

IRP Update

JUNE 2009

The Installation Restoration Program

Columbus Air Force Base (AFB) is committed to being a responsible steward of the environment and to conducting the base's military mission in a manner that safeguards human health and the environment. A key component of this commitment is the Installation Restoration Program (IRP).

The IRP is a Congressionally authorized Department of Defense (DoD) program that began in 1984 and addresses past disposal sites on military installations in the United States.

Through the IRP, both former and current DoD waste releases are identified, investigated, and cleaned up. Areas of potential releases are also evaluated. One IRP goal is to provide concerned citizens with timely and accurate information about cleanup activities through a community relations program.

The federal laws that form the basis of the IRP are the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986. The Mississippi Department of Environmental Quality is the state agency providing regulatory oversight of the IRP program at Columbus AFB.

The IRP at Columbus AFB

The IRP at Columbus AFB began in 1984 when a preliminary assessment/site investigation (PA/SI) was performed at the base. The PA/SI identified 33 potentially contaminated sites within the Columbus AFB fenceline. All 33 sites managed in the Columbus AFB IRP are similar to sites being cleaned up at other airfields, both military and civilian, around the country. Currently, all but five sites have reached final remedy. Details on the five active sites are provided below.

Old Landfill 6

Site LF-06, a former sanitary waste and construction debris landfill, covers approximately 28 acres and is located in the southeastern portion of Columbus AFB, directly south of the main runway and near the main gate. The landfill was operated from 1964 through 1974 as a disposal area for sanitary trash, ferrous metal debris, concrete debris, and small volumes of industrial waste including solvent and petroleum, oils, and lubricant waste.

The majority of the landfill area is covered with trees and dense vegetation, and the western portion is covered with grasses. Areas within the landfill contain partially buried debris, primarily construction waste. The landfill includes trenches 8-10 feet deep that were used for trash disposal. The LF-

History & Mission of Columbus AFB

Columbus AFB began as a training facility for fighters and bombers in January 1942. The base was deactivated following victory in WWII. When war threatened the Korean peninsula, Columbus AFB was reactivated and again provided pilot training. The mission changed during the 1950s, and Columbus AFB became part of the Strategic Air Command and was home to B-52 bombers and KC-135 tankers flying in Vietnam.

Today, Columbus AFB is part of the Air Education Training Command and provides Specialized Undergraduate Pilot Training (SUPT), where students learn to fly. SUPT students spend an intensive 52-weeks immersed in classroom, simulator, and flight training.

06 area is not currently used by the base, but the grassy area is regularly maintained.

There is concern that the landfill waste could affect one of the primary aquifers beneath the site. One aquifer, referred to as the "surficial" aquifer, is located at an average depth of 10 feet below ground surface across the site. A perched groundwater table (an aquifer that occurs above the regional water table) was detected in 1997 and possibly resulted in groundwater contamination. Groundwater flows to the west-southwest, but may flow towards the south.

Groundwater quality for LF-06 was
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Old Landfill 6

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historically monitored under the Long-Term Monitoring (LTM) Program. Groundwater sampling results collected during the last five years of the LTM Program have indicated decreasing concentration of chemicals of concern in the groundwater.

In January 2008, MDEQ approved monitored natural attenuation (MNA), long-term groundwater monitoring, and land use controls (LUC) for LF-06, and a record of decision (ROD) for the site was signed 18 February 2008. MNA reduces the toxicity, mobility, and volume of the chemical concentrations by using natural processes to reduce the contamination. Long-term groundwater monitoring confirms that the residual chemical plume is stable and no longer a threat to surrounding areas. LUCs were enacted to limit land use, prohibit on-site construction, and prohibit groundwater use.

The USAF does not intend to build on LF-06, and the current land and groundwater restrictions are expected to continue until residual concentrations no longer pose a threat to human health or the environment.

Spill Site 26

Spill Site 26 (SS-26) surrounds the bulk storage jet fuel tank farm located along a drainage ditch on the south side of the AFB that discharges into Stinson Creek. Stinson Creek eventually flows into the Tombigbee River. The site is comprised of four tanks ranging in size from 210,000 to 630,000 gallons and has been used to store jet fuel, diesel, and lubricant oils since the early 1980s.



Operated from 1964 through 1974 as a sanitary waste and construction debris landfill, Old Landfill 6 covers approximately 28 acres in the southeastern portion of Columbus AFB. The Record of Decision for Old Landfill 6 was signed in 2008.

There are no records of a major spill in the tank farm. However, through the 1988 site investigations, it has been determined that minor leaks from process equipment and unreported minor spills over the years have led to the contamination of the soil and groundwater in the tank farm.

Skimmer pumps removed contamination from the groundwater from 1988 to 1993, and groundwater remediation system startup began in 1995. This system consisted of a network of fuel, groundwater, and soil vapor extraction (SVE) wells and air injection wells. The groundwater extraction wells removed and routed contaminated groundwater to a groundwater treatment processing system. The air injection wells were installed in 2006. An air stripper was installed in 1998 to aid in contaminant removal from treated groundwater.

A new fuel release occurred from approximately 1999 to 2001. After the fuel leak was repaired and contaminated soil removed from the site, eight SVE wells were installed along with three biosparge wells. The SVE wells aided

groundwater treatment by extracting the contaminated groundwater in a vapor form, and the biosparge wells were designed to increase oxygen in the groundwater to support remediation.

In 2006, air injection wells were installed to help aid in groundwater treatment by pumping air into the contaminated groundwater and extracting the contamination as a vapor. From January through June of 2008, approximately 383,767 gallons of contaminated water were treated at SS-26, and approximately 21,165,426 gallons of contaminated water have been extracted since system startup in 1995. Currently undergoing semi-annual monitoring, Site SS-26 is rapidly approaching closure, which is expected within the next two years.

Trichloroethene Plume (SS-28)

Site SS-28 is an area of concern on the southern side of the AFB resulting from the long-term use of parts-cleaning solvents at the aircraft maintenance facilities along the flightline from 1958 to 1970. A remedial investigation in 1987 identified the area of concern, and the source was identified in 1991. The

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Trichloroethene Plume (continued)

remedial investigation conducted for the site in 1994 detected tetrachloroethylene (PCE), trichloroethene (TCE), 1,2-dichloroethylene, and vinyl chloride above drinking water standards in the shallow aquifer.

An evaluation conducted in 1999 determined that PCE and TCE would be chemicals of concern if the shallow groundwater was used for domestic

purposes. The 2001 feasibility study of alternatives for SS-28 recommended LUCs with groundwater monitoring as the final site remedy. Land Use Controls will limit land use and prohibit groundwater use, and groundwater monitoring will confirm that the residual chemical concentrations do not spread.

This site is currently undergoing compliance monitoring while Columbus AFB and MDEQ negotiate a Record of Decision. The record of decision for

SS-28 is expected to be signed in 2009.

Former Weapons Maintenance Area (SS-32)

SS-32, a former weapons maintenance area located in the northwestern quadrant of the site, was identified by Columbus AFB as an area of environmental concern due to contamination by chlorinated solvents, including volatile organic compounds (VOC), TCE, and vinyl chloride. This is the largest
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Former Weapons Maintenance Area (continued)

active IRP area on site and covers an area of 360 acres, included a partially wooded industrial area. Nearby buildings were previously used for weapons maintenance in the 1950s and 1960s, possibly resulting in groundwater contamination.

Investigations between 1989 and 2005 determined the extent of contamination in the groundwater in the shallow, or surficial, aquifer. During 2001 investigations, chlorinated solvent contamination was detected in the groundwater at concentrations above MDEQ regulatory limits, potentially posing a risk to human health and the environment. Contamination was not identified in surface water, soil, or the deep aquifer (25-35 feet below the surficial aquifer).

The selected site remedy included injection of emulsified vegetable oil and bioaugmentation culture in the area of concern to promote complete break-

down of contaminants to harmless by-products. Monitored natural attenuation of the groundwater will verify that contaminants do not migrate offsite.

Evaluation of the data has demonstrated that natural attenuation and contaminant breakdown is occurring on site. Land at SS-32 will continue to be used for industrial operational activities, and Land Use Controls will prevent access to the groundwater until contamination is remediated. A record of decision for SS-32 was signed 22 January 2008.

Munitions Demolition Area (OD-33)

Munitions Demolition Area OD-33 consists of a former demolitions pit, a former small arms burn furnace, and the surrounding area used for the disposal of aircraft engine starter cartridges, flares, and various types of munitions materials. This area was used during, and possibly after, the Strategic Air Command presence from 1955 to 1969. After munitions demolition operations, inert munitions were

apparently buried or spread in the vicinity of the demolition pit and burn furnace. The area was later used as a sand and gravel pit.

The location of OD-33 was identified in 1998, and a preliminary investigation was conducted to locate and remove any unexploded material. Surveys using magnetic location devices were conducted from 2000 to 2001 to locate spent munitions, and the AFB recycled approximately 5,800 pounds of scrap metal identified and removed in the cleanup. Samples taken from OD-33 demonstrate that contamination has not spread to the soil or the groundwater.

Several investigations have been performed on OD-33, including the most recent removal action in 2008. Munitions or explosives were not encountered during this investigation, and all scrap metal encountered was recycled. Although all identified spent munitions debris has been removed, land use will be restricted due to possible debris in the subsurface.



Instrument-assisted surveys help to identify the locations of spent munitions requiring removal from the Munitions Demolition Area (OD-33).

Based on results from the recent removal action and previous investigations, Land Use Controls are necessary to ensure that potential hazards associated with the site do not affect human health and the environment. The site will be restricted as a designated wildlife management area with limited outdoor recreation, and future land use will continue to limit public access. Hiking and hunting will be limited, while camping and construction will be prohibited in the area. Interim remedial action is complete and a record of decision is scheduled to be signed in 2009.

Table 1: Status of All IRP Site at Columbus AFB, Mississippi

Site #	Site Name	Material Spilled/Disposed	Dates of Operation	Status (Nov 2008)
FT-01	Fire Training Area #1	<ul style="list-style-type: none"> • Jet fuel 	1971-1995	NFA
FT-02	Fire Training -Area #2	<ul style="list-style-type: none"> • Jet fuel • Waste oil 	Late 1950s – 1971	NFA
FT-03	Fire Training Area #3	<ul style="list-style-type: none"> • Jet fuel • Waste oil 	Early to mid 1950s	NFA
FT-04	Fire Training Area #4	<ul style="list-style-type: none"> • Waste oil 	Early to mid 1950s	NFA
LF-05	Old Landfill #5	<ul style="list-style-type: none"> • Sanitary trash, • Waste oil • Construction debris • Industrial wastes 	1964 – 1967	Long-term monitoring
LF-06	Old Landfill #6	<ul style="list-style-type: none"> • Sanitary trash • Metal debris • Concrete • Industrial wastes 	1964-1967	<ul style="list-style-type: none"> • Long-term monitoring • ROD signed 18 Feb 08
LF-07	Old Landfill #7	<ul style="list-style-type: none"> • Sanitary trash • Construction debris 	1974-1976	Long-term monitoring
LF-08	Filter Burial Site	<ul style="list-style-type: none"> • B-52 air filters, possibly with low-level radioactivity • Radio/electronic tubes 	Late 1950s	NFA
LF-09	Old Landfill #1	<ul style="list-style-type: none"> • Solid debris • Concrete • Metal • Large Trees • Sanitary fill • Incinerator ash • Industrial wastes 	Mid 1940s – early 1950s	Long-term monitoring
LF-10	Old Landfill #2	<ul style="list-style-type: none"> • Sanitary waste • Solid debris • Metal • Industrial wastes 	1956 – 1960	Long-term monitoring
LF-11	Old Landfill #3	<ul style="list-style-type: none"> • Construction debris 	1960 – 1961	NFA
LF-12	Old Landfill #4	<ul style="list-style-type: none"> • Sanitary waste • Airplane parts • Waste oil • Industrial wastes 	1962 – 1964	Long-term monitoring
ST-13	322 UST Area (10 USTs)	<ul style="list-style-type: none"> • Jet fuel • Diesel • Gasoline 	Early 1940s – 1992	NFA
ST-14	732 and 734 UST Area	<ul style="list-style-type: none"> • Heating fuel 	1945 – 1988	NFA
ST-15	371 and 372 UST Area	<ul style="list-style-type: none"> • Heating fuel 	1945 – 1988	NFA
ST-16	854, 871, and 874 UST Area	<ul style="list-style-type: none"> • Heating fuel 	1945 – 1988	NFA
ST-17	900 and 1004 UST Area (6 USTs)	<ul style="list-style-type: none"> • Diesel • Gasoline • Heating fuel 	1945 – 1988	NFA
ST-18	935 UST Area	<ul style="list-style-type: none"> • Heating fuel 	1945 – 1988	NFA
ST-19	1022 and 1050 UST Area	<ul style="list-style-type: none"> • Fuel 	1945 – 1988	NFA
ST-20	1100 UST Area	<ul style="list-style-type: none"> • Gasoline 	Unknown – 1988	NFA

Table 1 (continued): Status of All IRP Site at Columbus AFB, Mississippi

Site #	Site Name	Material Spilled/Disposed	Dates of Operation	Status (Nov 2008)
ST-21	1806, 1808, 1810, and 1816 UST Area	<ul style="list-style-type: none"> • Heating fuel • Waste diesel 	1960 – 1988	NFA
ST-22	1944 UST Area	<ul style="list-style-type: none"> • Fuel oil 	1962 – 1988	NFA
ST-23	Fire Training Area #2 UST	<ul style="list-style-type: none"> • Waste fuels 	Late 1950s – 1971	NFA
ST-24	AAFES Service Station	<ul style="list-style-type: none"> • Unleaded Gasoline 	1958-1988	NFA
SS-25	Entomology Shop Drainage	<ul style="list-style-type: none"> • Herbicides • Pesticides 	1959 – 1991	NFA
SS-26	Fuel Tank Farm	<ul style="list-style-type: none"> • Jet fuel • Diesel • Lubricating oil 	1960s – present	Interim remedial action for fuel recovery
DP-27	Demolition Pit #1	<ul style="list-style-type: none"> • Small arms ammunitions 	Unknown – 1967	NFA
SS-28	Trichloroethene Plume	<ul style="list-style-type: none"> • Parts cleaning solvents 	1958 – 1970	<ul style="list-style-type: none"> • Near completion of site remedy • RI complete Oct 2008 • ROD expected 2009
SS-29	Flightline Hydrant System and Pump Houses 1 and 2	<ul style="list-style-type: none"> • Fuels 	1940s – present	NFA
SS-30	Hydraulic Equipment Storage Area	<ul style="list-style-type: none"> • Hydraulic fluid 	1960s – 1992	NFA
SS-31	Outdoor Firing Range	<ul style="list-style-type: none"> • Small arms ammunition 	Unknown	NFA
SS-32	Former Weapon Maintenance Area	<ul style="list-style-type: none"> • Parts cleaning solvents 	1959 – 1969	ROD signed 22 Jan 08
OD-33	Munitions Demolition Area	<ul style="list-style-type: none"> • Munitions fragments • small arms ammunition • engine starter cartridges • flares • 0.050 caliber rounds 	1950s – 1960s	<ul style="list-style-type: none"> • Interim remedial action complete • ROD to be signed 2009

Notes: NFA - no further action ROD - record of decision
 RI - remedial investigation UST - underground storage tank



Emulsified vegetable oil and bioaugmentation culture are injected into the substrate to treat the TCE plume at the Former Weapons Maintenance Area (SS-32).

Community Involvement at Columbus AFB

The Community Relations Plan

Columbus AFB welcomes and encourages community participation throughout the IRP process. To ensure that the needs of the community are recognized and addressed, Columbus AFB maintains a Community Relations Plan (CRP). The CRP for Columbus AFB was updated in March 2009.

An integral part of the environmental cleanup process, the Columbus AFB CRP is designed to foster an open channel of communication between the Air Force and the community. Assisting area residents, interested groups, and local organizations in providing input into the cleanup process, the CRP for Columbus AFB is structured to

allow modifications to be made in response to the changing needs of the community. As such, it is a living document.

Administrative Record

Columbus AFB maintains an Administrative Record, a legal record of significant correspondence and reports regarding environmental restoration activities. Consisting of non-circulating documents, the Administrative Record for Columbus AFB is maintained within the Natural Resources flight.

Information Repository

An Information Repository is a set of documents that contain important facts relating to the environmental cleanup

of sites such as those at Columbus AFB. The Information Repository contains the same documents found in the Administrative Record. The Information Repository is not a legal record but is intended only to provide the public with an additional source of information about environmental activities at the Base. The Columbus AFB Information Repository is located at:

Columbus-Lowndes Public Library
314 North Seventh Street
Columbus, MS 39701
662-329-5300

Steps in the Installation Restoration Process

Step	Description
Preliminary Assessment/ Site Investigation (PA/SI)	The Installation Restoration Program (IRP) begins with investigations that determine if the site poses enough potential risk to warrant further study and investigation.
Remedial Investigation/ Feasibility Study (RI/FS)	If results of the PA/SI warrant further investigation, a more in-depth investigation, called a remedial investigation , is conducted to assess the extent and nature of the contamination and the potential risks involved. In conjunction with the RI, a feasibility study report is prepared to examine and evaluate various remedial alternatives.
Proposed Plan	The proposed plan summarizes the preferred cleanup/remedial strategy and reviews the other considered alternatives. This is a very important step because the proposed plan is presented to the public for review and comment. Public comment can be made on all remedies considered by the Air Force and associated regulatory agencies during a 30-day comment period. During this comment period, the Air Force will be available to the public to answer questions concerning the proposed plan and will hold a public hearing to solicit verbal and written comments.
Record of Decision (ROD)	The ROD is a formal document that explains the final remediation alternatives to be implemented for a particular site. The ROD takes into consideration public comments on the proposed plan and community concerns.
Remedial Design	The remedial design includes the engineering plans and specifications for implementing the remedial action.
Remedial Action	The remedial action is the control measure or combination of control measures that are implemented as a remedy to prevent or mitigate chronic site contamination problems.



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For More Information

To learn more about the Installation Restoration Program at Columbus AFB, contact:

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If you would like to read past reports on the technical aspects of the IRP at Columbus AFB, please stop by the Information Repository at the Columbus-Lowndes Public Library.

Columbus-Lowndes Public Library
314 North Seventh Street
Columbus, MS 39701

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