oil, TX (7/1/92)	Bioremediation (in situ) - Other			Bioremediation (ex situ) - Land Treatment	ROD was misinterpreted.	Gary Guerra 214-665-3120 guerra.gary@epa.gov
6	Double Eagle Refinery Co., OK (9/28/92)	Project not in 9th edition of the ASR. Original ROD did not include this project.	Neutralization			ROD was misinterpreted.	Phillip Allen 214-665-8516 allen.phillip@epa.gov
6	Oklahoma Refining Company - Hazardous Landfill, OK (6/9/92)	Bioremediation (in situ) - Other			Bioremediation (ex situ) - Land Treatment	ROD was misinterpreted.	Earl Hendrick 214-665-8519 hendrick.earl@epa.gov
6	Texarkana Wood Preserving, TX (9/25/90)	Incineration (on-site)		Yes		A FY 1998 ROD changed the remedy to on-site containment through capping because of community concerns.	Earl Hendrick 214-665-8519 hendrick.earl@epa.gov
6	United Creosoting Co., TX (9/29/89)	Solvent Extraction		Yes		A FY 1998 ROD amendment changed the remedy from a treatment train of solvent extraction followed by incineration to off-site disposal because the cost was too high and the capacity of the treatment unit was too small.	Earl Hendrick 214-665-8519 hendrick.earl@epa.gov

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## Tenth Edition (March 2001) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 9TH EDITION)	10TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
6	United Creosoting Co., TX (9/29/89)	Incineration (off-site)		Yes		A FY 1998 ROD amendment changed the remedy from a treatment train of solvent extraction followed by incineration to off-site disposal because the cost was too high and the capacity of the solvent extraction treatment unit was too small.	Earl Hendrick 214-665-8519 hendrick.earl@epa.gov
6	Prewitt Abandoned Refinery, NM (9/30/92)	Dual Phase Extraction			Air Sparging	ROD was misinterpreted.	Gregory Lyssy 214-665-8317 lyssy.gregory@epa.gov
7	Hastings Groundwater Contamination- Colorado Ave., OU 1, NE (09/30/91)	Project not in 9th edition of the ASR.	Air sparging (in situ) - Groundwater			ROD was misinterpreted.	Darrell Sommerhauser 913-551-7711 sommerhauser.darrell@epa.gov
7	Hastings Groundwater Contamination- Colorado Ave., OU 1, NE (09/30/91)	Project not in 9th edition of the ASR.	In-Well Air Stripping			ROD was misinterpreted.	Darrell Sommerhauser 913-551-7711 sommerhauser.darrell@epa.gov
7	Midwest Manufacturing/North Farm, IA (2/28/93)	Bioremediation (in situ) - Other		Yes		ROD was misinterpreted.	Diane Easley 913-551-7797 easley.diane@epa.gov
7	Sherwood Medical Co., NE (9/5/1995)	Soil Vapor Extraction (ex situ)			Mechanical Soil Aeration	The site contact indicated that, after mechanical soil aeration was conducted in preparation for ex situ soil vapor extraction, the contaminant concentrations met cleanup goals and soil vapor extraction was unnecessary.	Steve Auchterlonie 913-551-7778 auchterlonie.steve@epa.gov
8	Broderick Wood Products, CO (9/24/91)	Incineration (off-site)		Yes		ROD was misinterpreted.	Armando Saenz 313-302-6359 saenz.armando@epa.gov
8	Lockheed/Martin - Denver Aerospace, CO (9/24/90)	Solidification/Stabilization		Yes		The site contact indicated that the remedy was not required because additional site investigation revealed contaminant levels were below cleanup goals.	Charles Johnson 303-692-3348 Johnson.Charles@State.CO.US
8	Rocky Flats Plant - Buffer Zone, CO (08/10/92)	Soil Vapor Extraction			Permeable Reactive Barrier	The site contact indicated that the remedy was changed because additional contamination was found that was not amenable to soil vapor extraction, including dense non-aqueous phase liquids.	Norma Casaneda 303-966-4226 casaneda.norma@epa.gov
8	Rocky Mountain Arsenal - Onpost OU, Hex Pits, CO (6/11/96)	Thermal Desorption			In Situ Thermal Treatment	ROD was misinterpreted.	Kerry Guy 303-312-7288 guy.kerry@epa.gov

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## Tenth Edition (March 2001) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 9TH EDITION)	10TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
8	Rocky Mountain Arsenal - Onpost OU, CO (6/11/96)	Soil Washing		Yes		The site contact indicated that this remedy was specified as a contingent remedy, but never implemented.	Kerry Guy 303-312-7288 guy.kerry@epa.gov
8	Sand Creek Industrial, OU 4, CO (4/2/94)	Soil Vapor Extraction		Yes		ROD was misinterpreted.	Erna Waterman 303-312-6762 waterman.erna@epa.gov
8	Summitville Mine - OU 2, CO (12/15/94)	Project not in 9th edition of the ASR.	Neutralization			ROD was misinterpreted.	Victor Ketellapper 303-312-6578 ketellapper.victor@epa.gov
8	Utah Power & Light/American Barrel, UT (7/7/93)	Solidification/Stabilization		Yes		ROD was misinterpreted.	Paula Schmittiel 303-312-6861 schmittiel.paula@epa.gov
9	Navajo Toxaphene, AZ (1/1/95)	Bioremediation (in situ) - Other			Bioremediation (ex situ) - Other	ROD was misinterpreted.	Robert Mandel 415-744-2290 mandel.bob@epa.gov
9	Williams Air Force Base - OU 3, AZ (12/30/92)	Bioventing			Soil Vapor Extraction	The site contact indicated that the remedy was changed because bioventing could not meet cleanup goals.	Sean Hogan 415-744-2334 hogan.sean@epa.gov
10	Queen City Farms, WA (10/24/ 86)	Solidification/Stabilization		Yes		The site contact indicated that the project was solidification only, and no stabilization occurred. Solidification only projects are not currently tracked in the ASR.	Neil Thompson 206-553-7177 thompson.neil@epa.gov

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## Ninth Edition (April 1999): Additions, Changes, and Deletions from the Eighth Edition (November 1996)

The ninth edition of the report adds information about 42 treatment selected for remedial actions in FY 1996 and FY 1997 RODs, – treatment technologies non-Superfund, and innovative technologies selected for two RCRA corrective actions. Other changes are listed below.

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 8TH EDITION)	9TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
1	Beacon Heights Landfill, CT (09/28/90)	Incineration (off site)		Yes		At \$20 billion, incineration was considered cost-prohibitive. In addition, the community was concerned about the safety of transporting 22 acres of material by truck over switchback mountain roads.	Elise Jakabhazy 617-573-5760
1	Cannon Engineering - Plymouth OU, MA (03/31/88)	Incineration (off site)		Yes		About 264 tons of soil contaminated with lead and PCBs were disposed of at the Adams Center Sanitary Landfill in Fort Wayne, Indiana. Incineration was never used. PRP's contractor was allowed to put soil in a landfill without ROD amendment or ESD.	Dan Coughlin 617-573-9621
1	Charles George Reclamation Trust Landfill, MA (09/29/88)	Solidification/ stabilization		Yes		The contaminated area was capped instead of using solidification/stabilization. The estimated volume of contaminated media had decreased; the technology was no longer effective.	Elaine Stanley 617-223-5515
1	Iron Horse Park - OU 1, MA (09/15/88)	Bioremediation (ex situ) - land treatment		Yes		Land treatment was changed to asphalt batching off site at a state-permitted soil recycling facility. Bioremediation was taking longer than expected; treatment goals could not be met. An ESD was issued in October 1997.	Don McElroy 617-223-5571
1	Salem Acres, MA (03/25/93)	Solidification/ stabilization		Yes		Contaminated soils were excavated and hauled from the site instead of using solidification/stabilization. The estimated volume of contaminated media had decreased; the technology was no longer effective.	Elaine Stanley 617-223-5515
1	Sullivan's Ledge, MA (06/28/89)	Solidification/ stabilization		Yes		Stabilization is no longer part of the remedy. An ESD was issued in 1996 to eliminate that requirement.	Dave Lederer 617-573-9665
1	Sullivan's Ledge, MA (09/27/91)	Solidification/ stabilization		Yes		Stabilization is no longer part of the remedy. An ESD was issued in 1996 to eliminate that requirement.	Dave Lederer 617-573-9665
1	Loring AFB - OU 11, Vehicle Maintenance Building, ME (05/20/96)	Soil vapor extraction		Yes		Never implemented. Soils were excavated and connected to the base laundry SVE; soils were put into rolloff containers with PVC pipe.	Mike Nalipinski 617-223-5503

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## Ninth Edition (April 1999) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 8TH EDITION)	9TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
1	O'Connor, ME (09/27/89)	Incineration (off site)		Yes		Problems included high cost for implementation of the technology and equipment or site problems. Contaminated soil was landfilled off site. An ESD was issued on 07/11/94.	Ross Gilleland 617-573-5766
1	O'Connor, ME (09/27/89)	Solidification/ stabilization		Yes		The solidification/ stabilization remedy option provided treatment of lead if incineration was chosen. Incineration was not selected as a remedy. Contaminated soil was landfilled off site. An ESD was issued on 07/11/94.	Ross Gilleland 617-573-5766
1	Union Chemical, ME (12/27/90)	Incineration (off site)		Yes		Misinterpretation of the ROD. The 1990 ROD selected thermal desorption. That remedy was subsequently changed to SVE in 1994. An ESD was issued in April 1994. See page D-36 for more information.	Terrence Connelly 617-573-9638
1	Union Chemical, ME (12/27/90)	Solidification/ stabilization		Yes		Misinterpretation of the ROD. The 1990 ROD selected thermal desorption. That remedy was subsequently changed to SVE in 1994. An ESD was issued in April 1994. See page D-36 for more information.	Terrence Connelly 617-573-9638
1	Ottati & Goss/Kingston Steel Drum - OU 4, NH (01/16/87)	Incineration (on site)			Thermal desorption	A change in cleanup level may be necessary under new risk guidance issued since the ROD was signed. Thermal desorption is more cost effective; the volume of contaminated media had increased. A change in future use from residential to nonresidential would require a ROD amendment.	Richard Goehlert 617-573-5742
1	South Municipal Water Supply Wells, NH (09/27/89)	Soil vapor extraction		Yes		A second ESD, issued in February 1997, granted a technical impracticality waiver. The waiver eliminated SVE because of the presence of DNAPLs. The SVE system has been shut down.	Roger Duwart 617-573-9628  Tom Andrews (NHDES) 603-271-2910
1	South Municipal Water Supply Wells, NH (09/27/89)	In situ air stripping (air sparging)		Yes		The air injection well was not installed deep enough to deliver air below the water table. Because of installation of deeper air injection wells would have caused penetration of a confining layer, that activity was not performed. An ESD was issued on 02/03/97.	Roger Duwart 617-573-9628  Tom Andrews (NHDES) 603-271-2910
1	Davis Liquid Waste, RI (09/29/87)	Solidification/ stabilization		Yes		Solidification/stabilization was proposed in the ROD as a treatment for the residues of incineration, but thermal desorption was used instead of incineration. Therefore, solidification/stabilization was not used. No ROD amendment or ESD was needed.	Neil Handler 617-573-9636

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## Ninth Edition (April 1999) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 8TH EDITION)	9TH EDITION			COMMENTS	CONTACTS/PHONE
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2	Cosden Chemical Coatings Corp., NJ (09/30/92)	Solidification/ stabilization		Yes		The estimated volume of contaminated media had decreased; the technology was no longer effective. An ESD is to be issued in the near future.	Edward Finnerty 212-637-4367
2	De Rewal Chemical Co., NJ (09/29/89)	Solidification/ stabilization		Yes		The treatability study indicated that leaching inorganics from the solidified mass would increase contamination of the groundwater. An ESD, issued on 06/12/97, eliminates solidification/stabilization and provides for off-site disposal.	Lawrence Granite 212-637-4423
2	Ellis Property, NJ (09/30/92)	Incineration (off site)			Solidification/ stabilization	Off-site incineration never was used because of high cost; chemical stabilization was used instead.	Richard Ho 212-637-4372
2	Kauffman & Minter, NJ (09/27/96)	Incineration (off site)		Yes		No hazardous waste has been detected at this OU. The nonhazardous waste currently is being excavated and disposed of with no treatment. Additional characterization currently is being performed.	Paolo Pascetta 212-637-4383
2	Reich Farms, NJ (09/30/88)	Incineration (off site)		Yes		This was a contingency in the ROD. The ROD specified enhanced volatilization followed by either incineration or on-site disposal. All soil was treated successfully by enhanced volatilization and thus incineration was not necessary.	Jonathan Gorin 212-637-4361
2	Renora, Inc., NJ (09/29/87)	None				Original remedy was not listed in the ASR. The 1987 ROD selected bioremediation (in situ) for groundwater. It was cancelled because treatability studies showed bioremediation to be ineffective in treating PAH-contaminated soils. A ROD Amendment signed on 09/30/94 changed the remedy to off-site disposal.	Jonathan Gorin 212-637-4361
2	Roebing Steel Co., NJ (03/29/90)	Solidification/ stabilization		Yes		Solidification/stabilization was considered and rejected because of the high cost of cleaning up a large area of contamination (10 acres). A ROD amendment is expected in December 1998.	Tamara Rossi 212-637-4368
2	Roebing Steel Co., NJ (09/26/91)	Solidification/ stabilization		Yes		Solidification/stabilization was considered and rejected because of the high cost of cleaning up a large area of contamination (10 acres). A ROD amendment is expected in December 1998.	Tamara Rossi 212-637-4368
2	Swope Oil & Chemical, NJ (09/27/91)	Incineration (off site)		Yes		Remedy included only SVE treatment, and no off-site incineration was conducted. Misinterpretation of ROD.	Joseph Gowers 212-637-4413

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## Ninth Edition (April 1999) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 8TH EDITION)	9TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
2	Waldick Aerospace Devices, Inc., NJ (03/29/91)	Incineration (off site)		Yes		Misinterpretation of the ROD. Off-site incineration never was implemented. The ROD specified on-site thermal treatment or thermal desorption.	Daniel Weissman 212-637-4384  George Buc (USACE) 908-389-3040  Dave Modricker (USACE) 717-748-4505
2	Waldick Aerospace Devices, Inc., NJ (09/29/87)	Solidification/ stabilization		Yes		Misinterpretation of the ROD.	Daniel Weissman 212-637-4384
2	White Chemical Corp., NJ (09/26/91)	Solidification/ stabilization		Yes		Misinterpretation of the ROD. ROD specified that the site should be stabilized, referring to the site stabilization process performed during a previous remedial action. This did not mean treatment using stabilization/solidification.	Betsy Donovan 212-637-4369
2	Brookhaven National Laboratory (USDOE) - OU 4, NY (03/25/96)	This is an FY96 ROD that was not listed in the eighth edition.	Soil vapor extraction			Soil vapor extraction was added to enhance the existing in situ air stripping system.	Mary Logan 212-637-4321
2	Circuitron Corp., NY (03/29/91)	Incineration (off site)		Yes		Misinterpretation of the ROD. Soil was excavated and transported to an approved RCRA treatment and disposal facility. Incineration (off site) was selected as the method of treatment to develop a conservative cost estimate.	Sharon Trocher 212-637-3965
2	Hooker (102nd Street Landfill), NY (09/26/90)	Incineration (off site)		Yes		Original ROD specified incineration of sediments outside slurry wall. Slurry has been repositioned to contain any migration of NAPL plumes. The site will be capped instead. ROD Amendment issued 06/9/95.	Paul Olivo 212-637-4280
2	Love Canal - 93rd St. School, NY (09/26/88)	Solidification/ stabilization		Yes		Residents did not want any materials treated on site. Materials were disposed of off site instead. A ROD amendment was issued in 05/91.	Damian Duda 212-637-4269
2	Marathon Battery Corp., NY (09/30/88)	Solidification/ stabilization		Yes		All three solidification/ stabilization projects were conducted as one project, even though three RODs were issued. The work is documented in the ASR as a single project. Therefore, the two other projects have been deleted.	Pam Tames 212-637-4255

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## Ninth Edition (April 1999) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 8TH EDITION)	9TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
2	Marathon Battery Corp., NY (09/30/89)	Solidification/ stabilization		Yes		All three solidification/ stabilization projects were conducted as one project, even though three RODs were issued. The work is documented in the ASR as a single project. Therefore, the two other projects have been deleted.	Pam Tames 212-637-4255
2	Mattiace Petrochemicals - OU 1, 5, and 6, NY (06/27/91)	Incineration (off site)		Yes		The ROD identified incineration as a possible method of treatment, but incineration was not the selected remedy.	Edward Als 212-637-4272
2	Olean Well Field - OU 2, NY (09/30/96)	In situ air stripping (air sparging)		Yes		Air sparging was considered for the dry cleaning. A pilot test demonstrated that air sparging was not feasible because of site conditions. Contaminated soil will be excavated instead (a contingency in the ROD, so no ESD or ROD amendment is necessary).	Thomas Taccone 212-637-4281
2	Solvent Savers, NY (09/30/90)	Thermal desorption			Soil vapor extraction	SVE is being conducted as a pilot study, but thermal desorption may be used in the future.	Lisa Wong 212-637-4267
3	Delaware Sand & Gravel Landfill - OU 4 and OU 5, DE (09/30/93)	Soil vapor extraction			Bioremediation (in situ) - bioventing	Treating soil with SVE followed by bioventing would not have enhanced the rate of removal of VOCs from soil. Therefore, bioventing was used without SVE. The remedy was a contingency in the ROD.	Eric Newman 215-814-3237
3	E.I. DuPont-Newport Site, DE (09/23/93)	None				Original remedy was not listed in the ASR. The 1993 ROD selected solidification/stabilization (in situ). However, the waste was much deeper than originally estimated. Due to the increased volume of waste, the cleanup costs were significantly higher than cited in the 1993 ROD. On 08/16/95 EPA issued and ESD to change the remedy to containment with pump-and-treat for groundwater.	Lisa Brown 215-814-5528
3	Halby Chemical Co. - OU 1, Process Plant Area, DE (06/28/91)	Solidification/ stabilization			Chemical treatment	Misinterpretation of ROD; in situ chemical oxidation was used.	Eric Newman 215-814-3237
3	Aberdeen Proving Ground (Edgewood Area) J-Field Soil OU, MD (09/27/96)	This is an FY96 ROD that was not listed in the eighth edition.			Phyto- remediation	Incineration and solidification/stabilization, provided for in the original ROD, was considered dangerous because of the presence of unexploded ordnance. A ROD amendment is to be issued in the near future for a change to phytoremediation.	Steven R. Hirsh 215-566-3352

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## Ninth Edition (April 1999) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 8TH EDITION)	9TH EDITION			COMMENTS	CONTACTS/PHONE
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3	Mid-Atlantic Wood Preservers, MD (12/31/90)	Solidification/ stabilization		Yes		The remedy was a contingency in the ROD. Solidification/ stabilization was to be used only if the level of arsenic was above 1000 mg/kg. Results of soil analysis on all samples at the site show levels of arsenic below 1,000 mg/kg.	Eric Newman 215-814-3237
3	Aladdin Plating, PA (09/27/88)	Solidification/ stabilization		Yes		A vendor demonstration of electrokinetics to treat contami- nated groundwater and soils will continue. A subsequent ROD issued on 12/30/93 requires institutional controls and monitoring, but no solidification/stabilization.	Gregory D. Hamm 215-566-3194
3	Berks Sand Pit, PA (09/29/88)	Incineration (off site)		Yes		The source of contamination in sediments is being eliminated because of lowering of the water table, eliminating the need for excavation and incineration (off site) of sediments. An ESD has been proposed and will be made final after a public comment period of 30 days.	Bruce Rundell 215-566-3317
3	Brown's Battery Breaking Site - OU 2, PA (07/02/92)	Plasma high- temperature recovery		Yes		Problems with implementation include high cost and equipment or site problems.	Richard Watman 215-566-3219
3	Douglasville Disposal, PA (06/30/89)	Incineration (on site)		Yes		Community concerns prohibited the use of the technology. A feasibility study of solidification/stabilization is being conducted. A ROD amendment is expected in FY99.	Victor J. Janosik 215-566-3217
3	Drake Chemical - Phase II, PA (05/13/86)	Incineration (on site)		Yes		This is a duplicate project. Both the 1986 and the 1988 ROD specified incineration. Incineration (on site) was chosen because of a preference for on-site treatment. The work is documented as a single project.	Gregg Crystall 215-566-3207
3	Hebelka Auto Salvage Yard, PA (09/30/91)	Solidification/ stabilization		Yes		The 1991 ROD refers to solidification/stabilization of lead- contaminated soils completed under the 1989 ROD, but the 1991 ROD specifies monitoring of groundwater only; no solidification/stabilization of additional sites is specified.	Frederick N. Macmillan 215-814-3201
3	M.W. Manufacturing, PA (03/31/89)	Incineration (off site)			Solidification/ stabilization and Thermal Desorption	Results of treatability study showed burning fluff caused potential threat due to emissions of dioxin. Thus, offsite incineration was not implemented. ROD Amendment issued 12/22/97 selected ex-situ stabilization and low temperature thermal desorption.	Bhupendra Khona 215-566-3213

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## Ninth Edition (April 1999) (continued)

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3	Publicker Industries, Inc. - OU 3, PA (12/28/95)	Solidification/ stabilization		Yes		The remedy was a contingency. Wastes were disposed of in a landfill.	Frances Costanzi 215-566-3196
3	Greenwood Chemical Co., VA (12/29/89)	Solidification/ stabilization		Yes		Solidification/stabilization of soils contaminated with arsenic would not have been cost-effective for the small volume of waste present. No ROD amendment or ESD was issued.	Philip Rotstein 215-814-3232
3	Rentokil Virginia Wood Preserving, VA (06/22/93)	Incineration (off site)		Yes		Cost too high. A value engineering analysis indicated that contaminants in soil could successfully be contained with a slurry wall and cap. A pump and treat system for dewatering could effectively immobilize contaminants. ROD Amendment issued 08/27/96.	Andrew C. Palestini 215-566-3233
3	Rentokil Virginia Wood Preserving, VA (06/22/93)	Solidification/ stabilization		Yes		Cost too high. A value engineering analysis indicated that contaminants in soil could successfully be contained with a slurry wall and cap. A pump and treat system for dewatering could effectively immobilize contaminants. ROD Amendment issued 08/27/96.	Andrew C. Palestini 215-566-3233
3	Saunders Supply Co., VA (09/30/91)	Solidification/ stabilization		Yes		Solidification/stabilization was a contingency that was found to be unnecessary.	Andrew C. Palestini 215-566-3233
3	Fike Chemical, Inc. - OU 1, WV (09/29/88)	Solidification/ stabilization		Yes		Misinterpretation of the ROD. The ROD called for drainage of water and liquid from the lagoon (referred to as "stabilization" in the ROD). Lagoon sludge then was to be sent off site for incineration.	Katherine Lose 215-566-3240
3	Fike Chemical, Inc.-WV (03/31/92)	Neutralization		Yes		The excavated drums were damaged and were sent off site for disposal. ESD issued 05/13/93.	Katherine Lose 215-566-3240
3	Fike Chemical, Inc. - OU 3 - Drum Removal, WV (03/31/92)	Solidification/ stabilization		Yes		Stabilizing in the ROD referred to stabilizing acidic wastes. The closeout report indicated that all nonhazardous soils were landfilled and hazardous wastes were incinerated. Solidification/stabilization was a contingency remedy.	Katherine Lose 215-566-3240
4	Ciba Geigy (McIntosh Plant), AL (07/14/92)	Solidification/ stabilization		Yes		Solidification/stabilization was not implemented because it would bring about no cost savings.	Charles L. King, Jr. 404-562-8931

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## Ninth Edition (April 1999) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 8TH EDITION)	9TH EDITION			COMMENTS	CONTACTS/PHONE
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4	Ciba Geigy (McIntosh Plant) - OU 3, AL (07/25/95)	Bioremediation (in situ) - other			Incineration (on site)	The treatability study was unsuccessful; treatment goals could not be met. Wastes are being incinerated instead.	Charles L. King, Jr. 404-562-8931
4	Anodyne, Inc., FL (06/17/93)	Solidification/ stabilization		Yes		The amount of contaminated soil was less than anticipated, and the soil was excavated and landfilled off site.	Brad Jackson 404-562-8925
4	Brown Wood Preserving, FL (04/8/88)	Solidification/ stabilization		Yes		Contingency. This technology in ROD was to be considered only if ex situ biodegradation - land treatment did not attain the desired cleanup levels for the appropriate indicator chemicals within the two-year time period. Goals were met within 18 months.	Rosalind Brown 404-562-8870
4	Cecil Field Naval Air Station - OU 2, Sites 5 and 17, FL (06/24/96)	Bioremediation (in situ) - groundwater			Air sparging	Bioremediation was begun, but the cleanup goals were revised. A ROD amendment is to be issued soon, and air sparging will be used.	Debbie Vaughn-Wright 404-562-8539
4	Cecil Field Naval Air Station - OU 6, Site 11, FL (09/14/94)	Incineration (off site)		Yes		Wastes were below LDR standards for treatment. Waste was sent off site to a RCRA subtitle C landfill.	Debbie Vaughn-Wright 404-562-8539
4	Cecil Field Naval Air Station - OU 7, FL (07/17/96)	Bioremediation (in situ) - groundwater		Yes		SVE and bioremediation were to be implemented in the downgradient area, but concentrations of contaminants have decreased. Therefore, the remedy will not be implemented.	Debbie Vaughn-Wright 404-562-8539
4	Cecil Field Naval Air Station - OU 7, FL (07/17/96)	Soil vapor extraction		Yes		SVE and bioremediation were to be implemented in the downgradient area, but concentrations of contaminants have decreased. Therefore, the remedy will not be implemented.	Debbie Vaughn-Wright 404-562-8539
4	Coleman-Evans Wood Preserving - Amendment, FL (09/26/90)	Solidification/ stabilization			Thermal desorption	The 1990 ROD amendment selected a technology train of bioremediation, soil washing and S/S. Treatability studies indicated presence of dioxin, which cannot be treated with bioremediation. So, remedy changed to thermal desorption. ROD Amendment 9/25/97.	Randall Chaffins 404-562-8929
4	Gold Coast Oil Corp., FL (09/11/87)	Solidification/ stabilization		Yes		The estimated volume of contaminated media had decreased, and the technology was no longer effective.	Brad Jackson 404-562-8925

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## Ninth Edition (April 1999) (continued)

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4	Homestead Air Reserve - OU 6, Site SS-3, FL (06/27/95)	Thermal desorption		Yes		Excavation, hauling, and landfilling as a non-RCRA solid waste was less costly, as per the ESD issued on 10/22/97. One 55-gal. drum and 1,350 cu yd of waste were hauled to a non-RCRA landfill. Data in design showed reduced volume of soil.	Patricia Goldberg 404-562-8543  Doyle Brittain 404-562-8549
4	Reeves Southeastern Galvanizing - OU 1, FL (10/13/92)	Solidification/stabilization		Yes		Implementability (equipment problems and site problems). The PRP could not find a treatment mix that could meet performance standards. An ESD was issued on 04/17/97.	Randall Chaffins 404-562-8929
4	Stauffer Chemical Company, FL (12/01/95)	Bioremediation (ex situ)			Bioremediation (ex situ)-composting	The change was made to identify a specific type of ex situ bioremediation.	Brad Jackson 404-562-8925
4	Whitehouse Oil Pits - Amendment, FL (06/16/92)	Bioremediation (ex situ) - slurry-phase		Yes		Treatment goals could not be met. A ROD amendment was to be issued in mid-September 1998, and a public comment period will be conducted.	Mark Fite 404-562-8927
4	Marine Corps Logistics Base - OU 3, PSC 16 & 17, GA (08/14/92)	Solidification/stabilization		Yes		Misinterpretation of ROD; soil was mixed with clean fill and then disposed of at a permitted landfill. No solidification/stabilization was performed.	Robert Pope 404-562-8506
4	Marzone Inc./Chevron Co. - OU 1, GA (09/30/94)	Thermal desorption		Yes  Yes		Remedy was too costly, the community was opposed to the remedy, and dioxin was discovered. Therefore, the technology was not implemented, and the soil was excavated and disposed of at an off-site landfill. A ROD amendment was issued on 06/18/97.	Annie Godfrey 404-562-8919
4	Mathis Brothers Landfill - South Marble Top Road, GA (03/24/93)	Bioremediation (ex situ) - slurry-phase				Excavation, landfilling, and incineration were less costly and required less time. Soils were excavated and transported off site for landfilling if nonhazardous, and incinerated if hazardous.	Charles L. King, Jr. 404-562-8931
4	Smith's Farm - OU 1, KY (09/29/89)	Solidification/stabilization		Yes		Solidification/stabilization was planned for the heavy metals remaining in the treated soils after the thermal desorption, but the treatment was not necessary.	Antonio DeAngelo 404-562-8826
4	Aberdeen Pesticide Dumps (Amendment), NC (09/30/91)	Solidification/stabilization			Incineration (off site)	Arsenic is a contaminant at the site. Because the arsenic was commingled with pesticide wastes, all soil contaminated with arsenic was incinerated, and no soil required stabilization.	Kay Crane 404-562-8795

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## Ninth Edition (April 1999) (continued)

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4	Cape Fear Wood Preserving, NC (06/30/89)	Soil washing			Thermal desorption	An ESD issued in 1993 changed the remedy from soil washing to thermal desorption.	Jon Bornholm 404-562-8820
4	Chemtronics, Inc., NC (04/05/88)	Solidification/ stabilization		Yes		The project was canceled during the design phase, and the site was capped.	Jon Bornholm 404-562-8820
4	Marine Corps Base, Camp Lejeune - OU 12, Site 3 - The Old Creosote Plant, NC (04/03/97)	Bioremediation (ex situ) - solid-phase		Yes		Treatment goals could not be met during treatability testing, and therefore bioremediation (ex situ) – solid-phase will not be implemented. A ROD amendment that specifies disposal of the contaminated soils in an off-site landfill is being prepared.	Gena Townsend 404-562-8538
4	Sodyeco - Area C, NC (09/24/87)	Soil vapor extraction		Yes		During installation, contaminated drums were encountered, excavated, and removed. Contamination therefore decreased, and SVE no longer was required.	Michael Townsend 404-562-8813
4	Geiger (C&M Oil), SC (6/1/87)	Solidification/ stabilization		Yes		A ROD amendment was issued on 07/13/93.	Sheri Panabaker 404-562-8810
4	Kalama Specialty Chemicals, SC (09/28/93)	Solidification/ stabilization		Yes		The amount of contaminated material was less than originally estimated, so it was excavated and disposed of off site. Contingency in ROD.	Steven Sandler 404-562-8818
4	Kalama Specialty Chemicals, SC (09/28/93)	Mechanical soil aeration		Yes		The amount of contaminated material was less than originally estimated, so it was excavated and disposed of off site. Contingency in ROD.	Steven Sandler 404-562-8818
4	Savannah River (TNX Area), SC	In situ air stripping (air sparging)		Yes		Problems with implementability (equipment problems, on site problems) arose; development of an air recirculation well was not possible. Areas of low permeability precluded formation of the required recirculation cell. An ESD is to be issued in near the future.	Joao Cardoso-Neto (Bechtel) 803-952-6495  Keith A. Collinsworth (SCDHEC) 803-896-4055  Constance A. Jones 404-562-8551

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## Ninth Edition (April 1999) (continued)

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4	Savannah River (USDOE) - M Area Settling Basin, SC	In situ air stripping (air sparging)		Yes		This is a demonstration project, not a full-scale application.	Mike Simmons (DOE) 803-725-1627  Brian Looney (WSRC) 803-725-1627
4	Savannah River (USDOE) - OU 1, SC (06/29/92)	Solidification/ stabilization		Yes		The work was completed as a RCRA project that is not applicable to the ASR.	Mike Simmons (DOE) 803-725-1627  Brian Looney (WSRC) 803-725-3692
4	Amnicola Dump, TN (03/30/89)	Solidification/ stabilization		Yes		The volume of soil was much less than had been indicated in the ROD, and it was more cost-effective to dispose of the soil off site.	Robert West 404-562-8806
4	Arlington Blending and Packaging Co., TN (06/28/91)	Solidification/ stabilization		Yes		The estimated volume of contaminated media has decreased; the technology no longer is effective. An ESD is to be issued in near future.	Derek Matory 404-562-8800
4	Wrigley Charcoal, TN (09/30/91)	Incineration (off site)		Yes		The technology was too expensive; disposed of off site in a landfill. A ROD amendment was issued on 02/02/95.	Lisa Montalvo 404-562-8805
4	Wrigley Charcoal, TN (09/30/91)	Solidification/ stabilization		Yes		The technology was too expensive; disposed of off site in a landfill. A ROD amendment was issued on 02/02/95.	Lisa Montalvo 404-562-8805
5	Acme Solvent Reclaiming, Inc., IL (12/31/90)	Incineration (off site)		Yes		The ROD identifies off-site incineration as a contingency. The technology was never implemented.	David Linnear 312-886-1841
5	Belvidere Municipal Landfill - No. 1, IL (06/29/88)	Incineration (off site)		Yes		Incineration off site was included in the ROD to be used if the concentration of PCBs was greater than 50 ppm. Because the concentration was not, PCBs were disposed of off site.	William Ballard 312-353-6083
5	Byron/Johnson Salvage Yard, IL (03/13/85)	Incineration (off site)		Yes		Excavation, hauling, and landfilling were used instead of off- site incineration as indicated in the ROD because of high cost.	Bill Bolen 312-353-6316
5	Savanna Army Depot Activity, IL	Solidification/ stabilization		Yes		This project is a RCRA closure - state oversight.	David Seely 312-886-7058

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## Ninth Edition (April 1999) (continued)

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5	Fisher-Calo, IN (08/07/90)	Soil vapor extraction			Bioremediation (in situ) - biosparging	Biosparging was determined to be more effective than SVE; no ROD amendment or ESD has been issued.	Jeffrey Gore 312-886-6552
5	Main Street Well Field, IN (03/29/91)	Incineration (off site)		Yes		Off-site incineration was never implemented at this site.	Deborah Orr 312-886-7576
5	Wayne Waste Oil, IN (03/30/90)	Bioremediation (in situ)			Bioremediation (in situ) - biosparging	The technology has been reclassified.	Jeffrey Gore 312-886-6552
5	Wayne Waste Oil, IN (03/30/90)	Solidification/ stabilization		Yes		The technology was determined to be unnecessary. Metals were the only contaminants of concern, and the site had been capped already. Consequently, the risk was minimized. No ROD amendment or ESD was written.	Jeffrey Gore 312-886-6552
5	Wedzeb, IN (06/30/89)	Incineration (off site)		Yes		52,000 drums of PCB capacitors were incinerated off site in 1987 at the Apptus facility in Kansas. Soil was excavated and disposed of off site because the contamination remaining in soil was low. No ROD amendment or ESD was issued.	Kenneth Theisen 312-886-1959
5	Berlin & Farro Liquid Incinera- tion, MI (02/29/84)	Incineration (off site)		Yes		Contingency in the ROD. ROD specified transportation of PCB liquid wastes, if any, to an approved off-site incinerator.	Robert Whippo 312-886-4759
5	Burrows Sanitation, MI (09/30/86)	Solidification/ stabilization		Yes		The volume of contamination was smaller than originally had been estimated. It was more cost-effective to excavate and dispose of off site under removal authority.	Jeffrey Gore 312-886-6552
5	Carter Industries, Inc., MI (09/18/91)	Incineration (off site)		Yes		1991 ROD specified thermal desorption, not incineration off-site. Misinterpretation of ROD. Amended ROD 2/28/95 canceled remedy because the cost for off-site disposal dropped, there was less soil, and restrictions on interstate transport have decreased.	Jon Peterson 312-353-1264
5	Clare Water Supply, MI (09/16/92)	Thermal desorption		Yes		The remedy should have been listed as SVE. The 1992 ROD specified SVE, not thermal desorption, but SVE was not feasible because of the low permeability of soils. A ROD amendment was issued on 05/15/97.	Jon Peterson 312-353-1264

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## Ninth Edition (April 1999) (continued)

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5	Duell-Gardner Landfill, MI (09/07/93)	Thermal desorption		Yes		The volume of contaminated material was much smaller than originally had been estimated. Consequently, it was more cost-effective to excavate and dispose of the material off site. A ROD amendment was to be issued in FY98.	Lolita Hill 312-353-1621
5	Electrovoice, MI (06/23/92)	Solidification/ stabilization		Yes		Solidification/stabilization was identified as a contingency remedy in the 1992 ROD. If cleanup goals are not achieved by the SVE system, the soils will be excavated and stabilized. The SVE system is in operation and its performance will be reviewed next year.	Karen Sikora 312-886-1843
5	Forest Waste Products, MI (03/31/88)	Incineration (off site)		Yes		An ESD is to be issued in the near future.	Elizabeth Reiner 312-353-6576
5	H. Brown Company, Inc., MI (09/30/92)	Solidification/ stabilization		Yes		The site was capped with clay and covered with asphalt so that the property could be redeveloped. Two ROD amendments have been issued. The first, issued on 09/29/95, removed solidification/stabilization from the project.	Timothy Prendiville 312-886-5122
5	Thermo-Chem, Inc. - OU 1, MI (09/30/91)	Incineration (off site)		Yes		The concentrations of the contaminants in the soil were low and it was not cost-effective to treat the soil with incineration. The metals could not be treated with incineration. The contaminated soil was excavated and disposed of off site.	James Hahnenberg 312-353-4213
5	MacGillis and Gibbs/Bell Lumber and Pole - OU 3, MN (09/22/94)	Bioremediation (in situ) - groundwater		Yes		The technology is ex situ, not in situ. Groundwater is being pumped and treated above ground.	Darryl Owens 312-886-7089  Miriam Horneff (MPCA) 612-296-7228
5	Ritari Post and Pole - OU 1, MN (06/30/94)	Incineration (off site)			Bioremediation (ex situ) - land treatment	Incineration was too expensive.	Ted Smith 312-353-6571  John Moeger (MPCA) 612-296-9707
5	Ritari Post and Pole - OU 1, MN (06/30/94)	Incineration (off site)		Yes		Incineration was too expensive. Chemical oxidation may be used to treat highly contaminated soils, and land treatment will be used for lower concentrations; the use of off site incineration would move the risk outside the site. An ESD is to be issued.	Ramon Torres 312-886-3010

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## Ninth Edition (April 1999) (continued)

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			ADDED	DELETED	CHANGED TO		
5	Allied Chem & Ironton Coke, OH (12/28/90)	Incineration (on site)		Yes		Contaminated soil volume decreased. A ROD amendment was to be issued in May or June 1998. Soil contaminated with soft tar will be excavated, soil that meets the TCLP limit will be recycled for alternative fuel, and soil that fails the TCLP limit will be disposed of at an off-site landfill.	Matthew Mankowski 312-886-1842
5	Fields Brook, OH (09/30/86)	None				The original remedy in the 1986 ROD was not listed in the ASR. The 1986 ROD specified solidification of sediments. EPA issued and ESD on 08/15/97 changed solidification to disposal.	Terese Van Donsal 312-353-6564
5	Summit National Liquid Disposal Service - Amendment, OH (11/02/90)	Incineration (off site)		Yes		The 1988 ROD and the 1990 ROD amendment both specified incineration on site. It is documented as a project under the 1988 ROD.	Anthony Rutter 312-886-8961
5	Mid-State Disposal Landfill, WI (09/30/88)	Solidification/ stabilization		Yes		Solidification/stabilization was identified as a contingency that was to be used only to solidify the sludge lagoon so that a cap could be placed over it. Solidification/ stabilization was deemed unnecessary. A geomembrane cap was used without solidification/ stabilization.	Mary Tierney 312-886-4785
5	Onalaska Municipal Landfill, WI (08/14/90)	Bioremediation (in situ)			Bioremediation (in situ) - bioventing	The technology was reclassified from bioremediation in situ to bioventing.	George Mickelson (WIDNR) 608-267-0858  Kevin Adler 312-886-7078
5	Spickler Landfill, WI (06/03/92)	Solidification/ stabilization		Yes		Results of a test of stabilization/solidification showed that the technology would not provide a significant reduction in the mobility or hydraulic conductivity of mercury wastes. An impermeable cap with synthetic liner was used to eliminate infiltration.	John Fagiolo 312-886-0800
6	Gurley Pit, AR (10/06/86)	Incineration (off site)		Yes		The cost was too high; transportation and safety problems also arose.	Ernest R. Franke 214-665-8521
6	Popile, AR (02/01/93)	Bioremediation (ex situ)			Bioremediation (ex situ) - land treatment	The RI data is being reviewed to determine whether there is a more appropriate remedy. The site was capped under a removal action. FS decisions will be made in 1999.	Shawn Ghose 214-665-6782

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

## Ninth Edition (April 1999) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 8TH EDITION)	9TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
6	Popile, AR (02/01/93)	Bioremediation (in situ)			Bioremediation (in situ) - groundwater	The RI data is being reviewed to determine whether there is a more appropriate remedy. The site was capped under a removal action. FS decisions will be made in 1999. The original remedy had been composting, but the remedy was changed to bioremediation in situ - groundwater.	Shawn Ghose 214-665-6782
6	Vertac, Inc., AR (06/30/93)	Incineration (off site)		Yes		This project has been consolidated with off-site incineration under the 1993 ROD for OU1. All material specified in that ROD was incinerated off site according to a 1995 ESD. See information under the listing for incineration off site at OU1.	Phillip Allen 214-665-8516
6	Vertac, Inc. - Onsite OU 1, AR (05/25/95)	Incineration (on site)			Incineration (off site)	An on-site incinerator was present after use for a previous removal action. The PRP and the incinerator operator could not agree on a price, so EPA allowed the PRP to choose to incinerate the soils off site. An ESD was issued on 05/25/95.	Mike Arjmandi (ADPCE) 501-682-0852  Phillip Allen 214-665-8516
6	Bayou Bonfouca - Source Control OU (Amendment), LA (07/20/95)	Incineration (off site)		Yes		This ROD amendment (07/20/95) actually covered the off-site incineration of waste from the Southern Shipbuilding Corporation site. Therefore, no waste from Bayou Bonfouca was incinerated off site or addressed by this ROD amendment.	Mark Hansen 214-665-7548
6	Pab Oil & Chemical Services, Inc., LA (09/22/93)	Bioremediation (ex situ) - other			Solidification/ Stabilization	Bioremediation was discontinued because of implementability problems. An ESD was issued on 03/12/1997.	Caroline Ziegler 214-665-2178
6	Atchison, Topeka, & Santa Fe Clovis/Santa Fe Lake - TPH lake sediments, NM (09/23/88)	Bioremediation (ex situ) - land treatment		Yes		No information available.	Donald H. Williams 214-665-2197
6	Oklahoma Refining Co., OK (06/09/92)	Bioremediation (ex situ) - other			Bioremediation (ex situ) - land treatment	The type of bioremediation was clarified; there was no actual remedy change.	Kelly Dixon (ODEQ) 405-702-5141  Earl Hendrick 214-665-8519

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## Ninth Edition (April 1999) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 8TH EDITION)	9TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
6	Bailey Waste Disposal, TX (06/28/88)	Solidification/ stabilization		Yes		Cost too high; treatment goals could not be met; more contamination than planned. New remedy includes excavation and offsite disposal of problematic wastes and installation of a geocomposite cap over mixed industrial and municipal wastes. ROD Amendment 12/16/96.	Chris Villarreal 214-665-6758
6	Brio Refining, TX (03/31/88)	Solidification/ stabilization		Yes		Solidification/ stabilization was considered during the RI/FS stages, but was not included in the ROD because it could not meet treatment levels. No ROD Amendment or ESD therefore was necessary.	John Meyer 214-665-6742
6	Kelly Air Force Base - Site 1100, Phase II, TX	This phase is an addition to the phase listed in the eighth edition.	Soil vapor extraction			No information available.	Bill Hall 210-925-3100
6	Kelly Air Force Base - Site 1100, Phase III, TX	This phase is an addition to the phase listed in the eighth edition.	Bioremediation (in situ)- bioventing			No information available.	Bill Hall 210-925-3100
6	Petro-Chemical Systems, Inc.- OU 2, TX (04/30/98)	This is an FY98 ROD that was not listed in the eighth edition.	Thermal desorption				Chris Villarreal 214-665-6758
6	Petrochemical (Turtle-Bayou), TX (09/06/91)	Incineration (off site)			Soil vapor extraction	Misinterpretation of ROD. SVE currently is being used to remediate four soil areas at the site.	Chris Villarreal 214-665-6758
6	Sheridan Disposal Services, TX (12/29/88)	Solidification/ stabilization		Yes		Misinterpretation of the ROD.	Gary A. Baumgarten 214-665-6749
6	South Cavalcade Street, TX (09/26/88)	Incineration (off site)		Yes		The 09/26/88 ROD listed incineration (off site) for sludges, if encountered. However, no sludges were not found and therefore incineration was not performed.	Glenn Celerier 214-665-8523
6	South Cavalcade Street, TX (09/26/88)	Soil washing		Yes		A pilot study of soil washing showed that 40 percent of the volume could not be washed to meet goals. Soils contaminated with carcinogenic PAHs at levels higher than 700 ppm will be sealed and contained beneath a six-inch-thick reinforced concrete cap. A ROD amendment was issued on 06/27/97.	Glenn Celerier 214-665-8523

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## Ninth Edition (April 1999) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 8TH EDITION)	9TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
6	South Cavalcade Street, TX (09/26/88)	Flushing (in situ)		Yes		Estimated volume of contaminated soil much less than anticipated, but treatment goals could not be reached anyway. Will cap the site instead. ROD Amendment issued 6/27/97.	Glenn Celerier 214-665-8523
7	Midwest Manufacturing/North Farm (Amendment), IA (09/30/93)	Solidification/ stabilization		Yes		The cost was too high; contaminant levels for both OUs were lower than before. Site risks were evaluated to determine that monitoring with institutional controls would effectively address the contamination at both OUs. The original ROD was issued in 1988.	Diane Easley 913-551-7797
7	Strother Field Industrial Park, KS (03/31/94)	Soil vapor extraction		Yes		The application of SVE technology is impractical at this site because the soil permeability is too low. The remedy proposed in the ESD is a pump-and-treat system with monitored natural attenuation. An ESD was to be issued by 09/30/98.	Paul Roemer 913-551-7694
7	Ellisville Site - Bliss, MO (09/29/86)	Incineration (off site)				The 1986 ROD called for interim storage of contaminated soil on site and incineration at an off-site commercial facility. The 1991 ROD called for off-site incineration at the Times Beach, MO site operated by the PRPs. A ROD amendment was issued on 09/30/91.	Robert Feilds 913-551-7697
7	Missouri Electric Works, MO (09/28/90)	Incineration (on site)			Thermal desorption	On-site incineration was too expensive. A ROD amendment was issued in September 1995.	Pauletta France-Isetts 913-551-7701
7	Shenandoah Stables, MO (09/28/90)	Solidification/ stabilization		Yes		Misinterpretation of the ROD.	Robert Feild 913-551-7697
8	Broderick Wood Products, CO (03/24/92)	Bioremediation (in situ) - groundwater			Bioremediation (in situ) - bioventing	The remedy was changed to bioventing in the ESD issued on 03/24/95. The pump-and-treat system did not work with LNAPLs; therefore, the cost of implementing it would be high.	Armando Saenz 303-312-6559
8	Fort Carson - Building 9648 OU, CO	Bioremediation (in situ) - other			Bioremediation (in situ) - bioventing	The technology was reclassified.	John Cloonan 719-526-8004
8	Lockheed/Martin - W C Astronautics Facility, CO (09/24/90)	Soil vapor extraction			Thermal desorption	SVE will not be used. All soil will be excavated and treated by thermal desorption. Doing so will allow the site owner to reduce risk, eliminate the need for post-closure care, and clean-close the unit.	George Dancik 303-312-6206  Charles Johnson (CDPHE) 303-692-3348

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## Ninth Edition (April 1999) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 8TH EDITION)	9TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
8	Rocky Mountain Arsenal - OU 17, CO (05/14/90)	Solidification/ stabilization		Yes		The ROD was misinterpreted.	Laura Williams 303-312-6660
8	Rocky Mountain Arsenal - OU 28, CO (01/15/93)	Solidification/ stabilization		Yes		OU 28 was the evaluation of alternatives for treatment of various future waste streams at RMA. Solidification/ stabilization was considered, but no actions were taken under OU 28.	Laura Williams 303-312-6660
8	Rocky Mountain Arsenal - OU 29, CO (01/15/93)	Incineration (off site)		Yes		OU 29 was an interim remedial action to address PCB wastes. Both off-site incineration and off-site landfilling were selected as the most preferable alternatives for disposal of PCB wastes. The PCB wastes were ultimately disposed of by landfilling.	Laura Williams 303-312-6660
8	Sand Creek Industrial, CO (09/28/90)	Incineration (off site)		Yes		No information is available.	Erna Waterman 303-312-6762
8	Summitville Mine - OU 0, CO (12/15/94)	Neutralization		Yes		The ROD was misinterpreted.	Victor Ketallappet 303-312-6528
8	Burlington Northern (Somers Plant) - Soil, Base - OU 4, UT (06/14/94)	Bioremediation (in situ) - other		Yes		The ROD was misinterpreted.	James C. Harris 406-441-1150
8	Montana Pole and Treating Plant - Soil OU, MT (09/21/93)	Bioremediation (in situ) - other		Yes		The ROD was misinterpreted.	James C. Harris 406-441-1150  Neil Marsh (MT) 406-444-1420
8	Silver Bow Creek/Butte Area - Rocker Timber Framing and Treatment Plant OU, MT (06/30/92)	Solidification/ stabilization		Yes		Solidification/stabilization treatment was recommended only if chemical treatment was not successful. The estimated volume of contaminated media had decreased; the technology was no longer effective.	Mike Bishop 406-441-1150
8	Ellsworth AFB - Abandoned Fire Protection Area, SD (05/10/96)	Soil vapor extraction		Yes		The FY96 ROD only expanded the dual phase system from the FY95 ROD, but did not add any technologies.	Peter Ismert 303-312-6665

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## Ninth Edition (April 1999) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 8TH EDITION)	9TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
8	Hill Air Force Base - OU 4, UT (06/14/94)	Soil vapor extraction		Yes		The bottom half of the landfill is below the water table, and the landfill does not have a slurry wall to divert groundwater flow from it. Therefore, SVE technology could not be implemented. A series of 3 trenches collects leachate from the landfill.	Dr. Dan Atkins (DoD) 801-775-2559  Rob Stites 303-312-6664
8	Utah Power & Light/American Barrel, UT (07/07/93)	Incineration (off site)		Yes		Off-site incineration was specified as a contingent remedy but never was implemented.	Paula Schmittiel 303-312-6861
9	Fairchild Semiconductor (Mt. View) - Bldg 1-4 (515 & 545 N. Whisman Rd./313 Fairchild Dr.), CA (06/30/89)	Soil vapor extraction		Yes		The water table rose and is now too high for SVE to be effective. A pump-and- treat system currently is being used. No ROD amendment or ESD was issued.	Dennis Curran Smith Env. Tech. Corp. 415-960-1640  Eugenia Chow 415-744-2258
9	FMC Corp. (Fresno Plant), CA (06/28/91)	Solidification/ stabilization		Yes		Removed from proposed NPL listing.	Cynthia Wetmore 415-744-2234
9	Intel, Mountain View, CA (06/09/89)	Mechanical soil aeration		Yes		Soil was excavated and shipped off site.	Eugenia Chow 418-744-2258
9	J.H. Baxter, CA (09/27/90)	Bioremediation (ex situ) - land treatment			Bioremediation (in situ) - bioventing	Ex situ bioremediation was replaced with in situ bioremediation. Landfarming may be used; biomass culture was added to contaminated soil. ESD issued 3/27/98.	Kathy Setian 415-744-2254  Beatriz Bofill 415-744-2235
9	Koppers (Oroville Plant), CA (09/13/89)	Solidification/ stabilization		Yes		Treatment goals could not be met. The concentrations of dioxins were sufficiently high that solidification/ stabilization was not feasible. A ROD amendment was issued on 08/29/96.	Charles Berrey 415-744-2223
9	March AFB - OU 1, Area 5 & Site 4, CA (06/20/96)	Bioremediation (in situ) - bioventing		Yes		No information available.	Richard Russell 415-744-2406
9	March AFB - OU 1, Area 5 & Site 4, CA (06/20/96)	Thermal desorption				No information available.	Richard Russell 415-744-2406

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## Ninth Edition (April 1999) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 8TH EDITION)	9TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
9	Mather AFB - Soil and Groundwater OU/Smaller UST Sites, CA	Bioremediation (in situ)			Bioremediation (in situ) - bioventing	The technology was reclassified from bioremediation in situ to bioventing.	Kathleen Salyer 415-744-2214  Terry Winsor (Montgomery Watson) 916-231-4430
9	McColl, CA (06/30/93)	Solidification/stabilization		Yes		Technology had implementation problems. EPA selected the contingency remedy of RCRA-equivalent closure for the sump wastes. Pilot and full-scale treatability studies were conducted during 1994 and 1995 to determine the feasibility of solidification/stabilization.	Patti Collins 415-744-2229
9	Purity Oil Sales, Inc., CA (09/26/89)	Solidification/stabilization		Yes		The reason for deletion of the technology is unknown. An ESD was issued in 1995, and capping was performed at the site.	Rosemarie Caraway 415-744-2231
9	Raytheon, Mountain View, CA (06/09/89)	Mechanical soil aeration		Yes		Soil was excavated and shipped off site for disposal.	Eugenia Chow 415-244-2258
9	Roseville Drums, CA (03/03/88)	Bioremediation (in situ)		Yes	Bioremediation (in situ) - bioventing	The technology was reclassified from bioremediation in situ to bioventing.	Bradley Shipley 415-744-2287
9	Sacramento Army Depot, CA (01/17/95)	Solidification/stabilization		Yes		The 1995 ROD was a base-wide ROD. It reiterated the S/S remedy specified in the 3/29/93 ROD. It did not add another S/S project. Hence there is only one S/S project at SAD.	Marlon Mezquita 415-744-1499
9	Southern California Edison, Visalia Pole Yard, CA (06/10/94)	Bioremediation (in situ) - groundwater			Thermally enhanced recovery	The remedy was implemented as a contingency. The remedy is actually "dynamic underground stripping." Treatment goals could not be met because concentrations were too high for bioremediation to work in a timely manner.	Richard Procnier 415-744-2219  Emmanuel Mensall (CADTSC) 916-255-3704
9	Southern California Edison, Visalia Pole Yard - Groundwater OU, CA (06/10/94)	Bioremediation (in situ) - groundwater		Yes		The remedy implemented was a contingency. Concentrations were too high. Bioremediation could not achieve cleanup levels in a realistic time frame.	Richard Procnier 415-744-2219  Emmanuel Mensall (CADTSC) 916-255-3704

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## Ninth Edition (April 1999) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 8TH EDITION)	9TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
9	Valley Wood Preserving, Inc., CA (09/27/91)	Solidification/ stabilization		Yes		The estimated volume of contaminated media had decreased; the technology was no longer effective. A ROD amendment is to be issued in near future.	Michelle Lau 415-744-2227
10	FAA Northway Station, AK	Bioremediation (in situ)			Bioremediation (in situ) - groundwater	The technology was reclassified.	Daniel McKay 603-646-4738
10	FAA Strawberry Point Station, AK	Bioremediation (in situ)			Bioremediation (in situ) - biosparging	The technology was reclassified.	Daniel McKay 603-646-4738
10	Fort Wainwright - OU 1 - Chemical Agent Dump Site, AK (07/20/95)	Neutralization		Yes		Non-invasive geophysical investigations indicated the presence of buried chemical agents. However, when excavation was completed, the agents were undetectable.	David Williams (USACE) 907-753-5657  Dianne Soderlund 907-271-3425
10	U.S. DOE Idaho National Engineering and Environmental Lab - OU 23, ID	Solidification/ stabilization			Vitrification	Solidification/stabilization was never used at the site.	Terrell Smith Lockheed Marietta GW Restoration Dept. 208-526-5692  Wayne Pierre 206-553-7261
10	McCormick and Baxter Creosoting Company (Portland Plant), OR (03/29/96)	Solidification/ stabilization		Yes		Treatment goals could not be met. Decided to dispose offsite. The excavated soil contaminated with F-listed waste will be disposed offsite at a landfill. ROD Amendment to be issued in 1998.	Alan Goodman 503-326-3685
10	Union Pacific Railroad Tire Treatment, OR (03/27/96)	Bioremediation (in situ)			Bioremediation (in situ) - bioventing	Reclassified technology.	Brian McClure (ORDEQ) 541-298-7255  Alan Goodman 503-326-3685
10	American Crossarm & Conduit, WA (06/30/93)	Solidification/ stabilization		Yes		Excavated and transported contaminated soil to a landfill in Arlington, OR. Flyash was added to absorb moisture. ROD called for the material to be solidified off site.	Lee Marshall 206-553-2723

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## Ninth Edition (April 1999) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 8TH EDITION)	9TH EDITION			COMMENTS	CONTACTS/PHONE
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10	Commencement Bay, South Tacoma Field, WA (09/29/94)	Soil vapor extraction		Yes		The plume was smaller than had been estimated; contamination levels have decreased. SVE was discussed as an option but never implemented.	Cami Grandinetti 206-553-8696
10	Commencement Bay, South Tacoma Field, WA (09/29/94)	In situ air stripping (air sparging)		Yes		The plume smaller than had been estimated; contamination levels have decreased. Air sparging was never implemented, and no ROD amendment or ESD was issued.	Cami Grandinetti 206-553-8696
10	Harbor Island (Lead), WA (09/30/93)	Incineration (off site)		Yes		Contaminated soil was disposed of at a hazardous waste disposal facility. The technology was a contingency in the ROD.	Keith A. Rose 206-553-7721
10	Queen City Farms, WA (10/24/85)	None	Solidification/ Stabilization			This remedy was not listed in the ASR.	Neil Thompson 206-553-7177
10	Western Processing Co., Inc., WA	Thermal desorption		Yes		Contaminated soil was excavated and transported off site to a landfill in Arlington, OR. The remedy was contingent and never implemented.	Lee Marshall 206-553-2723
10	Western Processing Co., Inc. - ESD, WA (12/11/95)	Bioremediation (in situ) - other		Yes		Natural attenuation already was occurring at site. Bioremediation would not enhance the degradation of contaminants. An ESD will be issued to note the change.	Lee Marshall 206-553-2723
10	Western Processing Co., Inc. - Phase I, WA (08/05/84)	Incineration (off site)		Yes		Contaminated soil was excavated and disposed of off site. Incineration was not required. The specified remedy in the ROD was off-site disposal or incineration, so no amendment or ESD was required.	Lee Marshall 206-553-2723
10	Western Processing Co., Inc. - Phase II, WA (09/25/85)	Solidification/ stabilization		Yes		The technology never was specified in the ROD as the preferred remedy and therefore never was used at the site. Flyash was added to the soil to absorb moisture for easy transportation. The soil was excavated and disposed of off site.	Lee Marshall 206-553-2723

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## Eighth Edition (November 1996): Additions, Changes, and Deletions from the Seventh Edition (September 1995)

The eighth edition of this report added information about 38 innovative treatment technologies selected for remedial action under FY 1995 RODs and two treatment technologies at non-Superfund DoD and DOE sites, and two innovative treatment technologies selected for two RCRA corrective actions. Other changes are listed below.

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 7TH EDITION)	8TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
1	New Bedford, MA (04/06/90)	Incineration (on site)		Yes		Remedy canceled because of community concerns. No alternative selected at this time.	David Dickerson 617-573-9632
1	Norwood PCBs, MA (09/29/89)	Solvent extraction		Yes		Remedy not implemented because of space constraints on-site, cost, and safety issues. New cleanup goals based on future land use and changes in risk assessment methodologies. Site will be capped instead. ROD Amendment issued on 5/17/96.	Bob Cianciarulo 617-573-5778
1	Wells G&H, MA (09/14/89)	Incineration (on site)			Incineration (off site)	Remedy changed to off-site incineration because of community concerns. Explanation of significant difference (ESD) signed 04/25/91.	Mary Garren 617-573-9613  Paula Fitzsimmons (MA) 617-223-5572
1	Wells G&H, OU1, MA (09/14/89)	Soil vapor extraction	Soil vapor extraction and in situ air sparging	Yes		Adding air sparging to existing SVE project to enhance pump-and-treat. Conducting SVE on a new area (New England Plastics). ESD to be issued.	Mary Garren 617-573-9613
1	Davis Liquid Waste, RI (09/29/87)	Incineration (on site)			Thermal desorption	Thermal desorption cheaper and more effective based on performance data. ESD signed on 7/19/96.	Neil Handler 617-543-9636
2	Brook Industrial Park, OU 1, NJ (09/30/94)	Incineration (on site)		Yes		Misinterpretation of ROD. Will conduct off-site incineration or disposal.	Donna Vizian 212-637-4295
2	De Rewal Chemical, NJ (09/29/89)	Incineration (on site)		Yes		Remedy changed to off-site disposal because more cost-effective. Much less volume of contaminated material than originally projected.	Romona Pezzella 212-637-4385
2	Lipari Landfill, NJ (07/11/88)	Incineration (on site)			Thermal desorption*	ROD specified thermal treatment of marsh sediments. Thermal desorption was selected as the treatment.	Fred Cataneo 212-637-4428
2	Applied Environmental Services, OU 1, NY (06/24/91)	Bioventing		Yes		Misinterpretation of ROD.	Maria Jon 212-637-3967  Gerald Ridder (NY) 518-457-0927

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

## Eighth Edition (November 1996)(continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 7TH EDITION)	8TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
2	Circuitron Corporation, OU 1, NY (03/29/91)	Soil vapor extraction		Yes		Further investigation indicated that VOCs were below action levels.	Miko Fayon 212-637-4250  Thomas Simmons (USACE) 816-426-2296
2	Love Canal, NY (10/1/87)	Incineration (on site)			Incineration (off site)	PRP was conducting on-site incineration at another site. Waste was transported to that site for incineration. ESD issued 11/96.	Damian Duda 212-637-4269  Doug Carbarini 212-637-4263
2	Sarney Farm, NY (09/27/90)	Incineration (on site)			Thermal desorption*	Misinterpretation of the ROD.	Kevin Willis 212-637-4271
3	Delaware Sand & Gravel, DE (04/22/88)	Incineration (on site)			Soil vapor extraction* and bioremediation (in situ)*	Remedy was revised to address previously unrecognized site conditions. ROD amendment signed on 09/30/93. SVE subsequently changed to bioventing.	Eric Newman 215-566-3237
3	Southern Maryland Wood Treating, MD (06/29/88)	Incineration (on site)			Thermal desorption	Remedy changed to thermal desorption, because of cost and community concerns. ROD issued on 09/08/95.	Stephanie Dehnhard 215-566-3234
3	Eastern Diversified Metals, PA (03/29/91)	Incineration (on site)			Incineration (off site)	ROD specified on or off-site incineration. Off-site being conducted because of reduced amount of material to be treated.	Steven Donohue 215-566-3215
3	MW Manufacturing, PA (06/29/90)	Incineration (on site)		Yes		Pilot-scale trial burn could not achieve emission standards. Remedy to be determined; considering solidification/ stabilization at this time.	Bhupi Khona 215-566-3213
3	Sagertown Industrial, PA (01/29/93)	Incineration (on site)			Incineration (off site)	Remedy changed because of cost and faster treatment time. ESD signed on 03/09/95.	Steven Donohue 215-566-3215
3	Whitmoyer Laboratories, OU 2, PA (12/17/90)	Incineration (on site)			Incineration (off site)	Remedy changed because the volume of wastes was less than originally projected. ESD signed on 12/28/94.	Chris Corbet 215-566-3220

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## Eighth Edition (November 1996)(continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 7TH EDITION)	8TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
3	Rentokil, VA (06/22/93)	Thermal desorption		Yes		Groundwater modeling indicated that there would be no further groundwater contamination if source soils were left in place. Site will be capped. ROD amendment issued on 8/27/96.	Andrew Palestini 215-597-1286
3	Saunders Supply Co., OU 1, VA (09/30/91)	Dechlorination and Thermal desorption			Incineration (off site)	Remedy changed to off-site incineration due to implementability, short-term effectiveness, and cost. ROD Amendment issued on 9/27/96.	Andrew Palestini 215-597-1286
3	Ordnance Works Disposal, WV (03/31/88)	Incineration (on site)		Yes	Bioremediation (ex situ)*	Remedy changed because of community concerns. ROD amended in 1/89.	Melissa Whittington 215-566-3235
4	Ciba-Geigy (McIntosh Plant), OU 2, AL (09/30/91)	Thermal desorption			Incineration (on site)*	Treatability study showed that incineration was more cost-effective.	Charles L. King, Jr. 404-562-8931
4	Ciba-Geigy (McIntosh Plant), OU 2, AL (09/30/91)	Flushing (in situ)		Yes		Treatability study showed percolation from precipitation was just as effective. Minimal benefit would be gained from flushing (in situ).	Charles L. King, Jr. 404-562-8931
4	Ciba-Geigy (McIntosh Plant), OU 4, AL (07/14/92)	Thermal desorption			Incineration (on site)	Treatability study showed that incineration was more cost-effective.	Charles L. King, Jr. 404-562-8931
4	Ciba-Geigy (McIntosh Plant), OU 4, AL (07/14/92)	Flushing (in situ)		Yes		Treatability study showed percolation from precipitation was just as effective. Minimal benefit would be gained from flushing (in situ).	Charles L. King, Jr. 404-562-8931
4	Mowbray Engineering, AL (09/25/86)	Incineration (on site)		Yes	Solidification/ stabilization	Remedy changed because of cost.	Tim Woolheater 404-347-2643
4	American Creosote Works, Inc., OU 2, FL (02/03/94)	Surfactant flushing - groundwater		Yes		Determined that pump-and-treat alone would be effective.	Mark Fite 404-562-8927
4	Zellwood Groundwater, FL (12/17/87)	Incineration (on site)			Solidification/ stabilization*	Remedy changed because of community concerns and because the state would not concur with incineration. ROD amendment issued on 03/01/90.	Pam Scully 404-347-6246

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## Eighth Edition (November 1996)(continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 7TH EDITION)	8TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
4	Mathis Brothers Landfill (South Marble Top Road), GA (03/24/93)	Incineration (on site)			Incineration (off-site) and bioremediation (ex-situ)*	Remedy changed because of community concerns, cost-effectiveness, and decreased waste volume from original ROD. Bioremediation will treat dicamba wastes. Incineration (off site) will treat all other wastes.	Charles L. King, Jr. 404-562-8931
4	Smith's Farm Brooks, KY (09/29/89)	Incineration (on site)			Dechlorination*, thermal desorption* and, Solidification/stabilization*	Remedy changed because of community concerns. Amended remedy is dechlorination and thermal desorption followed by solidification/stabilization. ROD amendment issued on 09/30/91.	Antonio DeAngelo 404-562-8826
4	Aberdeen Pesticide Dump Fairway, NC (06/30/89)	Incineration (on site)			Thermal desorption *	Remedy changed because of community concerns, cost, and a preference for using an innovative technology. ROD amendment signed on 09/30/91.	Kay Crane 404-562-8795  Randy McElveen (NC) 919-733-2801
4	Cape Fear Wood Preserving, NC (06/30/89)	Bioremediation (ex situ) - slurry-phase		Yes		Original remedy called for soil washing followed by slurry-phase bioremediation of fines, based on an 80% reduction in volume of contaminated soil achieved by soil washing. Soil washing bidders claimed a 96% reduction in volume of contaminated soil, thus making slurry-phase bioremediation too costly for the 0.4% of contaminated fines remaining.	Jon Bornholm 404-562-8820
4	Geiger/C&M Oil, SC (06/01/87)	Incineration (on site)			Solidification/stabilization*	Further investigation found that organics were not present at their previous levels. ROD amendment issued 07/13/93.	Sherry Panabaker 404-562-8810
4	Para-Chem Southern, Inc., SC (09/27/93)	Bioremediation (ex situ) - slurry-phase		Yes		Remedy canceled because of concerns about feasibility, performance, and treatment time. Will excavate and dispose off-site.	Judy Canova 803-896-4046
4	American Creosote Works (Jackson Plant), TN (01/05/89)	Incineration (on site)		Yes		Action completed as a removal by excavating and disposing off site. ESD issued in 1992.	Femi Akindale 404-347-7791
5	Acme Solvent Reclaiming, IL (09/27/85)	Incineration (on site)		Yes		PRPs excavated and disposed of soil off-site.	Deborah Orr 312-886-7576
5	Fort Wayne Reduction, IN (08/26/88)	Incineration (on site)			Incineration (off site)	Remedy changed to ROD contingency off-site incineration because of community concerns, cost, and implementability.	Fred Mickey 312-886-5123

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## Eighth Edition (November 1996)(continued)

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5	Ninth Avenue Dump, IN (06/30/89)	Incineration (on site)			Soil vapor extraction	Remedy changed because of cost. Soil vapor extraction will treat larger area than soil flushing remedy that was completed in 1994. Soil flushing removed most of the heavier contaminants. ROD amendment signed on 9/13/94.	Bernard Schorle 312-886-4746
5	Bofors Nobel, MI (09/17/90)	Incineration (on site)		Yes		Remedy changed from on-site incineration to disposal in an on-site landfill because of cost. Volume of material to be treated much greater than expected. ROD amendment signed on 07/22/92. Now proposing containment via slurry wall because of cost.	John Fagiolo 312-886-0800
5	Forest Waste Products, MI (03/31/88)	Incineration (on site)			Incineration (off site)	Original ROD specified either on-site or off-site incineration as the remedy. ESD signed on 05/04/93.	Beth Reiner 312-886-6337
5	Ott/Story/Cordova Chemical, MI (09/27/93)	Thermal desorption		Yes		The state revised the cleanup goals. Consequently, the amount of soils requiring remediation was reduced. Also shallow groundwater present at the site would continue to contaminate clean backfilled soil. Cost was also a factor. No alternative remedy has been selected at this time.	John Fagiolo 312-886-0800
5	Springfield Township Dump, MI (09/29/90)	Incineration (on site)		Yes		Remedy canceled because of community concerns. ROD amendment projected to be issued in Fall 1996. Remedy to be determined.	Kashual Khanna 312-353-2663
5	Thermo-Chem, Inc., OU 1, MI (09/30/91)	Soil vapor extraction	Air sparging			Added to enhance SVE system.	Jim Hahnenberg 312-353-4213
5	Arrowhead Refinery Co., MN (09/30/86)	Incineration (on site)			Solvent extraction*	Remedy was changed to solvent extraction because of cost-effectiveness and short-term effectiveness. ROD amendment signed on 02/09/94.	Edwin Smith 312-353-6571
5	Ritari Post and Pole, OU 1, MN (06/30/94)	Incineration (on site)			Incineration (off site)	Misinterpretation of ROD. Remedy now being reconsidered. Capping is a contingency.	Ramon Torres 312-886-3010
5	Fields Brook, OH (09/30/86)	Incineration (on site)			Incineration (off site)	Remedy changed because of cost, community concerns, and reduced concentration. ESD issued on 8/15/97.	Ed Hanlon 312-353-9228
5	Pristine, OH (12/31/87)	Incineration (on site)			Soil vapor extraction* and thermal destruction*	Misinterpretation of ROD specified in situ vitrification. This remedy was changed to SVE and thermal destruction. Thermal desorption was selected as the thermal destruction technology. ROD amendment issued on 03/30/90. (see below)	Tom Alcamo 312-886-7278
5	Pristine, OH (03/30/90) (Amendment)	Incineration (on site)			Thermal desorption*	1990 ROD amendment specified thermal destruction. Thermal desorption selected as the thermal destruction technology.	Tom Alcamo 312-886-7278

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## Eighth Edition (November 1996)(continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 7TH EDITION)	8TH EDITION			COMMENTS	CONTACTS/PHONE
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5	Skinner Landfill OU 2, OH (06/04/93)	Soil vapor extraction		Yes		Further investigation through a feasibility study indicated that the site conditions would not be amenable to SVE. Will cap instead.	Jamey Bell 312-886-6436
5	Van Dale Junkyard, OH (03/31/94)	Bioremediation (in situ) - other		Yes		Pre-design sampling indicated that contaminant levels had decreased. No active bioremediation is occurring. The site will be capped and will rely on natural attenuation with monitoring.	Lawrence Schmitt 312-353-6565  James Campbell 412-351-6132
5	Zanesville Well Field, OH (09/30/91)	Soil vapor extraction	Air sparging			Implemented by PRPs to accelerate groundwater remediation.	Dave Wilson 312-886-1476
5	Zanesville Well Field, OH (09/30/91)	Soil washing		Yes		Will excavate and dispose off-site because soil volume was much smaller than originally projected.	Dave Wilson 312-886-1476
5	City Disposal Corporation Landfill, WI (09/28/92)	Soil vapor extraction		Yes		Rise in groundwater table prevented implementation of SVE. Remedy changed to capping with gas collection.	Russ Hart 312-886-4844  Mike Schmoller (WI) 608-275-3303
5	Hagen Farm, Groundwater Control OU, WI (09/30/92)	Bioremediation (in situ) - groundwater		Yes		Treatability studies indicated that bioenhancement would not provide any additional benefit. Relying on natural attenuation. Explanation of Significant Differences (ESD) signed on 08/27/96.	Steve Padovani 312-353-6755
6	Vertac, AR (09/27/90)	Incineration (on site)		Yes		Incinerator would not function properly. Community preferred landfilling and was cheaper. ROD amendment issued 9/17/96.	Phillip Allen 214-665-8516
6	Gulf Coast Vacuum Services, OU 1, LA (09/30/92)	Incineration (on site)			Bioremediation (ex situ)- land treatment	Agreement between PRPs and EPA to meet the treatment standards using bioremediation.	Kathleen Aisling 214-665-8509
6	MOTCO, TX (03/15/85)	Incineration (on site)			Incineration (off site)	Remedy changed because of contractor problems and cost. ESD has been issued.	Mary Ann Abramson 214-665-6754
6	Petro-Chemical Systems, Inc. OU 2, TX (09/06/91)	Air sparging			Bioremediation (in situ)- groundwater	Bioremediation thought to be more effective.	Chris Villarreal 214-665-6758

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## Eighth Edition (November 1996)(continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 7TH EDITION)	8TH EDITION			COMMENTS	CONTACTS/PHONE
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7	People's Natural Gas, IA (06/16/91)	Bioremediation (in situ) - other	Air sparging				Diana Engeman 913-551-7797
7	Hastings Groundwater Contamination (East Industrial), NE (09/28/90)	Incineration (on site)			Incineration (off site)	Remedy changed because volume of soil was less than originally projected. More cost-effective to incinerate off-site. ROD amendment issued 02/28/95.	Ron King 913-551-7063
7	Sherwood Medical, NE (09/28/93)	Thermal desorption			Soil vapor extraction (ex situ)	Soil vapor extraction (ex situ) will be more cost-effective. ESD issued 09/05/95.	Steve Auchterlonie 913-551-7778
7	Valley Park TCE Site, Wainwright OU, MO (09/29/94)	In situ air stripping		Yes		Air sparging would be difficult to implement and nearby residences might be adversely affected. Will do pump-and-treat instead. ESD issued on 04/02/96.	Steve Auchterlonie 913-551-7778  Dave Mosby (MO) 573-751-1288
7	Valley Park TCE Site, Wainwright OU, MO (09/24/94)	Thermal desorption			Soil vapor extraction (ex situ)*	Soil vapor extraction (ex situ) more cost-effective. ESD issued on 04/02/96.	Steve Auchterlonie 913-551-7778  Dave Mosby (MO) 573-751-1288
8	Broderick Wood Projects, CO (06/30/88)	Incineration (on site)		Yes	Incineration (off site)*	Remedy canceled based on new technical data and cost. Will excavate and recycle and incinerate off-site. ROD amendment signed on 09/24/91.	Armando Saenz 303-312-6559
8	Lockheed/Martin (Denver Aerospace), CO (Remedial Action) (09/24/90)	Soil vapor extraction and thermal desorption			Listing as a Superfund remedial action has been deleted.	Remedial action being handled as a RCRA corrective action.	George Dancik 303-312-6935  Charles Johnson (CO) 303-692-3348
8	Idaho Pole Company, MT (09/28/92)	Flushing (in situ)			Bioremediation (ex situ) - land treatment*	Further investigation indicated flushing (in situ) would not be effective. Soils were excavated and will be treated as part of the land treatment remedy. ESD issued on 05/21/96.	Jim Harris 406-441-1150

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## Eighth Edition (November 1996)(continued)

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8	Summitville Mine, OU 1, CO (12/15/94)	This is a FY 1995 ROD and was not listed in the seventh edition. The FY 1995 ROD specified bioremediation (in situ)		Yes		When heap leach pad rinsed with water, cyanide concentrations were reduced and bioremediation was not necessary. ESD issued on 6/4/97.	James Hanley 303-312-6725  Victor Kettlepepper 303-312-6578
9	Motorola 52nd Street, AZ (09/30/88)	Soil vapor extraction	Air sparging				Fred Schauffler 415-744-2359  Mana Font 602-207-4194
9	Seal Beach Navy Weapons Station, IR Site 14, CA (DoD Action)	Soil vapor extraction		Yes		Research project, not a full-scale cleanup.	Ken Reynolds 619-532-2912
9	Hexcel, CA (09/21/93)	Air sparging, bioremediation (in situ) - groundwater, soil vapor extraction		Yes		Hexcel was removed from the National Priorities List (NPL) on November 1, 1993.	Mark Johnson 510-286-0305
9	Intel Mountain View (355 Middlefield Road), CA (06/09/89)	Soil vapor extraction		Yes		Groundwater table rose, leaving too little unsaturated soil to warrant SVE. Soils were excavated and aerated.	Elizabeth Adams 415-744-2235  Michael Maley 510-450-6159
9	Koppers Company, Inc. (Oroville Plant), CA (09/13/89)	Soil washing		Yes		Further analysis determined soil washing would be ineffective, more dioxins discovered and land use scenario changed. Soil will be disposed of in a landfill with the potential for two percent of the most contaminated soil treated through solidification/stabilization. ROD amendment issued on 8/29/96.	Fred Schauffler 415-744-2359
9	Koppers Company, Inc. (Oroville Plant), CA (09/13/89)	Bioremediation (in situ) - other		Yes		Presence of metals and dioxins made bioremediation infeasible, and land use scenario changed. Soil will be disposed of in a landfill with the potential for two percent of the most contaminated soil treated by solidification/stabilization. ROD amendment issued on 8/29/96.	Fred Schauffler 415-744-2359
9	Middlefield-Ellis-Whisman (MEW) - Siemens/Sobrato (455 & 487 Middlefield Road), CA (06/30/93)	Soil vapor extraction	Air sparging				Elizabeth Adams 415-744-2235

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## Eighth Edition (November 1996)(continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 7TH EDITION)	8TH EDITION			COMMENTS	CONTACTS/PHONE
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9	Van Waters and Rogers, CA (09/30/91)	Soil vapor extraction		Yes		Site was proposed for listing on the NPL but has been removed. Responsibility was picked up under RCRA and subsequently dropped from RCRA authority.	Belinda Wei 415-744-2280  Duazo Ricco 510-268-0837
10	Eielson AFB, OUs 3, 4, and 5, AK (9/22/95)	This is a FY 1995 ROD and was not listed in the seventh edition. The FY 1995 ROD specified bioventing and soil vapor extraction.		Yes		Remedy changed to institutional controls because there was not enough contamination present to warrant active remediation. Groundwater also was contained, preventing risk due to groundwater.	Mary Jane Nearman 206-553-6642
10	Idaho National Engineering Laboratory, Pit 9 (OU7-10), ID (09/23/93)	Solvent extraction	Vitrification			Misinterpretation of the ROD.	Mary Jane Nearman 206-553-6642
10	USDOE Hanford 100 Area, OUs 100-BC-1, 100-DR-1, 100-HR-1, WA (9/27/95)	This is a FY95 ROD that was not listed in the seventh edition. The FY95 ROD specified thermal desorption for soil contaminated with organic compounds		Yes		Remedy changed to on-site disposal because further investigation did not indicate that organics were present.	Doug Sherwood 509-376-9529  Audrey Dove 509-376-6865

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## Seventh Edition (September 1995): Additions, Changes, and Deletions from the Sixth Edition (September 1994)

The seventh edition of this report added information about 42 innovative treatment technologies selected for remedial action under FY 1994 RODs and eight innovative treatment technologies selected for seven RCRA corrective actions.

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 6TH EDITION)	7TH EDITION			COMMENTS	CONTACTS/PHONE
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1	Linemaster Switch Corporation, CT (07/21/93)	Soil vapor extraction			Dual-phase extraction	Groundwater also is being treated with this technology.	Elise Jakabhazy 617-573-5760
2	American Thermostat, NY (06/29/90)	Thermal desorption	Thermal desorption (phase 2)			Project is being conducted in two phases. Phase 1 has been completed and is listed as a separate project.	Christo Tsiamis 212-637-4257
2	GCL Tie and Treating, NY (Removal Action)	Bioremediation (ex situ) - Composting			Thermal desorption (being implemented as a remedial action with the ROD signed 09/30/94)	Site is not amenable to composting because of the presence of long-chain PAHs and the time constraints of the removal process. A treatability study achieved over 90% reduction but little degradation of long chain carcinogenic hydrocarbons occurred.	Joe Cosentino 908-906-6983
2	General Motors Central Foundry Division (OU 1 and OU 2), NY (12/17/90) & (03/31/92)	Bioremediation (ex situ) - slurry-phase			Thermal desorption	Both OUs were combined under the thermal desorption remedy. ROD amended to combine both OUs under a thermal desorption remedy.	Lisa Jackson 212-637-4274
2	Pasley Solvents and Chemicals, Inc., NY (04/24/92)	Flushing (in situ) and soil vapor extraction	Air sparging		Soil vapor extraction and air sparging	SVE, in combination with air sparging, will eliminate the need for soil flushing. ROD amendment was signed 05/22/95.	Sherrel Henry 212-637-4273
3	Bendix, PA (09/30/88)	Soil vapor extraction			Mechanical aeration	It was determined that SVE was not a viable remedy; soil was too tightly compacted. No alternative has been selected. ESD issued on 11/22/95.	Jim Harper 215-597-6906
3	Brown's Battery Breaking Site, OU 2, PA (07/02/92)	Fuming gasification			Plasma high-temperature metals recovery	The name of the technology was changed to reflect the treatment process more accurately.	Richard Watman 215-566-3219
4	Helena Chemical, SC (09/08/93)	Bioremediation (ex situ) and dechlorination		Yes	Incineration (off site)	Technologies could not meet cleanup goal.	Bernie Hayes 404-562-8822
5	Carter Industries, MI (09/18/91)	Thermal desorption		Yes		Thermal desorption was too costly (approximately \$300 per cu yd). It is less expensive to dispose of the wastes at TSCA landfill (approximately \$186 per Ton).	Jon Peterson 312-353-1264

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## Seventh Edition (September 1995) (Continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 6TH EDITION)	7TH EDITION			COMMENTS	CONTACTS/PHONE
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5	Cliffs/Dow Dump, MI (09/27/89)	Bioremediation (ex situ)		Yes		Remedy could not reduce concentrations of benzo(a)pyrene to acceptable level. Contaminated soil was excavated and placed in a permitted landfill.	Ken Glatz 312-886-1434
5	Electro-Voice, OU 1, MI (06/23/92)	Soil vapor extraction	Air sparging			Technology actually is a combination of SVE and air sparging called the Subsurface Volatilization and Ventilation System™.	Eugenia Chow 312-353-3156
5	Ionia City Landfill, MI (09/29/89)	Vitrification (in situ)		Yes		Remedy was canceled. Conditions at the site had changed since 1989. Project was implemented as a time critical removal action.	Michael Gifford 312-886-7257
5	Seymour Recycling, IN (09/30/86)	Bioremediation (in situ groundwater)		Yes		Bioremediation of groundwater was not actively pursued. Contamination degraded through natural attenuation.	Jeff Gore 312-886-6552
5	Verona Well Field OU 2, MI (06/28/91)	Soil vapor extraction	Soil vapor extraction			Conducting soil vapor extraction at two separate sites under this ROD: Annex area and Paint shop area. Projects are listed as separate entries in the ASR seventh edition.	Janice Bartlett 312-886-5438
5	Wayne Reclamation and Recycling, IN (03/30/90)	Soil vapor extraction	Air sparging			Air sparging was added under the existing ROD to treat groundwater.	Duane Heaton 312-886-6399
6	Koppers/Texarkana, TX (09/23/88)	Soil washing		Yes		Volume of soil was not as large as originally had been projected. The small volume did not warrant bringing a soil washing unit on-site. Will excavate and dispose of soil off-site.	Ursula Lennox 214-665-6743
6	Koppers/Texarkana, TX (09/23/88)	Flushing (in situ)		Yes		Flushing (in situ) was never intended as a treatment at the site. Misinterpretation of the ROD during ROD analysis.	Ursula Lennox 214-665-6743
8	Chemical Sales Company (OU 1), CO (06/27/91)	Soil vapor extraction	Air sparging			Air sparging was added under the existing ROD to treat groundwater.	Armando Saenz 303-312-6559
8	Mouat Industries, MT (Removal Action)	Chemical treatment		Yes		Reducing chromium VI to chromium III not considered innovative.	Ron Bertran 406-449-5720

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## Seventh Edition (September 1995) (Continued)

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9	Phoenix-Goodyear Airport Area (North and South Facilities), AZ (09/26/89)	Soil vapor extraction	Soil vapor extraction			Site is divided into 2 areas: North area & South area. Each area is listed as an individual project in the seventh edition ASR.	Craig Cooper 415-744-2370  Rusty Harris-Bishop 415-744-2365  Nancy Moore (AZ) 602-207-4180
9	Fairchild Semiconductor, CA (06/30/89)	Two listings for soil vapor extraction	Three more soil vapor extraction projects			Soil vapor extraction systems are being implemented at 5 different areas at the site.	Elizabeth Adams 415-744-2235
9	Indian Bend Wash, AZ (09/27/93)	Soil vapor extraction	Four distinct areas using soil vapor extraction			SVE is being conducted at four distinct areas; areas 6, 7, 8, and 12, at the site. Each site is considered as an individual project.	Emily Roth 415-744-2247
9	Intersil, CA (09/27/90)	Soil vapor extraction				Site renamed to Intersil/Siemens (Intersil)	Belinda Wei 415-744-2280
9	Solvent Service, CA (09/27/93)	Soil vapor extraction			Soil vapor extraction under RCRA corrective action	Project was changed from a Superfund remedial action to a RCRA corrective action.	Tony Mancini 510-286-0825
10	Fairchild AFB Priority 1 OUS (OU 1) Craig Rd Landfill, WA (02/13/93)	Soil vapor extraction		Yes		Remedy was not implemented because of the following concerns: •Generation of combustible gases •Heterogeneous stratigraph •Reluctance to put holes into the landfill, which could lead to leaching of contaminants	Cami Grandinetti 206-553-8696
10	Gould, Inc., OR (03/31/88)	Soil washing		Yes		Will cap the landfill and conduct pump-and-treat operations. Remedy was shown to be ineffective due to varying site conditions and problems with the technology.	Chip Humphries 503-326-2678

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## Seventh Edition (September 1995) (Continued)

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			ADDED	DELETED	CHANGED TO		
10	Naval Submarine Base, Bangor Site A, OU 1, WA (12/10/91)	Soil washing			Flushing (in situ)	Will excavate and place soil in a lined pit. Soil will be sprayed with water and leachate and will be collected and treated.	Harry Craig 503-326-3689  Craig Thompson (WA) 360-407-7234  Chris Drury (Navy) 206-396-0062
10	Union Pacific Railroad Sludge Pit, ID (09/10/91)	Flushing (in situ)		Yes		Remedy was not implemented. Excavation of sludge did not indicate that contaminants were present. Amended ROD was signed 9/94. Will excavate and treat off-site, in addition to a pump-and-treat operation.	Ann Williamson 206-553-2739  Clyde Cody (ID) 208-334-0556
10	Fort Lewis Military Res. Landfill 4 and Solvent Refined Coal Plant, WA (09/24/93)	Soil washing			Thermal desorption	ROD specified soil washing or thermal desorption as the remedy. Thermal desorption was selected based on the results of a treatability study.	Bob Kievit 206-753-9014
10	Eielson Air Force Base, AK (9/29/92)	Bioremediaiton (in situ)- bioventing and soil vapor extraction		Soil vapor extraction		Soil vapor extraction written into ROD as a contingency.	Mary Jane Nearman 206-553-6642  Rielle Markey (AK) 907-451-2117

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

## Sixth Edition (September 1994): Additions, Changes, and Deletions from the Fifth Edition (September 1993)

The sixth edition of this report added information about 53 innovative treatment technologies selected for remedial action under FY 1993 RODs. Other changes are listed below.

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 5TH EDITION)	6TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
1	Union Chemical Co., OU 1, ME (12/27/90)	Thermal desorption (In situ)			Soil vapor extraction	It was determined that SVE would be the more cost-effective of the two. ESD was signed April 1994.	Terry Connelly 617-573-9638  Christopher Rushton (ME DEP) 207-287-2651
1	Tibbetts Road, NH (09/29/92)	Flushing (in situ)		Yes		Misinterpretation of ROD during ROD analysis. Soil was not targeted for treatment.	Darryl Luce 617-573-5767  Mike Robinette (NH) 603-271-2014
2	Ewan Property, OU 2, NJ (09/29/88)	Soil washing and solvent extraction		Yes		Reevaluation of site found significantly less contaminated soil than originally had been estimated. Soil will be disposed of off-site. ESD was signed July 1994.	Kim O'Connell 212-637-4399
2	Naval Air Engineering Center, OU 7, Interim Action, NJ (03/16/92)	Flushing (in situ)		Yes		Misinterpretation of the ROD during ROD analysis.	Jeff Gratz 212-637-4320  Robert Wing 212-264-8670
2	Solvent Savers, NY (09/28/90)	Soil vapor extraction		Yes		Soil vapor extraction is a secondary remedy that may be used instead of thermal desorption, the primary remedy, if treatability studies show it to be effective.	Lisa Wong 212-637-4267
3	U.S. Titanium, VA (11/21/89)	Flushing (in situ)			Neutralization with lime (ex situ)	Treatability studies indicated that the technology was not feasible. ESD is under preparation.	Vance Evans 215-597-8485  Jeff Howard (VA) 804-762-4203
3	L.A. Clarke & Sons, OU 1 (Soils), VA (03/31/88)	Bioremediation (in situ)		Yes		Facility is no longer in operation, and excavation can be done. Remedies being considered include thermal desorption.	Andy Palestini 215-597-1286

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

## Sixth Edition (September 1994)(continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 5TH EDITION)	6TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
3	L.A. Clarke & Sons, OU 1 (Soils), VA (03/31/88)	Flushing (in situ)		Yes		Facility is no longer in operation, and remedies being considered include thermal desorption.	Andy Palestini 215-597-1286
3	L.A. Clarke & Sons, Lagoon Sludge OU, VA (03/31/88)	Bioremediation (ex situ)			Reuse off-site as fuel	Technology changed because of uncertainty about the ability of bioremediation to reach treatment goals. ESD was signed on 3/94.	Andy Palestini 215-597-1286
3	Henderson Road, PA (06/30/88)	Soil vapor extraction		Yes		Conducted air injection only to facilitate pump-and-treat system. Vapors were not extracted. Further investigation revealed that the vadose zone was not an area of concern.	Joe McDowell 215-566-3192
4	Cabot Carbon/Koppers (Groundwater), FL (09/27/90)	Bioremediation (in situ) - groundwater		Yes		Groundwater is not being treated; only soil is being treated.	Patsy Goldberg 404-562-8543
4	Benfield Industries, NC (07/31/92)	Soil washing and bioremediation (ex situ) (slurry-phase)			Bioremediation (ex situ) - land treatment	Land treatment was determined to be a more cost-effective technology.	Jon Bornholm 404-562-8820
4	Charles Macon Lagoon, Lagoon #10, NC (09/31/91)	Bioremediation (ex situ)		Yes		Treatability study indicated that the technology could not treat the contaminants of concern because of materials problems. Will excavate and dispose of wastes off-site. ROD amendment was signed in 3/94.	Geizelle Bennett 404-562-8824  David Lown (NC) 919-733-2801
4	Palmetto Wood Preserving, SC (09/30/87)	Chemical treatment		Yes		Waste will be disposed of more cost-effectively off-site.	Al Cherry 404-342-7791
4	Arlington Blending & Packaging Co., OU 1, TN (06/28/91)	Dechlorination		Yes		Another disposal method is likely to be used.	Derek Matory 404-562-8800
5	South Andover Salvage Yard, OU 2, MN (12/24/91)	Bioremediation (ex situ)		Yes	Thermal treatment	Technology changed to off-site thermal treatment (either thermal desorption or incineration) because of reduced volume of contamination found during RD investigations. ROD amendment was signed 5/31/94.	Bruce Sypniewski 312-886-6189
5	Allied Chem & Ironton Coke, OU 2, OH (12/28/90)	Bioremediation (in situ)	Bioremediation (ex situ) (magneti- cally enhanced land farming)			Adding technology to treat more highly contaminated soil. ROD Amendment issued on 9/4/97.	Tom Alcamo 312-886-7278

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

## Sixth Edition (September 1994)(continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 5TH EDITION)	6TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
5	Allied Chem & Ironton Coke, OU 2, OH (12/28/90)	Bioremediation (in situ)		Yes		Adding technology to treat more highly contaminated soil. ROD Amendment issued on 9/4/97.	Tom Alcamo 312-886-7278
5	United Scrap Lead/SIA, OH (09/30/88)	Soil washing		Yes		Determined to be too expensive. Soil disposed off-site if lead levels above 1,550 ppm; containment of soil below this level. ROD amendment issued on 6/27/97.	Anita Boseman 312-886-6941  Timothy Hull (OH) 513-285-6357
5	MacGillis and Gibbs Co./Bell Lumber and Pole Co., MN (12/31/92)	Soil washing and bioremediation (ex situ) of fines		Yes	Incineration (on site)	Incineration was contingency remedy in ROD. State had concerns about effective means of soil washing, and cost of incineration has decreased. ESD will be signed in fall 1994.	Daryl Owens 312-886-7089
6	Fruitland Drum, NM (09/08/90)	Dechlorination			Incineration (off site)	Dechlorination is not being pursued because of cost considerations.	Gregory Fife 214-655-6773
6	Holloman AFB, Main POL Area, NM	Bioremediation (in situ) - groundwater		Yes		Groundwater remediation is not planned for this area.	Ron Stirling (USACE) 402-221-7664
6	Holloman AFB, Main POL Area, NM	Air sparging		Yes		Groundwater remediation is not planned for this area.	Ron Stirling (USACE) 402-221-7664
6	South Valley, NM (09/30/88)	Soil vapor extraction		Yes		Determined there was insignificant concentration to warrant remediation. No further action.	Bert Gorrod 214-655-6779
6	Tinker AFB (Soldier Creek Bldg. 3001), OK (08/16/90)	Soil vapor extraction		Yes		Determined that SVE was not viable. No alternative has been selected.	Susan Webster 214-655-6784  Major Richard Ashworth (USAF) 405-734-3058
8	Rocky Mountain Arsenal, M-1 Basins (OU 16), CO (02/26/90)	In situ vitrification		Yes		Remedy has been canceled because of problems with the contractor. New ROD is being negotiated.	Connally Mears 303-293-1528
8	Portland Cement Co. (Kiln Dust No. 2 and No. 3) OU2, UT (03/31/92)	Chemical treatment		Yes		Technology is not considered innovative.	Mike McCeney 303-293-1526

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

## Sixth Edition (September 1994)(continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 5TH EDITION)	6TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
9	Mesa Area Groundwater Contamination, AZ (09/27/91)	Soil vapor extraction		Yes		Site has been removed from National Priorities List (NPL), referred to the state	Maurice Chait 602-962-2187  Richard Oln 602-207-4176
9	Castle Air Force Base, OU 1, CA (08/12/91)	Bioremediation (in situ) - groundwater		Yes	Pump and treat with air stripping	Bench-scale test indicated that the technology did not work. No ESD or ROD amendment is being issued.	David Roberts 415-744-1487  Brad Hicks (USAF) 209-726-4841
9	Teledyne Semiconductors (Spectra Physics), CA (03/22/91)	Soil vapor extraction		Yes		ROD was misinterpreted. SVE was intended only for Spectra Physics, the adjacent site.	Sean Hogan 415-744-2233  Carla Dube 510-286-1041
9	FMC (Fresno), CA (06/28/91)	Soil washing		Yes		Soil washing did not work because the soil contained too many fines. Thermal desorption and solidification and stabilization are being considered as possible remedies.	Tom Dunkelman 415-744-2296  Mike Pfister (CA) 209-297-3934
9	Signetics (Advanced Micro Devices 901), CA (09/11/91)	Soil vapor extraction		Yes		Site is subject to a combined ROD for Signetics, AMD 901/902 and TRW Microwave site. SVE is not being done at the TRW OU. ROD was misinterpreted.	Darrin Swartz-Larson 415-744-2233  Kevin Graves (CA) 510-286-0435
9	Sacramento Army Depot, Oxidation Lagoons, OU 4, CA (09/30/92)	Soil washing		Yes		Technology canceled because of cost; solidification is being considered as an alternative.	Marlin Mezquita 415-744-2393
10	McChord AFB Washrack Treatment Area, AK (09/28/92)	Bioremediation (ex situ)		Yes		Additional studies showed that treatment is not needed.	Marie Jennings 206-553-1173

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

## Fifth Edition (September 1993): Additions, Changes, and Deletions from the Fourth Edition (October 1992)

The fifth edition of this report added information about 49 innovative treatment technologies selected for remedial action under FY 1992 RODs and 15 innovative treatment technologies used in removal actions. Other changes are listed below.

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 4TH EDITION)	5TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
1	Re-Solve, MA (09/24/87)	Dechlorination		Yes		Pilot study showed that dechlorination increased the volume and that the waste still required incineration. An ESD to incinerate residuals off-site is in peer review.	Joe Lemay 617-573-9622
1	Pinette's Salvage Yard, ME (05/30/89)	Solvent extraction		Yes		Will incinerate off-site.	Ross Gilleland 617-573-5766
2	Naval Air Engineering Center, OU 1, NJ (02/04/91)	Flushing (in situ)		Yes		Remedy involves pump-and-treat system, with on-site discharge. Soil is not being targeted.	Jeff Gratz 212-637-4320
2	Naval Air Engineering Center, OU 2, NJ (02/04/91)	Flushing (in situ)		Yes		Remedy involves pump-and-treat system, with on-site discharge. Soil is not being targeted.	Jeff Gratz 212-637-4320
2	Naval Air Engineering Center, OU 4, NJ (09/30/91)	Flushing (in situ)		Yes		Remedy involves pump-and-treat system, with on-site discharge. Soil is not being targeted.	Jeff Gratz 212-637-6320
2	Caldwell Trucking, NJ (09/25/86)	Thermal desorption		Yes		Thermal desorption is not necessary because highly contaminated soil will be incinerated off-site. Remainder of soil will be stabilized. ESD issued.	Ed Finnerty 212-637-4367
3	Tobyhanna Army Depot, PA (Non-Superfund project)	Bioremediation (in situ)		Yes		Will conduct ex situ passive volatilization.	Drew Lausch 215-597-3161  Ross Mantione (Tobyhanna) 717-894-6494
4	Smith's Farm Brooks, KY (09/30/91)	Dechlorination	Thermal desorption			Will alter chemistry to achieve dechlorination during thermal desorption.	Tony DeAngelo 404-562-8826
4	American Creosote Works, FL (09/28/89)	Soil washing		Yes		Bench-scale study of soil washing showed that the concentrations of carcinogenic PAHs were not reduced adequately. Dioxins also were discovered at much higher concentrations.	Mark Fite 404-562-8927

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

## Fifth Edition (September 1993) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 4TH EDITION)	5TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
4	American Creosote Works, FL (09/28/89)	Bioremediation (ex situ)		Yes		Bench-scale study of bioremediation (ex situ) showed that the concentrations of carcinogenic PAHs were not reduced adequately. Dioxins also were discovered at much higher concentrations.	Mark Fite 404-562-8927
4	Hollingsworth Solderless, FL (04/10/86)		Soil vapor extraction			Listed as soil aeration in the third edition.	John Zimmerman 404-562-8936
5	Cliffs/Dow Dump, MI (09/27/89)	Bioremediation (in situ)		Yes		Bioremediation (in situ) was a misinterpretation of the ROD. All soil will be excavated and treated by bioremediation (ex situ).	Ken Glatz 312-886-1434
6	Tenth Street Dump/Junkyard, OK (09/27/90)	Dechlorination		Yes		Remedy has been suspended because of difficulties in implementation and escalating cost; Actual cost was double the cost projected in ROD. ROD amendment to cap in place is being issued.	Mike Overbay 214-655-8512
7	Fairfield Coal & Gas, IA (09/21/90)	Bioremediation (in situ)		Yes		Pilot study showed in situ bioremediation was too costly. It appears that the present pump-and-treat system will achieve cleanup levels.	Bruce Morrison 913-551-7755
8	Sand Creek Industrial OU 5, CO (09/28/90)	Soil washing			Thermal desorption	Soil washing did not meet performance standards and was expensive. ROD amendment was issued in early September 1993.	Erna Acheson 303-312-6753
9	Koppers Company (Oroville), CA (04/04/90)	Bioremediation (ex situ)		Yes		Misinterpretation of ROD during ROD analysis.	Fred Schlauffler 415-744-2359
9	Signetics (AMD 901) TRW OU, CA (09/11/91)		Soil vapor extraction			Remedy added.	Joe Healy 415-744-2331
9	Teledyne Semiconductors, CA (03/22/91)		Soil vapor extraction			Dropped by mistake from fourth edition.	Kevin Graves (CA) 510-286-0435  Sean Hogan 415-744-2233

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

## Fifth Edition (September 1993) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 4TH EDITION)	5TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
10	IDEL Warm Waste Pond, ID (12/05/91)	Acid extraction		Yes		Treatability study of acid extraction did not achieve good extraction rates. Did not reduce the volume of waste. Will excavate, consolidate, and cap.	Linda Meyer 206-553-6636  Nolan Jenson (DOE) 208-526-0436
10	IDEL Warm Waste Pond, ID (12/05/91)	Soil washing		Yes		Treatability study of soil washing did not achieve acceptable results. Did not reduce the volume of waste. Will excavate, consolidate, and cap.	Linda Meyer 206-553-6636  Nolan Jenson (DOE) 208-526-0436

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

## Fourth Edition (October 1992): Additions, Changes, and Deletions from the Third Edition (April 1992)

The fourth edition of this report added information about 10 innovative treatment technologies selected for remedial action under FY 1992 RODs and 21 innovative treatment technologies implemented at non-Superfund sites. Other changes are listed below.

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 3RD EDITION)	4TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
2	Lipari Landfill Marsh Sediment, NJ (07/11/88)		Thermal desorption			Missed during original ROD analysis.	Tom Graff 816-426-2296
2	GE Wiring Devices, PR (09/30/88)	Thermal desorption			Soil washing		Caroline Kwan 212-637-4275
5	University of Minnesota, MN (06/11/90)	Thermal desorption		Yes	Incineration (in the fifth edition)	An ESD was issued in August 1991 to change remedy to thermal desorption or incineration. Incineration was chosen because it was the less expensive of the two.	Darrel Owens 312-886-7089
6	Sol Lynn/Industrial Dechlorina- tion Transformers, TX (03/25/88)	Dechlorination		Yes		Discontinued because of difficulties in implementation.	John Meyer 214-667-6742
6	Koppers/Texarkana, TX (09/23/88)	Soil washing	In situ flushing			Remedy added by ROD amendment.	Ursula Lennox 214-655-6735
9	Poly Carb, NV (Removal)	Bioremediation (in situ)			Bioremediation (ex situ)	Reclassified technology.	Bob Mandel 415-744-2290
9	Teledyne Semiconductors, CA (03/22/91)	Soil vapor extraction		Yes		Mistakenly deleted from report.	Sean Hogan 415-744-2233
10	Gould Battery, OR (03/31/88)	Soil washing	Soil washing			Missed during original ROD analysis.	Chip Humphries 503-326-2678

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

## Third Edition (April 1992): Additions, Changes, and Deletions from the Second Edition (September 1991)

The third edition of this report added information to the 70 innovative treatment technologies selected for remedial actions under FY 1991 RODs. Other changes are listed below.

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 2ND EDITION)	3RD EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
2	Marathon Battery, NY (09/30/88)	Thermal desorption		Yes		During design, soil gas concentration at hot spots was below state standards. Groundwater monitoring will continue.	Pam Tames 212-264-1036
2	Goose Farm, NJ (09/27/85)	Flushing (in situ)		Yes		Incorrectly classified. A pump-and -treat system with reinjection of treated water is being used.	Laura Lombardo 212-264-6989
2	GE Wiring Services, PR (09/30/88)	Soil washing			Thermal desorption	Possible pre-wash of debris with surfactants.	Caroline Kwan 212-637-4275
4	Coleman-Evans Wood Preserving, FL (09/26/90)	Soil washing		Yes	Incineration	Problems due to the presence of furans; incineration is likely.	Tony Best 404-347-2643
5	Sangamo/Crab Orchard National Wildlife Refuge, IL (08/01/90)	In situ vitrification			Thermal desorption	ROD specified the remedy as in situ vitrification <u>or</u> incineration; incineration was chosen.	Nan Gowda 312-353-9236
5	Anderson Development, MI (09/28/90)	In situ vitrification		Yes		Because of concern on the part of the community, the remedy was changed. A ROD amendment was signed on 9/30/91, and an ESD was signed on 10/2/92.	Jim Hahnenberg 312-353-4213
5	U.S. Aviex, MI (09/07/88)	Flushing (in situ)		Yes		Cleanup levels were reached by natural attenuation.	Robert Whippo 312-886-4759
6	Atchison/Santa Fe/Clovis, NM (09/23/88)	Bioremediation (ex situ)		Yes			Ky Nichols 214-655-6783
6	Crystal Chemical, TX (09/27/90)	In situ vitrification		Yes		Remedy was reconsidered after commercial availability of the technology was delayed. Revised remedy will consist of capping and off-site disposal and consolidation of soils.	Lisa Price 214-655-6735
9	Solvent Service, CA (09/27/90)	Bioremediation (in situ)		Yes		ROD was misinterpreted during ROD analysis.	Kevin Graves 510-286-0435  Steve Morse (CA) 570-286-0304

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

### Third Edition (April 1992) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 2ND EDITION)	3RD EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
9	Poly Carb, NV (Removal)	Bioremediation (ex situ)			Bioremediation (in situ)	Reclassified technology.	Bob Mandel 415-744-2290

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

## Second Edition (September 1991): Additions, Changes, and Deletions from the First Edition (January 1991)

The second edition of this report added information about 45 treatment technologies selected for remedial actions in RODs signed during fiscal year (FY) 1990 and 18 innovative treatment technologies used in removal actions. Other changes are listed below.

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 1ST EDITION)	2ND EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
1	Re-Solve, MA (09/24/87)	Chemical extraction		Yes	Dechlorination	Reclassified technology.	Lorenzo Thantu 212-637-4240
2	GE Wiring Services, PR (09/30/88)	Chemical treatment			Soil washing	Reclassified technology.	Caroline Kwan 212-637-4275
2	SMS Instruments (Deer Park), NY (09/29/89)	Chemical treatment				ROD was misinterpreted during ROD analysis.	Miko Fayon 212-637-4250
3	Leetown Pesticides, WV (03/31/86)	Bioremediation		Yes		No further action. Risk was re-evaluated and it was determined that risk was not sufficient for remedial action.	Andy Palestini 215-597-1286  Philip Rotstein 215-566-3232
3	Harvey-Knott Drum, DE (09/30/85)	Flushing (in situ)		Yes (changed to soil vapor extraction in third edition)		During remedial design, sampling indicated VOCs were no longer present in the soils. Heavy metals remained at the surface. An ESD was issued in December 1992. Remedy will consist of capping the site.	Kate Lose 215-566-3240
6	Sol Lynn/Industrial Transformers, TX (03/25/88)	Thermal desorption			Dechlorination	Reclassified technology.	John Meyer 214-665-6742
10	Northwest Transformer, WA (09/15/89)	In situ vitrification		Yes		Technology dropped because commercial availability was delayed.	Christine Psyk 206-553-6519

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

# APPENDIX E

## SUPERFUND REMEDIAL ACTIONS: RODS SELECTING NATURAL ATTENUATION



# Superfund Remedial Actions:

## RODs Selecting Monitored Natural Attenuation

Region	Site Name	State	ROD Date
1	Atlas Tack Corp. Superfund Site	MA	3/10/2000
1	Barkhamsted-New Hartford Landfill	CT	9/28/2001
1	BRUNSWICK NAVAL AIR STATION	ME	9/30/1994
1	Brunswick Naval Air Station Site 9 OU6	ME	9/28/1999
1	BURGESS BROTHERS LANDFILL – OU 01	VT	9/25/1998
1	Cannon Engineering	MA	3/31/1988
1	COAKLEY LANDFILL	NH	9/30/1994
1	Dover Municipal Landfill	NH	9/10/1991
1	FLETCHER'S PAINT WORKS & STORAGE – OU 01	NH	9/30/1998
1	FORT DEVENS – OU 05	MA	2/18/1998
1	Fort Devens, Areas of Contamination (AOC) 43G and 43J	MA	10/17/1996
1	Gallup's Quarry	CT	9/30/1997
1	Mottolo Pig Farm	NH	3/29/1991
1	Natick Laboratory Army Research, Development, and Engineering Center	MA	9/19/2001
1	NEW HAMPSHIRE PLATING CO. – OU 01	NH	9/28/1998
1	PEASE AIR FORCE BASE – OU 4	NH	6/26/1995
1	PEASE AIR FORCE BASE – OU 4	NH	9/26/1995
1	PEASE AIR FORCE BASE – OU 6	NH	9/18/1995
1	Peterson/Puritan	RI	9/30/1993
1	Picillo Farm	RI	9/27/1993
1	PSC Resources	MA	9/15/1992
1	Saco Municipal Landfill	ME	9/29/2000
1	Savage Municipal Water Supply	NH	9/27/1991
1	TIBBETTS ROAD – OU 01	NH	9/28/1998
1	Town Garage Radio Beacon	NH	9/30/1992
1	West Site/Hows Corner Superfund Site	ME	9/24/2002
1	Western Sand & Gravel	RI	4/16/1991
2	Carroll and Dubies Sewage Disposal	NY	9/30/1996
2	Conklin Dumps	NY	3/29/1991
2	DUPONT /NECCO PARK – OU 01	NY	9/18/1998
2	Forest Glen Subdivision Ous 2 & 3	NY	9/30/1999
2	Global Sanitary Landfill – OU 2	NJ	9/29/1997
2	GOLDISC RECORDINGS, INC. – OU 02	NY	9/30/1998
2	Islip Municipal Sanitary Landfill	NY	9/30/1992
2	Johnstown City Landfill	NY	3/31/1993
2	Jones Chemicals, Inc.	NY	9/27/2000
2	JUNCOS LANDFILL	PR	10/5/1993
2	Kin-Buc Landfill	NJ	9/28/1992
2	Malta Rocket Fuel Area	NY	7/13/1996
2	Marathon Battery	NY	9/30/1988

Region	Site Name	State	ROD Date
2	NAVAL AIR ENGINEERING CENTER	NJ	1/5/1995
2	Naval Air Engineering Station Areas I & J groundwater OU 26	NJ	9/27/1999
2	Naval Weapons Station Earle – OU 2, Site 19	NJ	9/25/1997
2	NAVAL WEAPONS STATION EARLE (SITE A) – OU 03	NJ	9/29/1998
2	PLATTSBURGH AIR FORCE BASE	NY	3/31/1995
2	Preferred Plating Corporation (ROD Amendment)	NY	9/30/1997
2	Renora	NJ	9/29/1987
2	Ringwood Mines/Landfill	NJ	9/29/1988
2	Robintech, Inc./National Pipe Company	NY	7/25/1997
2	ROSEN BROTHERS SCRAP YARD/DUMP – OU 01	NY	3/23/1998
2	Sarney Farm	NY	9/27/1990
2	Tutu Wellfield	VI	8/5/1996
2	Woodland Routes 72 Dump and 532 Dump	NJ	7/1/1999
2	YORK OIL CO. – OU 02	NY	9/29/1998
3	ALLEGANY BALLISTICS LABORATORY (USNAVY) – OU 05	WV	6/30/1998
3	BELL LANDFILL	PA	9/30/1994
3	DOVER AIR FORCE BASE – OU 10	DE	9/26/1995
3	DOVER AIR FORCE BASE – OU 11	DE	9/26/1995
3	Dover Air Force Base, Fire Training Area 3, East Management Unit	DE	9/30/1997
3	Dover Air Force Base, Landfill 13, East Management Unit	DE	9/30/1997
3	Dover Air Force Base, Liquid Waste Disposal Area 14 and Landfill 15, Area 1, East Management Unit	DE	9/30/1997
3	DOVER GAS LIGHT CO	DE	8/16/1994
3	East Mt. Zion	PA	6/29/1990
3	MALVERN TCE – OU 01	PA	11/26/1997
3	Mid-Atlantic Wood Preservers	MD	12/31/1990
3	New Castle Spill	DE	9/28/1989
3	OHIO RIVER PARK – OU 03	PA	9/17/1998
3	Old City of York Landfill	PA	3/31/2000
3	OSBORNE LANDFILL – OU 02	PA	12/30/1997
3	Rodale Manufacturing Co. Inc. Site OU 1	PA	9/30/1999
3	The Crater Resources Superfund Site	PA	9/27/2000
3	Tobyhanna Army Depot	PA	9/28/2000
3	Tobyhanna Army Depot – OU OU 1, Areas A & B	PA	9/30/1997
3	Westline	PA	6/29/1988
3	Woodlawn Landfill Site	MD	9/30/1999
4	Aberdeen Pesticide Dumps OU 5	NC	6/4/1999
4	AGRICO CHEMICAL CO.	FL	8/18/1994

# Superfund Remedial Actions:

## RODs Selecting Monitored Natural Attenuation (continued)

Region	Site Name	State	ROD Date
4	Anodyne	FL	6/17/1993
4	Arlington Blending and Packaging (ROD Amendment)	TN	7/24/1997
4	B&B CHEMICAL CO., INC.	FL	9/12/1994
4	BMI-TEXTRON	FL	8/11/1994
4	Camp Lejeune Military Reservation	NC	9/26/2000
4	CECIL FIELD NAVAL AIR STATION – OU 06	FL	9/25/1998
4	CECIL FIELD NAVAL AIR STATION – OU 08	FL	8/27/1998
4	Cecil Field Naval Air Station – OU 2	FL	6/24/1996
4	Cecil Field Naval Air Station (Site 8) OU 3	FL	8/25/1999
4	Cecil Field Naval Air Station OU 7	FL	5/12/1999
4	Cedartown Industries	GA	5/7/1993
4	CEDARTOWN MUNICIPAL LANDFILL	GA	11/2/1993
4	Cherry Point Marine Air Corps Station OU 2	NC	9/29/1999
4	Cherry Point Marine Corps Air Station	NC	10/24/2000
4	Chevron Chemical Company	FL	5/22/1996
4	DAVIE LANDFILL	FL	8/11/1994
4	DAVIS PARK ROAD TCE – OU 01	NC	9/29/1998
4	Davis Park Road TCE Site	NC	9/27/2000
4	DIAMOND SHAMROCK CORP. LANDFILL	GA	5/3/1994
4	Dubose Oil Products	FL	3/29/1990
4	FCX, Inc. (Statesville Plant) – OU 3	NC	9/30/1996
4	FLANDERS FILTERS INC – OU 01	NC	9/18/1998
4	Florida Petroleum Reprocessors	FL	3/1/2001
4	GEIGER (C & M OIL) – OU 01	SC	9/9/1998
4	Hercules 009 Landfill	GA	3/25/1993
4	Homestead Air Force Base Ous 18, 26, 28, & 29	FL	3/15/1999
4	Interstate Lead (ILCO)	AL	9/30/1991
4	INTERSTATE LEAD CO. (ILCO) – OU 3	AL	9/29/1995
4	Jacksonville Naval Air Station	FL	9/28/2000
4	JACKSONVILLE NAVAL AIR STATION – OU 01	FL	8/3/1998
4	Marine Corps Logistics Base	GA	9/19/2001
4	MURRAY-OHIO DUMP	TN	6/17/1994
4	NATIONAL STARCH & CHEMICAL CORP.	NC	10/6/1994
4	Naval Air Station (NAS) Cecil Field	FL	4/24/2001
4	Naval Air Station Cecil Field	FL	1/11/2000
4	Normandy Park Apartments	FL	5/11/2000
4	Potter's Septic Tank Service Pits	NC	9/27/2000
4	Redwing Carriers/Saraland	AL	12/15/1992
4	Reeves Southeastern Galvanizing – OU 2	FL	9/9/1993
4	Ross Metals, Inc.	TN	9/17/2002
4	Sanford Gasification Plant	FL	6/12/2001
4	Savannah River Site	SC	6/22/2001

Region	Site Name	State	ROD Date
4	SAVANNAH RIVER SITE (USDOE) – OU 27	SC	8/14/1998
4	Solitron Microwave	FL	11/1/2000
4	STANDARD AUTO BUMPER CORP.	FL	12/10/1993
4	TAYLOR ROAD LANDFILL	FL	9/29/1995
4	Townsend Saw Chain Co.	SC	12/19/1996
4	WHITEHOUSE OIL PITS – OU 01	FL	9/24/1998
4	Wingate Road Municipal Incinerator Dump and Landfill	FL	5/14/1996
4	Yellow Water Road Dump	FL	6/30/1992
4	Zellwood Ground Water Contamination Site	FL	8/23/2000
5	A & F Materials Reclaiming	IL	8/14/1986
5	Adams County Quincy Landfill #2 & #3	IL	9/30/1993
5	AGATE LAKE SCRAPPYARD	MN	1/13/1994
5	ALBION SHERIDAN TOWNSHIP LANDFILL	MI	3/28/1995
5	Alsco Anaconda	OH	9/30/1992
5	Bendix Corp/Allied Automotives Site	MI	9/30/1997
5	Charlevoix Municipal Well Field	MI	9/30/1985
5	Cliff/Dow Dump	MI	9/27/1989
5	Dakhue Sanitary Landfill	MN	6/30/1993
5	DUPAGE COUNTY LANDFILL/BLACKWELL FOREST – OU 01	IL	9/30/1998
5	Electro-Voice OU2	MI	9/21/1999
5	Fadrowski Drum Disposal	WI	6/10/1991
5	GALEN MEYER'S DUMP/DRUM SAL	IN	9/29/1995
5	H.O.D. LANDFILL – OU 01	IL	9/28/1998
5	HECHIMOVICH SANITARY LANDFILL	WI	9/6/1995
5	Industrial Excess Landfill	OH	3/1/2000
5	Ionia City Landfill	MI	9/28/2000
5	Kohler Company Landfill	WI	6/26/1996
5	Metamora Landfill	MI	9/27/2001
5	MIG/DeWane Landfill	IL	3/30/2000
5	Oak Grove Sanitary Landfill	MN	12/21/1990
5	Outboard Marine Company/Waukegan Coke Plant	IL	9/30/1999
5	PENTA WOOD PRODUCTS – OU 01	WI	9/29/1998
5	PETOSKEY MUNICIPAL WELL FIELD – OU 01	MI	9/30/1998
5	PRESTOLITE BATTERY DIV	IN	8/23/1994
5	Rasmussen's Dump	MI	7/20/2001
5	Reilly Tar and Chemical (Indianapolis Plant) – OU 5	IN	6/30/1997
5	Roto-Finish Co, Inc.	MI	3/31/1997
5	Sangamo Electric Dump/Crab Orchard National Wildlife Refuge Site	IL	6/23/2000
5	South-east Rockford groundwater contamination	IL	6/11/2002
5	Tippecanoe Sanitary Landfill, Inc.	IN	9/30/1997

# Superfund Remedial Actions:

## RODs Selecting Monitored Natural Attenuation (continued)

Region	Site Name	State	ROD Date	Region	Site Name	State	ROD Date
5	Twin Cities AF Reserve (SAR Landfill)	MN	3/31/1992	8	PORTLAND CEMENT (KILN DUST 2 & 3) – OU 03	UT	8/17/1998
5	Wheeler Pit	WI	9/28/1990	8	Rocky Mountain Arsenal – OU Offpost OU	CO	12/19/1995
5	WOODSTOCK MUNICIPAL LANDFILL – OU 01	IL	7/15/1998	8	Rocky Mountain Arsenal – OU Onpost OU	CO	6/11/1996
5	Wright-Patterson Air Force Base – OU 2, Spill Sites 2, 3 & 10	OH	9/30/1997	8	SMELTERTOWN SITE – OU 02	CO	6/4/1998
6	Arkwood	AR	9/28/1990	8	Utah Power & Light/American Barrel	UT	7/7/1993
6	Brio Refining	TX	3/31/1988	9	ANDERSEN AIR FORCE BASE – OU 03	GU	6/16/1998
6	City of Perryton Well No. 2	TX	9/26/2002	9	Camp Pendleton Marine Corps Base, Site 9-41 Area – OU 1	CA	12/7/1995
6	DUTCHTOWN TREATMENT PLANT	LA	6/20/1994	9	Del Norte County Pesticide Storage Superfund Site	CA	8/29/2000
6	Fourth Street Abandoned Refinery	OK	9/30/1993	9	George Air force Base OU 3	CA	10/5/1998
6	French Limited	TX	3/24/1988	9	INDIAN BEND WASH AREA – OU 03	AZ	9/30/1998
6	Gulf Coast Vacuum Services – OU 1	LA	9/30/1992	9	Lawrence Livermore National Laboratory	CA	2/23/2001
6	Gulf States Utilities – North Ryan Street Site	LA	9/27/2000	9	Marine Corps Air Station	AZ	9/8/2000
6	Hardage/Criner (Amendment)	OK	11/22/1989	9	Operating Industries, Inc. Landfill	CA	9/30/1996
6	Koppers (Texarkana Plant)	TX	9/23/1988	9	TRAVIS AIR FORCE BASE – OU 01	CA	12/3/1997
6	Koppers (Texarkana Plant) (Amendment)	TX	3/4/1992	9	Travis Air Force Base West/Annexes/Basewide OU (WABOU)	CA	3/16/1999
6	KOPPERS COMPANY, INC (TEXARKANA PLANT)	TX	8/20/2002	10	Adak Naval Air Station	AK	3/31/2000
6	Monroe Auto Pit (Finch Road Landfill)	AR	9/26/1996	10	EIELSON AIR FORCE BASE – OU 03, 04, 05	AK	9/29/1998
6	Mosley Road Sanitary Landfill	OK	6/29/1992	10	Fairchild Air Force Base – OU Priority 2 Sites	WA	12/20/1995
6	PETRO-CHEMICAL SYSTEMS, (TURTLE BAYOU) – OU 02	TX	4/30/1998	10	Fort Richardson – OU OU A & B	AK	9/15/1997
6	Sikes Disposal Pit	TX	9/18/1986	10	Fort Wainwright – OU 1	AK	6/27/1997
6	SOUTH 8TH STREET LANDFILL – OU 01, 02	AR	7/22/1998	10	Fort Wainwright – OU 2	AK	3/27/1997
6	United Creosoting	TX	9/30/1986	10	Fort Wainwright – OU 3	AK	4/9/1996
7	Bee Cee Manufacturing	MO	9/30/1997	10	Fort Wainwright – OU 4, Fairbanks	AK	9/24/1996
7	Cleburn Street Well	NE	6/7/1996	10	Hanford 1100–Area (DOE)	WA	9/24/1993
7	Cornhusker Army Ammunition Plant	NE	12/14/1999	10	Idaho National Engineering and Environmental Laboratory Test Area North (TAN)	ID	9/19/2001
7	Cornhusker Army Ammunition Plant (CHAAP)	NE	9/26/2001	10	Monsanto Chemical Company	ID	4/30/1997
7	Farmers' Mutual Cooperative	IA	9/29/1992	10	Naval Air Station, Whidbey Island – Ault Field – OU OU 5, Areas 1, 52, and 31	WA	7/10/1996
7	Hastings Groundwater Contamination Site	NE	9/28/2000	10	NAVAL UNDERSEA WARFARE STATION (4 AREAS) – OU 01	WA	9/28/1998
7	Mason City Coal Gasification Site	IA	9/19/2000	10	North Market Street	WA	12/14/1999
7	Ogallala Ground Water Contamination OU 1	NE	4/23/1999	10	Northwest Pipe and Casing Company/Hall Process Company	OR	9/27/2001
7	Quality Plating	MO	9/28/1999	10	U.S. Naval Submarine Base–OU 8 Bangor	WA	9/27/2000
7	Ralston	IA	9/30/1999	10	USAF EIELSON AIR FORCE BASE – OU 6	AK	9/27/1994
8	ANACONDA CO. SMELTER – OU 04	MT	9/29/1998	10	USAF ELMENDORF AIR FORCE BASE – OU 4	AK	9/26/1995
8	Chemical Sales Company Superfund Site	CO	3/27/2000	10	USAF ELMENDORF AIR FORCE BASE – OU 5	AK	12/28/1994
8	Denver Radium – OU 8	CO	1/28/1992	10	Wyckoff/Eagle Harbor, (Amendment) – OU West Harbor OU	WA	12/8/1995
8	HILL AIR FORCE BASE – OU 01	UT	9/29/1998				
8	Hill Air Force Base – OU 6	UT	9/30/1997				
8	Kennecott South Zone Site	UT	12/13/2000				
8	MURRAY SMELTER – OU 00	UT	4/1/1998				
8	Mystery Bridge at Highway 20	WY	9/24/1990				

# APPENDIX F

## IDENTIFICATION OF REMEDY AND RECORD OF DECISION TYPES FOR SUPERFUND REMEDIAL ACTIONS



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## F.1 BACKGROUND

On December 11, 1980, Congress passed the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), which is known as the “Superfund” act. The act created the Superfund program, which was established to clean up abandoned hazardous waste sites around the United States. Section 105(a)(8)(B) of CERCLA, as amended, requires that EPA prepare a list of national priorities among the known sites throughout the United States at which releases or threatened releases of hazardous substances, pollutants, or contaminants may occur. This list is known as the National Priorities List (NPL).

The remedies selected for an NPL site are documented in a record of decision (ROD). Remedies implemented at NPL sites or NPL equivalent sites in accordance with RODs are known as Superfund remedial actions, and such sites are known as Superfund remedial action sites. Because selected remedies vary in the type of media addressed and the methods used to address those media, confusion can arise when assigning a type to a particular remedy. Categorizing remedies by types can facilitate the transfer of experience and technology by making it easier to identify sites at which similar remedies are applicable. Establishing and applying a methodology for classifying remedy types can provide a consistent and comprehensive approach for reviewing and comparing remedies used in RODs. In addition, use of such an approach can lead to more consistent data collection and reporting and assist remedial project managers (RPMs), On-Scene Coordinators (OSCs), and other regulatory and remediation professionals in the transfer of experience and technology among Superfund sites and in identifying sites implementing similar remedies. This document describes an approach that can be used to classify remedies and RODs.

Remedies should be classified by reviewing the remedies selected in RODs. Although RODs are written using an overall format that is consistent, RODs are prepared by individual RPMs and other staff of the 10 EPA regions. In addition, the management practices and techniques used to remediate sites have evolved over time and continue to evolve. Therefore, the words, phrases, and descriptions applied to the same or similar remedies may differ from ROD to ROD. To facilitate the identification of remedy types, this document includes both descriptive definitions of

remedy types and lists of key words and phrases that may be used to refer to each remedy type.

The definitions of remedy types provided in this document are based on a review of definitions and lists of media, remedies, and technologies provided in the following resources:

- The CERCLA Information System (CERCLIS 3) database
- ROD Annual Reports for fiscal years (FY) 1989 through 2002
- The Federal Remediation Technologies Roundtable (FRTR) Technology Screening Matrix
- Treatment Technologies for Site Cleanup: Annual Status Report (Eleventh Edition) (ASR)

The remedy type definitions were reviewed and augmented by a working group of personnel of the U.S. Environmental Protection Agency (EPA) Office of Solid Waste and Emergency Response (OSWER) who are experienced in site remediation and ROD preparation and review.

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## F.2 CLASSIFYING REMEDIES AND RODS

Remedy types should be identified by first dividing remedies into three categories (source control, groundwater, and no action) based on the media treated and the type of action. Within each of these categories, the remedies should then be further divided into the following 10 specific remedy types:

### ***Source Control Remedies:***

1. Source control treatment
2. Source control containment
3. Source control other
4. Source control monitored natural attenuation

### ***Groundwater Remedies:***

5. Groundwater in situ treatment
6. Groundwater pump and treat
7. Groundwater containment barriers
8. Groundwater other
9. Groundwater monitored natural attenuation

### ***No Action Remedies:***

10. No action or no further action (NA/NFA)

RODs should be classified using the 10 remedy types listed above. When more than one remedy type is selected in the same ROD, the ROD should be assigned all of the remedy types that are identified.

The definitions that should be used to identify each remedy type are provided in the “Definitions” section below. When definitions include specific technologies and those technologies commonly are referred to by more than one word or phrase, the most commonly used word or phrase is listed first, followed by synonyms in parentheses.

### F.3 DEFINITIONS USED TO IDENTIFY REMEDY TYPES

#### F.3.1 General Definitions

The definitions of treatment technology and the different types of treatment technologies (physical, chemical, thermal, and bioremediation treatment) apply to both source control and groundwater remedies.

*Treatment Technology* - Any unit operation or series of unit operations that alters the composition of a hazardous substance, pollutant or contaminant through chemical, biological, or physical means so as to reduce toxicity, mobility, or volume of the contaminated materials being treated. Treatment technologies are an alternative to land disposal of hazardous wastes without treatment (Federal Register, volume 55, page 8819, 40 CFR 300.5: Definitions). Treatment technologies are grouped into five categories. The definitions for four of the categories (physical treatment, chemical treatment, thermal treatment, and biological treatment) are based on definitions provided in the FRTR Technology Screening Matrix. The fifth category, other or unspecified treatment, includes those technologies that do not fit into the first four categories. The five treatment technology categories are:

*Physical Treatment* - Uses the physical properties of the contaminants or the contaminated medium to separate or immobilize the contamination.

*Chemical Treatment* - Chemically converts hazardous contaminants to non-hazardous or less toxic compounds or compounds that are more stable, less mobile, and/or inert. Even though a chemical reaction is not always involved in chemical precipitation, chemical precipitation is typically included in this category.

*Thermal Treatment* - Uses heat to: separate contaminants from contaminated media by

increasing their volatility; destroy contaminants or contaminated media by burning, decomposing, or detonating the contaminants or the contaminated media; or immobilize contaminants by melting and solidifying the contaminated media.

*Bioremediation Treatment* - Includes adding or stimulating the growth of microorganisms, which metabolize contaminants or create conditions under which contaminants will chemically convert to non-hazardous or less toxic compounds or compounds that are more stable, less mobile, and/or inert.

*Other or Unspecified Treatment* - Treatment that cannot be classified as physical treatment, chemical treatment, thermal treatment, or bioremediation treatment. For example, some RODs select physical/chemical treatment of a source without specifying the particular physical/chemical treatment. In such cases, the ROD should not be definitively classified as physical or chemical treatment and should be classified as other or unspecified treatment, unspecified physical/chemical treatment.

#### F.3.2 Source Control

*Source Media* - A source medium is defined as a material that acts as a reservoir, either stationary or mobile, for hazardous substances. Source media include or contain hazardous substances, pollutants, or contaminants that may migrate to the groundwater, to surface water, to air, (or to other environmental media) or act as a source for direct exposure. Contaminated groundwater generally is not considered to be a source material although non-aqueous phase liquids (NAPLs [occurring either as residual- or free-phase]) may be viewed as source materials. (A Guide to Principal Threat and Low Level Threat Wastes, Superfund publication 9355.3-02FS, USEPA OSWER 1991). Source media include soil, sediment, sludge, debris, solid-matrix wastes, surface water, NAPLs, equipment, drums, storage tanks, leachate, landfill gas, and any other contaminated media other than groundwater that can act as a potential source of contamination.

*Source Control Remedy* - any removal, treatment, containment, or management of any contaminant source or contaminated medium other than groundwater.

## 1. Source Control Treatment

Any process meant to separate and remove, destroy, or bind contaminants in a source medium. Key words used in RODs to identify these processes are listed below. Additional detail about these technologies can be found in the ASR at <http://clu-in.org/asr> or on the Federal Remediation Technologies Roundtable website at <http://www.frtr.gov>.

### Physical Treatment

Acid extraction	Multi-phase extraction (free product recovery)
Air stripping	Oil/water separation (free product recovery)
Carbon adsorption (liquid-phase carbon adsorption)	Physical separation (component separation and materials handling)
Clarification (sedimentation)	Soil vapor extraction (vacuum extraction and vapor extraction)
Decontamination	Soil washing
Dewatering	Solidification/stabilization (asphalt batching, immobilization, and microencapsulation)
Electrical separation (electrokinetic separation)	Solid-phase extraction
Evaporation	Solvent extraction (chemical stripping)
Filtration	Steam stripping
Flushing (soil flushing and surfactant flushing)	Super-critical fluid extraction
Ion exchange	Volatilization (aeration, mechanical soil aeration, and tilling)
Magnetic separation	
Membrane filtration (microfiltration, nanofiltration, reverse osmosis, ultrafiltration)	

### Chemical Treatment

Chemical oxidation (cyanide oxidation, oxidation, and peroxidation)	Flocculation
Chemical reduction (reduction)	Metals precipitation
Chemical treatment (chemical reduction/oxidation and remedy type not further specified)	Neutralization (pH neutralization)
Dehalogenation (dechlorination)	Permeable reactive barrier (chemical reactive barrier, chemical reactive wall, leachate reactive wall, and passive treatment wall)
	Ultraviolet (UV) oxidation

### Thermal Treatment

Flaring (gas flaring)	Thermal treatment (remedy type not further specified)
High energy corona	
Open burning/open detonation	In situ thermal treatment (conductive heating, Contained Recovery of Oily Wastes [CROW®], dynamic underground stripping, electrical resistance heating, hot air injection, in situ thermal desorption, microwave heating, radio frequency heating, steam injection, and thermally enhanced soil vapor extraction)
Plasma high-temperature recovery (fuming gasification and high-temperature metals recovery)	Vitrification (slagging)
Thermal desorption	
Thermal destruction (incineration and pyrolysis)	

### Bioremediation

Aeration (for purpose of bioremediation, tilling)	Bioslurping
Biopile	Bioventing
Bioreactor	Co-metabolic treatment
Bioremediation (biological treatment, remedy type not further specified)	Composting
	Controlled solid phase

*Continued on next page*

## Bioremediation (continued)

Fixed film reactors	Oxygen enhancement with hydrogen peroxide (H <sub>2</sub> O <sub>2</sub> )
Landfarming	Permeable treatment bed (for purpose of bioremediation)
Microbial injection (addition of microorganisms)	Slurry-phase bioremediation (bioslurry, activated sludge)
Nitrate enhancement	White rot fungus
Nutrient injection	
Oxygen enhancement with air sparging (biosparging)	

## Other or Unspecified Treatment

Air emission treatment	Publicly owned treatment works (POTW)
Fracturing (pneumatic fracturing, hydraulic fracturing)	Recycling
Gas collection and treatment (off-gas treatment)	Surface water treatment
Hot gas decontamination	Treatment of residuals
Leachate treatment	Unspecified physical/chemical treatment
Phytoremediation	Unspecified treatment

## 2. Source Control Containment

Any process or structure designed to prevent contaminants from migrating from a source media into groundwater, to surface water, to air, (or to other environmental media) or acting as a source for direct exposure. Key words used in RODs to identify source control containment remedies are listed below:

### Capping and Cover

- Cap (impermeable barrier)
- Cover material
- Evapotranspiration cover

### Bottom Liner

- Clay
- Geosynthetic material
- Liner (impermeable barrier)

### Drainage and Erosion Control

- Engineering control (remedy type not further specified)
- Hydraulic control
- Impermeable barrier
- Revegetation
- Slope stabilization
- Subsurface drain (leachate control)
- Surface water control (dike, berm, drainage controls, drainage ditch, erosion control, flood protection, and levee)

### On-Site Landfilling

- On-site consolidation
- On-site disposal
- On-site landfilling (remedy type not further specified)

### Off-Site Landfilling

- Off-site consolidation
- Off-site disposal
- Off-site landfilling (remedy type not further specified)

### Vertical Engineered Barrier

(When used as a remedy for a source medium [including subsurface NAPLs]. Vertical subsurface engineered barriers used to control or contain groundwater should not be considered source control containment.)

- Grout (grout curtain)
- Impermeable barrier
- Sheet piling
- Slurry wall
- Subsurface barrier
- Vertical barrier

*Continued on next page*

## Other or Unspecified Containment

Containment (consolidation, disposal, landfilling, and removal)

Encapsulation (overpacking)

Leachate control (leachate collection, leachate discharge, leachate recovery wells, leachate reinjection)

Liquid waste management (liquid waste collection, liquid waste discharge, liquid waste recovery wells, liquid waste reinjection)

Permanent storage

Repair (pipe repair, sewer repair, and tank repair)

Surface water management (surface water collection, surface water discharge, surface water recovery wells, surface water reinjection)

## 3. Source Control Other

Source control remedies that do not fall into the categories Source Control Treatment or Source Control Containment.

### Institutional Control

The classification of institutional controls has been revised based on *Institutional Controls: A Site Manager's Guide to Identifying, Evaluating, and Selecting Institutional Controls at Superfund and RCRA Corrective Action Cleanups*, OSWER 9355.0-74FS-P, EPA 540-F-00-005, September 2000. The remedy definitions outlined in this guidance differ from those historically used to classify institutional control remedies. This classification system groups institutional controls into 4 categories. Listed below are these four categories. Beneath each category, the terms historically applied to institutional controls that are most likely to fall under the categories are listed. The list below also adds a fifth category, "Institutional control (remedy type not further specified)" for cases where the particular institutional control selected is not recorded in a ROD.

#### 1. Governmental control

Access restriction

Drilling restriction

Fishing restriction

Guard (security)

Recreational restriction

Surface water restriction

Swimming restriction

Water supply use restriction

#### 2. Proprietary control

Deed notification

Deed restriction

Land use restriction

#### 3. Enforceable agreement

Access agreement

#### 4. Informational device

#### 5. Institutional control (remedy type not further specified)

### Engineering Control

Dust suppression

Engineering control (remedy type not further specified)

Fencing

Water table adjustment

Wetland replacement

### Population Relocation

Population relocation

### Surface Water Supply Remedies

Alternate water supply (alternate drinking water and bottled water)

Carbon at tap

Well-head treatment

### Source Monitoring

Monitoring

Sampling

#### 4. Source Control Monitored Natural Attenuation (MNA)

The reliance on natural attenuation processes (within the context of a carefully controlled and monitored approach to site cleanup) to achieve site-specific remediation objectives within a time frame that is reasonable, compared with that offered by other, more active methods. The “natural attenuation processes” that are at work in such a remediation approach include a variety of physical, chemical, or biological processes that, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in soil or groundwater. These in situ processes include biodegradation; dispersion; dilution; sorption; volatilization; radioactive decay; and chemical or biological stabilization, transformation, or destruction of contaminants (Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites, USEPA, Office of Solid Waste and Emergency Response, Directive Number 9200.4-17P, 1999).

A remedy should be considered source control MNA if it includes “natural attenuation” or “monitored natural attenuation” for a source (e.g., contaminated soil).

#### F.3.3 Groundwater Remedies

*Groundwater Remedy* - Management of groundwater. Groundwater remedies can include in situ treatment, pump and treat, containment using vertical engineered barriers, MNA, and other measures to address groundwater.

*Groundwater Media* - One or more aquifers beneath or proximal to a source medium, contaminated by migration of contaminants, such as leachate, or by other sources.

#### 5. Groundwater In Situ Treatment

Treatment of groundwater without extracting it from the ground. Key words used in RODs to identify groundwater in situ treatment remedies are listed below:

##### Physical Treatment

Air sparging	Multi-phase extraction (free product recovery)
Electrical separation (electrokinetic separation)	Surfactant flushing
In-well air stripping (well aeration and air stripping)	Vapor extraction

##### Chemical Treatment

Chemical oxidation (cyanide oxidation, oxidation, and peroxidation)	Dehalogenation (dechlorination)
Chemical reduction (reduction)	Permeable reactive barrier (chemical reactive barrier, chemical reactive wall, and passive treatment wall)
Chemical treatment (chemical reduction/oxidation and remedy type not further specified)	

##### Thermal Treatment

In situ thermal treatment (conductive heating, CROW®, dynamic underground stripping, electrical resistance heating, hot air injection, hot water or steam flushing and stripping, in-situ thermal desorption, microwave heating, radio frequency heating, steam injection, and thermally enhanced soil vapor extraction)

##### Bioremediation

Aeration (for purpose of bioremediation)	Bioslurping
Bioremediation (biological treatment, remedy type not further specified)	Bioventing
	Co-metabolic treatment

*Continued on next page*

**Bioremediation (continued)**

Microbial injection (addition of microorganisms)	Oxygen enhancement with air sparging (biosparging)
Nitrate enhancement	
Nutrient injection	Oxygen enhancement with hydrogen peroxide (H <sub>2</sub> O <sub>2</sub> )

**Other or Unspecified Treatment**

Fracturing (pneumatic fracturing, hydraulic fracturing)	Treatment of residuals
Phytoremediation	Unspecified physical/chemical treatment
	Unspecified treatment

**6. Groundwater Pump and Treat**

Extraction of groundwater from an aquifer followed by treatment above ground. Key words used in RODs to identify groundwater pump and treat remedies are listed below:

**Physical Treatment**

Aeration (air stripping)	Evaporation
Carbon adsorption (liquid phase carbon adsorption)	Filtration
Clarification (sedimentation)	Ion exchange
Coagulation	Membrane filtration (microfiltration, nanofiltration, reverse osmosis, ultrafiltration)
Component separation	Oil/water separation (free product recovery)
Equalization	

**Chemical Treatment**

Chemical oxidation (cyanide oxidation, oxidation, and peroxidation)	Flocculation
Chemical reduction	Metals precipitation
Chemical treatment (chemical reduction/oxidation and remedy type not further specified)	Neutralization (pH neutralization)
	Ultraviolet (UV) oxidation

**Biological Treatment**

Biological treatment (remedy type not further specified)	Fixed film reactors
Bioreactors	Oxygen enhancement with hydrogen peroxide (H <sub>2</sub> O <sub>2</sub> )

**Other or Unspecified Treatment**

Centralized waste treatment facility	Treatment of residuals
Fracturing (pneumatic fracturing, hydraulic fracturing)	Unspecified ex-situ physical/chemical treatment
Publicly owned treatment works (POTW)	Unspecified treatment
Pumping and unspecified ex-situ treatment	

**Groundwater Extraction**

The process of removing groundwater from beneath the ground surface, including the following methods of groundwater extraction:

*Continued on next page*

## Groundwater Extraction (continued)

Directional well (horizontal well)	Recovery trench (horizontal drain)
Pumping (recovery well, vertical well)	Subsurface drain

## Groundwater Discharge and Management

A method of discharging or otherwise managing extracted groundwater, including the following discharge methods and receptors:

Deep well injection (Class I well)	Surface drain reinjection (infiltration basin, infiltration trench)
Recycling	Surface water discharge (National Pollutant Discharge Elimination System [NPDES] discharge)
Reuse as drinking water	Vertical well reinjection (into contaminated aquifer)
Reuse as irrigation water	
Reuse as process water	

## 7. Groundwater Containment

Containment of groundwater, typically through the use of vertical engineered barriers. Key words used in RODs to identify groundwater containment remedies are listed below:

### Vertical Engineered Barrier

Deep soil mixing (barrier installation technique)	Impermeable barrier
Geosynthetic wall	Sheet piling
Grout (grout curtain)	Slurry wall
High-density polyethylene (HDPE) wall	Subsurface vertical engineered barrier (subsurface barrier, subsurface vertical barrier)

### Other or Unspecified Containment

Plume containment (hydraulic containment of plume, plume management, plume migration control)

## 8. Groundwater Other

Groundwater remedies that do not fall into the categories Groundwater In Situ Treatment, Groundwater Pump and Treat, Groundwater Containment, or Groundwater Monitored Natural Attenuation.

### Institutional Control

The classification of institutional controls has been revised based on *Institutional Controls: A Site Manager's Guide to Identifying, Evaluating, and Selecting Institutional Controls at Superfund and RCRA Corrective Action Cleanups*, OSWER 9355.0-74FS-P, EPA 540-F-00-005, September 2000. The remedy definitions outlined in this guidance differ from those historically used to classify institutional control remedies. This classification system groups institutional controls into 4 categories. Listed below are these four categories. Beneath each category, the terms historically applied to institutional controls that are most likely to fall under the categories are listed. The list below also adds a fifth category, "Institutional control (remedy type not further specified)" for cases where the particular institutional control selected is not recorded in a ROD.

#### 1. Governmental control

Access restriction	Recreational restriction
Drilling restriction	Surface water restriction
Fishing restriction	Swimming restriction
Groundwater restriction	Water supply use restriction
Guard (security)	

*Continued on next page*

**Institutional Control (continued)**

**2. Proprietary control**

- Deed notification
- Deed restriction
- Land use restriction

**3. Enforceable agreement**

- Access agreement

**4. Informational device**

**5. Institutional control (remedy type not further specified)**

**Engineering Control**

- Engineering control (berm, dike, drainage ditch, levee)
- Water table adjustment
- Wetland replacement

**Water Supply Remedies**

- Alternate water supply (alternate drinking water and bottled water)
- Carbon at tap
- Extend piping to existing water main
- Install new surface water intake
- Install new water supply wells
- Seal well (close well)
- Treat at use location
- Well-head treatment

**Groundwater Monitoring**

- Monitoring
- Sampling

**Population Relocation**

- Population relocation

**9. Groundwater MNA**

The reliance on natural attenuation processes (within the context of a carefully controlled and monitored approach to site cleanup) to achieve site-specific remediation objectives within a time frame that is reasonable, compared with that offered by other, more active methods. The “natural attenuation processes” that are at work in such a remediation approach include a variety of physical, chemical, or biological processes that, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in soil or groundwater. These in situ processes include biodegradation; dispersion; dilution; sorption; volatilization; radioactive decay; and chemical or biological stabilization, transformation, or destruction of contaminants (*Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites*, USEPA, Office of Solid Waste and Emergency Response, Directive Number 9200.4-17P, 1999).

A remedy should be considered groundwater MNA if it includes “natural attenuation” or “monitored natural attenuation” of groundwater.

**F.3.4 No Action Remedies**

**10. NA/NFA**

The designation used for remedies that indicate no action or no further action will be taken. When determining overall ROD type, the designation should be used only for RODs under which NA/NFA is the only remedy selected. If a ROD selects NA/NFA for only part of a site and another remedy for another part of a site, the ROD should be given the classification corresponding to that selected remedy and should not be given an NA/NFA designation.

**F.4 SPECIAL CASES**

This subsection provides a list of some special cases and descriptions of how remedy types should be assigned in those cases:

**Decontamination:**

- The remedy type for decontamination of buildings, equipment, tanks, debris, boulders,

rocks, or other objects should be considered source control treatment. For example, abrasive blasting or scarifying a concrete pad to remove the contaminated surface layer of the pad should be identified as source control treatment.

- Decontamination of equipment used to clean up a Superfund site is a normal activity that

occurs at many Superfund sites and should not be considered a remedy. For example, high-pressure water washing of a front end loader used to excavate contaminated soil should not be considered a remedy and should not be given a remedy type.

#### **Phytoremediation:**

- Phytoremediation involves the use of macroscopic plants to destroy, remove, immobilize, or otherwise treat contaminants. While this technology may include the use of microorganisms in conjunction with plants, it is distinguished from bioremediation in that bioremediation does not use macroscopic plants. Remedies that used microorganisms without macroscopic plants should be identified as bioremediation.
- The use of plants to control surface water drainage at a site is not phytoremediation. Such remedies should be identified as engineering controls (source control other or groundwater other).

**Remedies Based on Site Characteristics** - If a ROD indicates that a certain remedy be implemented based on certain site characteristics, the ROD should be considered to have selected the remedy. For example, a ROD may specify that if soils exceed a certain level of contamination they will be incinerated, but if they do not exceed that level, no further action will be taken. In such a case, the ROD should be considered to have selected incineration and therefore should be considered a source control treatment ROD.

**Vertical Engineered Barriers** - Some of the technologies used for vertical engineered barriers are also used to control surface water and surface drainage (for example, slurry walls and sheet piles). Where these remedies are used to contain groundwater, they should be identified as groundwater containment.

**Solidification/Stabilization** - Some of the technologies used for solidification/stabilization can be used for either treatment or containment. For example, “encapsulation” of a waste in plastic drums is source control containment. “Encapsulation” of a waste by mixing with a monomer and then causing it to polymerize, resulting in microencapsulation, is source control treatment. In general, containment involves isolating bulk wastes, while solidification/stabilization involves incorporating the contaminants into a matrix so that their leachability is reduced.

**Water Table Adjustment** - Where water table adjustment is used to prevent the groundwater from coming into contact with a contaminated source medium, it should be identified as source control other, engineering control. Where water table adjustment is used to treat groundwater, it should be classified as groundwater other, engineering control.

**Subsurface Drain** - When a subsurface drain is used in order to prevent contact of precipitation runoff with a source or to prevent erosion, it should be considered source control containment, drainage and erosion control. When a subsurface drain is used to extract groundwater prior to treatment of the groundwater, it should be classified as groundwater pump and treat, groundwater extraction.

**Treatment of Residuals** - Residuals are the matter that results from a treatment process. For example, the residuals from incineration of soil can include ash, off-gasses, and scrubber blowdown from off-gas treatment. In the preceding example, treatment of off-gasses using a scrubber should be classified as treatment of residuals. Where treatment of residuals is specified in a ROD, the existence of residuals treatment should be identified, but additional information on the treatment of residuals should not be collected.

**Air Media** - Air media include sources that are in a gaseous form, such as landfill gas or hazardous gasses stored in compressed gas cylinders. When remedies for air media are selected in a ROD they should be identified as source control remedies. For example, collection and treatment of landfill gas should be classified as source control treatment. Air emissions from equipment used to treat sources or groundwater are not air media. For example, a ROD may specify that groundwater will be extracted and treated by air stripping, and the off-gas generated by the air stripping must be treated by activated carbon adsorption. In such a case, the ROD would be classified as groundwater pump-and-treat (both physical treatment, aeration [air stripping]; and other or unspecified treatment, treatment of residuals), but would not be classified as a source control treatment ROD.

# APPENDIX G

## REASONS FOR SHUT DOWN OF 63 GROUNDWATER PUMP AND TREAT SYSTEMS



# Superfund Remedial Actions:

## Reasons for Shut Down of 63 Groundwater Pump and Treat Systems

EPA Region	Site Name, State	Reasons for Shut Down
1	Hocomonco Pond, MA	Treatment system shut-off due to technical problems
1	McKin Co., ME	Replaced with MNA
1	Norwood PCBs, MA	Replaced with cap
1	Pinnettes Salvage Yard, ME	Replaced with institutional controls
1	Sylvester, NH	Met project cleanup goals
2	Fulton Terminals, NY	Met project cleanup goals
2	Mannheim Avenue Dump, NJ	Met project cleanup goals
2	Pollution Abatement Services, NY	Met project cleanup goals
2	Tabernacle Drum Dump, NJ	Met project cleanup goals
2	Universal Oil Products, NJ	Replaced with cap
2	Vestal Water Supply Well 4-2, NY	Met project cleanup goals
3	Chem-Solv, Inc., DE	Met project cleanup goals
3	McAdoo Associates, PA	Met project cleanup goals
3	Rentokil Virginia Wood Preserving, VA	To be determined
3	Rhinehart Tire Fire Dump, VA	To be determined
3	Southern Maryland Wood Treating, MD	Met project cleanup goals
3	U.S. Titanium, VA	To be determined
4	62nd Street Dump, FL	Replaced with cap
4	Bypass 601 Groundwater Contamination, NC	To be determined
4	Gold Coast Oil Corp., FL	Met project cleanup goals
4	Hollingsworth Solderless Terminal, FL	Met project cleanup goals
4	Schuykill Metals Corp., FL	Replaced with source treatment and engineering controls
4	Tri-City Disposal Co., KY	To be determined
5	Avenue "E" Groundwater Contamination, MI	Met project cleanup goals
5	Belvidere Municipal Landfill, IL	Met project cleanup goals
5	Burrows Sanitation, MI	Met project cleanup goals
5	Charlevoix Municipal Well, MI	To be determined
5	Cross Brothers Pail Recycling (Pembroke), IL	Met project cleanup goals
5	Duell & Gardner Landfill, MI	Met project cleanup goals
5	East Bethel Township, MN	Met project cleanup goals
5	Enviro. Conservation and Chemical, IN	Treatment system shut-off due to technical problems
5	Kummer Sanitary Landfill, MN	Replaced with MNA
5	Lakeland Disposal Service, Inc., IN	To be determined

EPA Region	Site Name, State	Reasons for Shut Down
5	Lauer 1 Sanitary Landfill, (Boundary Road), WI	To be determined
5	Lehillier Mankato Site, MN	Met project cleanup goals
5	New Lyme Landfill, OH	Treatment system shut-off due to technical problems
5	Onalaska Municipal Landfill, WI	Replaced with MNA
5	Schmalz Dump, WI	To be determined
5	Skinner Landfill, OH	To be determined
5	Spiegelberg Landfill, MI	To be determined
5	Tri-State Plating, IN	Met project cleanup goals
5	University Minnesota (Rosemount Res Cen), MN	Met project cleanup goals
5	Washington County Landfill, MN	Met project cleanup goals
5	Whittaker Corp., MN	Met project cleanup goals
5	Windom Dump, MN	Met project cleanup goals
6	Bailey Waste Disposal, TX	Replaced with cap
6	Cimmaron Mining Corp., NM	Treatment system shut-off due to technical problems
6	French, Ltd., TX	Replaced with MNA
6	Odessa Chromium #2 (Andrews Highway), TX	To be determined
6	Odessa Chromium I Superfund Site, TX	To be determined
6	Odessa Chromium II Superfund Site, TX	To be determined
6	Odessa Chromium No 2 Pump and Treat 2nd Unit, TX	To be determined
6	Southern Shipbuilding, LA	Met project cleanup goals
7	Fairfield Coal Gasification Plant, IA	Met project cleanup goals
7	Valley Park TCE Site Wainwright, MO	Treatment system shut-off due to technical problems
7	Waverly Groundwater Contamination, NE	To be determined
7	White Farm Equipment Co. Dump, IA	Replaced with cap
8	Chemical Sales Co., CO	To be determined
8	Mystery Bridge Rd/U.S. Highway 20, WY	Met project cleanup goals
9	Coast Wood Preserving, CA	To be determined
9	Del Norte Pesticide Storage, CA	Treatment system shut-off due to technical problems
9	Norton Air Force Base, CA	Met project cleanup goals
10	Naval Air Station, Whidbey Island (AULT), WA	To be determined

MNA = Monitored natural attenuation