

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

Revised 9/20/02

**RCRA Corrective Action
Environmental Indicator (EI) RCRA Info code (CA725)
Current Human Exposures Under Control**

Facility Name: McConnell Air Force Base
Facility Address: 2801 South Rock Road, Wichita, KS 67221
Facility EPA ID #: KS1571924140

DETERMINATION RESULT: YE

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

If yes - check here and continue with #2 below;

If no - re-evaluate existing data; or

If data are not available, skip to #6 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Current Human Exposures Under Control" EI

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of

1993, GPRA). The “Current Human Exposures Under Control” EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program’s overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration / Applicability of EI Determinations

EI determination status codes should remain in RCRAinfo national database ONLY as long as they remain true (i.e., RCRAinfo status codes must be changed when the regulatory authorities become aware of contrary information).

FACILITY BACKGROUND

McConnell Air Force Base (MAFB) is a US Air Force installation located in Wichita, Kansas consisting of 3,101 acres of land. In 1929 the Wichita Municipal Airport, predecessor to MAFB, was constructed and was used for general aviation until 1941. At that time, the Kansas Air National Guard was assigned to the airport for training purposes associated with World War II. The facility was converted to permanent military use in 1953 as the Wichita Air Force Base, and used for training of B-47 bomber crews. Wichita AFB was renamed McConnell AFB in 1955 after a World War II officer from the Wichita area.

McConnell AFB has been in continuous operation since 1955 and fulfilled a number of different roles under various Air Force “Host Commands”. The most significant of these roles were as follows:

- Host installation for the 381st Strategic Missile Wing, which operated 18 Titan-II missile silos surrounding the Wichita area from 1963 to 1985 under the Strategic Air Command and Tactical Air Command;
- Host installation for the 384th Bombardment Wing, which operated B-1B “Lancer” strategic bombers from 1987 to 1994 under the Strategic Air Command and Air Combat Command; and
- Host installation for the 22nd Air Refueling Wing, which has operated KC-135R aerial tanker aircraft since 1994 under the Air Mobility Command.

McConnell AFB also currently supports the Kansas Air National Guard’s 184th Bomb Group which operates the B-1B strategic bomber.

Operations and maintenance at McConnell AFB have used and released various contaminants such as hydrocarbon fuels, oils, and lubricants; polychlorinated biphenyls; metals; polycyclic aromatic hydrocarbons; and chlorinated solvents. EPA and the Kansas Department of Health and Environment (KDHE) issued a RCRA permit to McConnell AFB in November 1993 requiring the facility to begin assessing the various contaminated areas. A facility-wide SWMU Assessment Report was completed in 1999 and identified 107 SWMUs. Sixteen other sites were identified under the Environmental Restoration Program (ERP); these sites are also SWMUs, but are tracked and funded separately by the Air Force due to their internal environmental regulations.

The SWMUs and ERP sites at the facility have been investigated singly and in groups in various efforts since 1999 as detailed in the responses to the questions below. Five SWMUs were transferred to the ERP by the Air Force in 2006 and are now tracked and funded as ERP sites. Both the SWMUs and ERP sites are being investigated using the same standards and procedures under RCRA.

McConnell’s Part II (HSWA) permit was renewed in 2007, while KDHE allowed the Part I permit to expire in August 2001 after the facility clean-closed its operating units.

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2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be **“contaminated”**¹ above appropriately protective risk-based “levels” (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria [e.g., Maximum Contaminant Levels (MCLs), the maximum permissible level of a contaminant in water delivered to any user of a public water system under the Safe Drinking Water Act] from releases subject to RCRA Corrective Action (from SWMUs, RUs, or AOCs)?

Media	Yes	No	?	Rationale/Key Contaminants
Groundwater	X			Trichloroethylene (TCE) and daughter products, BTEX, lead
Air (indoors) ²	X			TCE and daughter products
Surface Soil (e.g., <2 ft)	X			Polycyclic Aromatic Hydrocarbons (PAHs), metals
Surface Water	X			TCE, metals
Sediment	X			PAHs, metals
Subsurf. Soil (e.g., >2 ft)	X			Polychlorinated Biphenyls (PCBs), metals, PAHs, BTEX, TCE
Air (outdoors)		X		

_____ If no (for all media) - skip to #6, and enter “YE,” status code after providing or citing appropriate “levels,” and referencing sufficient supporting documentation demonstrating that these “levels” are not exceeded.

 X If yes (for any media) - continue after identifying key contaminants in each “contaminated” medium, citing appropriate “levels” (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

_____ If unknown (for any media) - skip to #6 and enter “IN” status code.

Rationale and References:

McConnell Air Force Base contains 102 SWMUs and 21 Environmental Restoration Program (ERP) sites. The SWMUs and ERP sites where the contaminated media identified above are found are as follows:

¹ “Contamination” and “contaminated” describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based “levels” (for the media, that identify risks within the acceptable risk range).

²Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

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Groundwater

Groundwater at the facility occurs in two distinct aquifers: a shallow unconsolidated aquifer 15 to 25 feet deep consisting of silts and clays, and a deeper shale bedrock aquifer. Only the shallow aquifer has been found to be contaminated. Neither aquifer is used for any purposes at the facility. Groundwater contamination at the facility is contained within the facility's boundaries with one exception at ERP site FT-06, where contamination has moved approximately 150 feet beyond the property line. The FT-06 plume has been delineated and is not threatening any offsite wells.

SWMUs and ERP sites with groundwater contamination at levels currently exceeding their maximum contaminant levels (MCLs) include:

SS-01, Spill site at MSS1 Tank Farm: TCE, tetrachloroethylene, benzene, vinyl chloride.
SS-03, Spill site at MSS3 Flight Line: TCE, vinyl chloride, cis-1,2-dichloroethylene.
FT-06, Fire Training Pit MFT2: TCE and cis-1,2-DCE.
LF-11, Landfill MLF2 at Weapons Range: TCE, cis-1,2-DCE, toluene, vinyl chloride.
LF-33, Hardfill area 3: Tetrachloroethylene.
LF-34, Municipal Waste Site at Building 1250: TCE, vinyl chloride, benzene, total petroleum hydrocarbons.
FT-07, Fire Training Pit MFT3: TCE, cis-1,2-DCE.
ST-17, UST Leak at Building 430: Methyl tert-butyl ether.
SWMU 207, Solvent Plume near Air Traffic Control Tower: TCE, 1,1-DCE, carbon tetrachloride.
SS-14, Auto Hobby Spill Site MSS5: TCE, cis-1,2-DCE, vinyl chloride.
FT-08, Fire Training Areas 1 and 5: Lead.
SS-23, Building 708 UST Leak Site: Methyl tert-butyl ether.
SS-24, Building 9 UST Leak Site: Benzene.

Contaminant concentrations in groundwater have been measured up to:

15,800 ug/L for TCE at LF-11 (MCL = 5 ug/L)
786 ug/L for benzene at SS-01 (MCL = 5 ug/L)
100 ug/L for vinyl chloride at LF-11 (MCL = 2 ug/L)
2,310 ug/L for cis-1,2-DCE at FT-06 (MCL = 70 ug/L)
1,860 ug/L for toluene at FT-06 (MCL = 1,000 ug/L)
26 ug/L for tetrachloroethylene at FT-06 (MCL = 5 ug/L)
756 ug/L for methyl tert-butyl ether at SS-01 (health advisory at 20 ug/L)
28 ug/L for carbon tetrachloride at SWMU 207 (MCL = 5 ug/L)
lead up to 41 ug/L at FT-08 (MCL = 15 ug/L)
159 ug/L for 1,1-DCE at SWMU 207 (MCL = 7 ug/L)

[References for these site investigations are provided in the detailed discussions in Question 4.]

Indoor Air

The risk of contamination to indoor air at the facility is due to the presence of volatile organic compounds in groundwater beneath buildings at several sites. Potential impacts to indoor air were identified for sites ERP sites SS-03, SS-14 and SWMU 207 based on the presence of buildings over the contaminant plumes at these sites. Indoor air samples have not yet been collected at these sites, but impacts to indoor air have been modeled using EPA's GW-SCREEN v3.1 spreadsheet as discussed in Question 4 below. No buildings are sited over the contaminant plumes identified at the other SWMUs and ERP sites discussed above.

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Surface and Subsurface Soil

SWMUs and ERP sites with current soil contamination at levels exceeding the non-residential Risk-based Standards for Kansas (RSKs) for industrial soil and/or soil-to-groundwater migration include:

- SS-01, Spill site at MSS1 Tank Farm: BTEX, TCE, cis-1,2-DCE, vinyl chloride, trimethylbenzene, arsenic.
- SS-03, Spill site at MSS3 Flight Line: TCE, vinyl chloride, arsenic.
- FT-06, Fire Training Pit MFT2: Tetrachloroethylene, TCE, cis-1,2-DCE, arsenic.
- LF-11, Landfill MLF2 at Weapons Range: TCE, vinyl chloride, arsenic, lead.
- LF-34, Municipal Waste Site at Building 1250: Benzene, trimethylbenzene, total petroleum hydrocarbons.
- SWMU 105, Hardfill No. 2: Benzo(a)pyrene.

Background arsenic concentrations in soil at McConnell AFB are elevated, and arsenic is not suspected to be a site-related contaminant at these sites.

Contaminant concentrations in soil have been measured up to:

- 77,600 ug/kg TCE at FT-06
- 2,350 ug/kg cis-1,2-DCE at FT-06
- 127 ug/kg vinyl chloride at SS-01
- 12,000 ug/kg benzene at SS-01
- 1,530,000 ug/kg total BTEX at SS-01
- 68,570 ug/kg trimethylbenzene (combined 1,2,4 and 1,3,5 isomers) at SS-01
- 2,610 mg/kg total petroleum hydrocarbons (gasoline range) at LF-34
- 226 ug/kg tetrachloroethylene at FT-06
- 1,080 mg/kg lead at LF-11
- 3,629 ug/kg benzo(a)pyrene at SWMU 105

[References for these site investigations are provided in the detailed discussions in Question 4.]

Surface Water and Sediment

Surface water and sediment from McConnell Creek were sampled and analyzed as part of the investigations of SWMU 108 (Old Base Lake Hardfill) and LF-10 (Landfill 1 at Golf Course). McConnell Creek is a perennial stream which drains most of the facility, flowing off the southern boundary and joining the Arkansas River approximately 3 miles to the southwest. This stream has the potential to receive contaminated runoff from nearly every SWMU and ERP site on the facility, and SWMU 108 and LF-10 are directly adjacent to its banks. PAHs were found in sediment above KDHE RSK values in the stream segments near these sites. Very low levels of metals and TCE were found in surface water and sediment near these sites; these concentrations did not exceed MCLs or RSKs but may exceed certain ecologically-based surface water quality standards. McConnell Creek may receive some base flow from the shallow unconsolidated aquifer beneath the facility; however, any such base flow does not appear to be contributing significant contamination to the stream.

[References for these site investigations are provided in the detailed discussions in Question 4.]

Other Sites

Many of the individual SWMUs are not known or suspected to have contamination in any media above appropriate protective risk-based levels, based on past investigations. These sites are as follows:

Site Name	Rationale	Reference
SWMU 101, Building 1 PCB Spill	Spilled material was cleaned up immediately	1

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SWMU 113, Pathological Incinerator, Bldg 212	Hospital containing this SWMU destroyed by tornado	1
SWMU 114, Document Incinerator, Bldg 739	Incinerator shut down and removed	1
SWMU 115, Energy Recovery Boiler, Bldg 1106	Boiler shut down and removed	1
SWMU 126, Oil Water Separator 7	Separator closed and removed	2
SWMU 152, Debris Pile 1, S of Runway	Debris pile removed and properly disposed of	1
SWMU 153, Debris Pile 2, SSW of Runway	Debris pile removed and properly disposed of	1
SWMU 154, Debris Pile 3, SW of Runway	Debris pile removed and properly disposed of	1
SWMU 155, Pesticide Storage Area, Bldg 1304	Temporary collection point; building subsequently removed	1
SWMU 159, Machine Gun Calibration Bldg 1317	Indoor firing berm sand removed and disposed of	1
SWMU 172, 90-day Container Storage Bldg 9	Clean closed in compliance with RCRA Part 1 Permit	2
SWMU 173, Hazwaste Storage Area, Bldg 36	Storage area closed; no releases found	1
SWMU 175, Hydrazine Neutralization, Bldg 5	Neutralization process ceased, no releases found	1
SWMU 178, Construction Debris Disposal Site	Inert wastes have been capped	1
SWMU 186, Oil-Water Separator K8, Bldg 50	Separator closed and removed	2
SWMU 188, Oil-Water Separator K10, Bldg 54	Separator closed and removed	2
SWMU 189, Oil-Water Separator K11, Bldg 14	Separator closed and removed	2
SWMU 191, Oil-Water Separator K13, Bldg 3	Separator closed and removed	2
SWMU 192, Oil-Water Separator K14, Bldg 7	Separator closed and removed	2
SWMU 194, 90-day Container Storage Bldg 1103	Clean closed in compliance with RCRA Part 1 Permit	2
SWMU 199, Silver Recovery Unit, Bldg 948	Recovery unit closed and removed	2
SWMU 201, Drain System, Bldg 1311	Building demolished and drains removed	2
SWMU 202, Oil-Water Separator, Bldg 692	Separator closed and removed	1
SWMU 204, Oil-Water Separator 3, Bldg 692	Separator closed and removed	1
SWMU 205, Oil-Water Separator, Bldg 1128	Separator closed and removed	1
SWMU 206, Mercury Manometer Site	Building and contaminated soil removed	1

The following sites were identified as SWMUs early in McConnell AFB's environmental restoration program but are still in active use. These sites are actively maintained and monitored for any releases, and do not appear to pose any threat to human health or the environment. However, investigation of these SWMUs may be warranted once they cease operation.

Site Name	Rationale	Reference
SWMU 111, Sanitary Sewer System	SWMU is operational and in good working order	1
SWMU 112, EOD Training Area	SWMU is operational and fenced to restrict access	1
SWMU 117, Septic System, Bldg 1358	SWMU is operational and in good working order	1
SWMU 118, Septic System, Bldg 1425	SWMU is operational and in good working order	1
SWMU 119, Septic System, Bldg 1349	SWMU is operational and in good working order	1
SWMU 120, Septic System, Bldg 1541	SWMU is operational and in good working order	1
SWMU 121, Oil-Water Separator 1, Bldg 424	SWMU is operational and in good working order	1
SWMU 122, Oil-Water Separator 2, Bldg 692	SWMU is operational and in good working order	1
SWMU 123, Oil-Water Separator 4, Bldg 710	SWMU is operational and in good working order	1
SWMU 124, Oil-Water Separator 5, Bldg 710	SWMU is operational and in good working order	1
SWMU 125, Oil-Water Separator 6	SWMU is operational and in good working order	1
SWMU 127, Oil-Water Separator 8, Bldg 970	SWMU is operational and in good working order	1
SWMU 128, Oil-Water Separator 9, Bldg 980	SWMU is operational and in good working order	1
SWMU 129, Oil-Water Separator 10, Bldg 1108	SWMU is operational and in good working order	1
SWMU 130, Oil-Water Separator 11, Bldg 1109	SWMU is operational and in good working order	1
SWMU 131, Oil-Water Separator 12, Bldg 1128	SWMU is operational and in good working order	1
SWMU 132, Oil-Water Separator 13, Bldg 1166	SWMU is operational and in good working order	1
SWMU 133, Oil-Water Separator 14, Bldg 1169	SWMU is operational and in good working order	1
SWMU 134, Oil-Water Separator 15, Bldg 1176	SWMU is operational and in good working order	1

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SWMU 135, Oil-Water Separator 16, Bldg 1375	SWMU is operational and in good working order	1
SWMU 136, Oil-Water Separator 17, Bldg 1394	SWMU is operational and in good working order	1
SWMU 137, Oil-Water Separator 18, S. Ramp	SWMU is operational and in good working order	2
SWMU 138, Oil-Water Separator 19	SWMU is operational and in good working order	1
SWMU 139, Oil-Water Separator 20, Bldg 1218	SWMU is operational and in good working order	1
SWMU 140, Oil-Water Separator 21, Bldg 714	SWMU is operational and in good working order	1
SWMU 141, Oil-Water Separator 22, Bldg 1090	SWMU is operational and in good working order	1
SWMU 142, Oil-Water Separator 23, Bldg 1094	SWMU is operational and in good working order	1
SWMU 143, Oil-Water Separator 24, Bldg 1200	SWMU is operational and in good working order	1
SWMU 144, Oil-Water Separator 25, Bldg 1396	SWMU is operational and in good working order	1
SWMU 145, Oil-Water Separator 26, Bldg 692	SWMU is operational and in good working order	1
SWMU 146, Oil-Water Separator 28, Bldg 1222	SWMU is operational and in good working order	1
SWMU 147, Oil-Water Separator 39, Bldg 1101	SWMU is operational and in good working order	1
SWMU 148, Oil-Water Separator, Bldg 426	SWMU is operational and in good working order	1
SWMU 149: NUMBER NOT USED AT McCONNELL AFB		
SWMU 150, Mud Pit for OWS 5, Bldg 710	SWMU is operational and in good working order	1
SWMU 151, Mud Pit for OWS 26, Bldg 692	SWMU is operational and in good working order	1
SWMU 166, Septic Field, Bldg 70	SWMU is operational and in good working order	1
SWMU 167, Septic Field, Bldg 1360	SWMU is operational and in good working order	1
SWMU 168, Septic Field, Bldg 1501	SWMU is operational and in good working order	1
SWMU 169, AFFF Waste Tank, Bldg 1166	SWMU is operational and in good working order	1
SWMU 170, AFFF Waste Tank, Bldg 1176	SWMU is operational and in good working order	1
SWMU 171, AFFF Waste Tank, Bldg 1218	SWMU is operational and in good working order	1
SWMU 176, Aircraft Wash Rack, Bldg 41	SWMU is operational and in good working order	1
SWMU 177, Aircraft Wash Rack, Bldg 50	SWMU is operational and in good working order	1
SWMU 179, Oil-Water Separator K1, Bldg 9	SWMU is operational and in good working order	1
SWMU 180, Oil-Water Separator K2, Bldg 33	SWMU is operational and in good working order	1
SWMU 181, Oil-Water Separator K3, Bldg 36	SWMU is operational and in good working order	1
SWMU 182, Oil-Water Separator K4, Bldg 37	SWMU is operational and in good working order	1
SWMU 183, Oil-Water Separator K5, Bldg 52	SWMU is operational and in good working order	1
SWMU 184, Oil-Water Separator K6, Bldg 41	SWMU is operational and in good working order	1
SWMU 185, Oil-Water Separator K7, Bldg 49	SWMU is operational and in good working order	1
SWMU 187, Oil-Water Separator K9, Bldg 51	SWMU is operational and in good working order	1
SWMU 190, Oil-Water Separator K12	SWMU is operational and in good working order	1
SWMU 193, Oil-Water Separator K15, Bldg 51	SWMU is operational and in good working order	1
SWMU 195, Silver Recovery Unit, Bldg 1219	SWMU is operational and in good working order	1
SWMU 196, Silver Recovery Unit, Bldg 1220	SWMU is operational and in good working order	1
SWMU 197, Silver Recovery Unit, Bldg 250	SWMU is operational and in good working order	1
SWMU 198, Silver Recovery Unit, Bldg 250	SWMU is operational and in good working order	1
SWMU 200, Septic System, Bldg 1346	SWMU is operational and in good working order	1
SWMU 203, Waste Storage Tank for OWS 21	SWMU is in standby status and in good working order	1

References

- 1) Parsons Engineering Science Inc, March 1999: Final Solid Waste Management Unit Assessment (RFA) Report.
- 2) HDR Engineering Inc, February 2006: Final RCRA Facility Investigation (RFI) Report.

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Non-Contiguous Sites

The following sites are identified as ERP sites associated with McConnell AFB in the October 1993 *Management Action Plan for McConnell Air Force Base* but are in fact not located at or adjacent to McConnell AFB. These sites are not further discussed in this CA725 evaluation form.

ST-05, Titan Missile Site UST Spill TSS1
DP-09, HQ Disposal Site Smoky Hill SLF1
DP-12, Smoky Hill Disposal Site
OT-18, Abandoned Wells M-4, S-98
SS-19, Smoky Hill Spill Site 1 SSS1
SS-20, Smoky Hill Spill Site 2 SSS2
SS-21, Smoky Hill Spill Site 3 SSS3
OT-22, Smoky Hill EOD
SS-25, Titan Missile Site 533-9
SS-26, Titan Missile Site 532-8

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3. Are there **complete pathways** between “contamination” and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table							
“Contaminated” Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food ³
Groundwater	No	No	No	Yes	No	No	No
Air (indoors)	No	Yes	No	No	No	No	No
Soil (surface, e.g., <2 ft)	No	Yes	No	Yes	Yes	Yes	No
Surface Water	No	Yes	No	No	Yes	Yes	No
Sediment	No	Yes	No	No	Yes	Yes	No
Soil (subsurface e.g., >2 ft)	No	No	No	Yes	No	No	No
Air (outdoors)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors’ spaces for Media which are not “contaminated”) as identified in #2 above.
2. enter “yes” or “no” for potential “completeness” under each “Contaminated” Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential “Contaminated” Media - Human Receptor combinations (Pathways) do not have check spaces (“___”). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

- _____ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter “YE” status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).
- __X__ If yes (pathways are complete for any “Contaminated” Media - Human Receptor combination) - continue after providing supporting explanation.
- _____ If unknown (for any “Contaminated” Media - Human Receptor combination) - skip to #6 and enter “IN” status code

³Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

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Rationale and References:

Risk assessments identifying complete or potentially complete exposure pathways outlined above have been conducted for numerous SWMUs and ERP sites at McConnell AFB, and are included in the following documents:

Engineering-Science Inc, April 1995: Remedial Investigation (RI) Report for Eleven Sites.

Engineering-Science Inc, June 1995: PA/SI/RI Report for Six Sites.

HDR Engineering Inc, February 2006: Final Base-Wide RCRA Facilities Investigation (RFI) Report.

Tetra Tech Inc, June 2007: Final Phase II RI Report for FT-06, LF-11, SS-01 and SS-03.

Based on these documents, the locations where the exposures summarized above could be expected are as follows:

- Construction worker exposure to contaminated groundwater could potentially occur during excavation at any of the sites identified in Question 2 above where groundwater contamination above MCLs has been found, including SS-01, SS-03, FT-06, LF-11, LF-33, LF-34, FT-07, ST-17, SWMU 207, SS-14, FT-08, SS-23 and SS-24.

- Worker exposure to contaminated indoor air could potentially occur at the air traffic control tower at SWMU 207; Buildings 1090, 1091, 1104, 1107, 1166, 1174, 1169, 1185, 1167, 1183, 1112, 1110, and 1122 at SS-03; and Buildings 15, 17 and 43 at SS-14. All of these buildings are at least partly above the identified extent of contaminated groundwater at those sites. None of these buildings are residential.

- Exposure of workers, construction workers, trespassers and recreational users to contaminated surface soil could potentially occur at any of the sites identified in Question 2 above where soil contamination above non-residential RSKs has been found, including SS-01, SS-03, LF-11, FT-06, LF-34, SWMU 105 and SWMU 108. In addition, exposure of construction workers to contaminated subsurface soils during excavation is possible at these sites.

- Exposure of workers, trespassers and recreational users to contaminated surface water and sediment is possible in McConnell Creek, particularly those stream segments near SWMU 108 and LF-10.

4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **“significant”**⁴ (i.e., potentially “unacceptable” because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable “levels” (used to identify the “contamination”); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable “levels”) could result in greater than acceptable risks)?

If no (exposures can not be reasonably expected to be significant (i.e., potentially “unacceptable”) for any complete exposure pathway) - skip to #6 and enter “YE” status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to “contamination” (identified in #3) are not expected to be “significant.”

⁴If there is any question on whether the identified exposures are “significant” (i.e., potentially “unacceptable”) consult a human health Risk Assessment specialist with appropriate education, training and experience.

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- _____ If yes (exposures could be reasonably expected to be “significant” (i.e., potentially “unacceptable”) for any complete exposure pathway) - continue after providing a description (of each potentially “unacceptable” exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to “contamination” (identified in #3) are not expected to be “significant.”
- _____ If unknown (for any complete pathway) - skip to #6 and enter “IN” status code

Rationale and References:

Risk assessments of the following non-residential sites, where contaminant concentrations exceeded applicable screening levels in one or more environmental media, were conducted as part of the reports identified in Question 3 above. The screening levels used included MCLs for groundwater and KDHE non-residential RSKs for soil. No significant human health risks were identified for any pathways or current receptors for the following sites:

<u>Site</u>	<u>Reference</u>
SWMU 102, Building 971 Jet Fuel Spill	HDR Engineering Inc, November 2000: Final SWMU 102 RFI Report
SWMU 103, Pesticide Disposal Site	HDR Engineering Inc, February 2006: Final RFI Report
SWMU 104, Hardfill No. 1	HDR Engineering Inc, February 2006: Final RFI Report
SWMU 105, Hardfill No. 2	HDR Engineering Inc, February 2006: Final RFI Report
SWMU 108, Old Base Lake Hardfill	HDR Engineering Inc, February 2006: Final RFI Report
SWMU 110, Soil Farm No. 2	HDR Engineering Inc, February 2006: Final RFI Report
SWMU 116, Fire Training Area No. 4	HDR Engineering Inc, February 2006: Final RFI Report
SWMU 156, Former MP Weapons Area	HDR Engineering Inc, February 2006: Final RFI Report
SWMU 157, Former Weapons Firing Range	HDR Engineering Inc, February 2006: Final RFI Report
SWMU 158, PCB Storage Area	HDR Engineering Inc, February 2006: Final RFI Report
SWMU 164, Former Weapons Firing Range	HDR Engineering Inc, February 2006: Final RFI Report
LF-10, Landfill 1 at Golf Course	Engineering-Science Inc, April 1995: RI Report for Eleven Sites
DP-13, Low Level Radioactive Waste Site	Engineering-Science Inc, April 1995: RI Report for Eleven Sites
SS-04, Pesticide Rinsate Spill Site	Engineering-Science Inc, April 1995: RI Report for Eleven Sites
SS-16, PCB Oil Spill Site	Engineering-Science Inc, April 1995: RI Report for Eleven Sites
OT-15, Conductive Anomaly Site	Engineering-Science Inc, April 1995: RI Report for Eleven Sites
FT-08, Fire Training Areas 1 and 5	Engineering-Science Inc, April 1995: RI Report for Eleven Sites
SS-02, UST Gasoline Spill	Walk, Haydel & Associates Inc, September 1991: Site Closeout Document for SS-02
LF-27, Drum Disposal Area Within LF-10	Engineering-Science Inc, March 1993: Decision Document for LF-27
SS-24, Building 9 UST Leak Site	Engineering-Science Inc, June 1995: PA/SI/RI Report for Six Sites
SS-23, Building 708 UST Leak Site	Engineering-Science Inc, June 1995: PA/SI/RI Report for Six Sites

The following non-residential sites are still being investigated; however, the available data is sufficient to conclude that no significant human exposures are occurring:

Sites SS-01, SS-03, LF-11, FT-06, SWMU 107, SWMU 160, SWMU 161, SWMU 162 and SWMU 165: The Final Phase II RI report for these non-residential sites (Tetra Tech Inc, June 2007) delineated the contamination in soil and groundwater. Contaminant concentrations in soil are below the non-residential RSKs. Contaminant concentrations in groundwater are above maximum contaminant levels (MCLs) for TCE, its daughter products, and BTEX; however, this groundwater is not used for any purpose. Modeling of indoor air impacts in buildings above the SS-03 groundwater plume using EPA’s GW-SCREEN version 3.1 spreadsheet indicated a low potential for adverse effects

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to workers in those buildings. (Note: SWMUs 107 and 160 are co-located with FT-06, and SWMUs 161, 162 and 165 are co-located with SS-03).

Sites SS-31, SS-32, LF-33 and LF-34: Investigation of these sites under a combined workplan is ongoing as of August 2007, and interim results from direct-push sampling have generally delineated the contamination in soil and groundwater. At SS-31, SS-32 and LF-33, contaminant concentrations in soil are below non-residential RSKs. At LF-34, gasoline-range organics concentrations in near-surface soil are above RSKs, but the non-residential nature of the site makes significant exposures unlikely. Contaminant concentrations in groundwater at LF-33 and LF-34 are above maximum contaminant levels (MCLs) for several volatile organic compounds; however, this groundwater is not used for any purpose. Contaminated groundwater is not present under any buildings, so no indoor air issues exist for these sites.

Sites FT-07 and ST-17: Soil contamination at fire training area FT-07 was delineated and found to be below RSKs for industrial use (Engineering-Science Inc, April 1995). Soil contamination at UST leak area ST-17 was also delineated and found to be below RSKs for industrial use (Engineering-Science Inc, June 1995). However, groundwater contamination at both of these non-residential sites was found to be above MCLs for volatile organic compounds (FT-07) and methyl tert-butyl ether (ST-17). Ongoing groundwater monitoring at both sites under a combined sampling plan indicates that MCLs are still being exceeded (CH2M Hill, October 2006); however, this groundwater is not used for any purpose. Contaminated groundwater is not present under any buildings, so no indoor air issues exist for these sites.

SS-35 (Building 2): Soil contamination at the SS-35 / Building 2 site was delineated and found to be below RSKs for industrial use (Tetra Tech, October 2006). Groundwater results showed metals and polycyclic aromatic hydrocarbons slightly exceeding MCLs and/or RSKs; however, these detections may be due to sample turbidity. Groundwater at this site is not used for any purposes. Metals and PAHs are not volatile, so no indoor air issues exist for this site.

SWMU 207: Soil contamination at this site has not been fully delineated; however, the industrial use of the area (aircraft taxiways) makes significant human exposures unlikely. Volatile organic compounds in groundwater, including TCE and carbon tetrachloride, have been found above MCLs (HDR Inc, February 2006); however, this groundwater is not used for any purposes. Modeling of indoor air impacts in buildings (primarily the base's air control tower) above this groundwater plume using EPA's GW-SCREEN version 3.1 spreadsheet indicated a very low potential for adverse effects to workers in those buildings.

SS-14: Soil contamination at this site was found to be below RSKs (Engineering-Science Inc, April 1995) for industrial use. Groundwater at this site is contaminated with trichloroethylene and its daughter products above their MCLs (Tetra Tech, February 2004); however, this groundwater is not used for any purposes. Modeling of indoor air impacts in buildings above this groundwater plume using EPA's GW-SCREEN version 3.1 spreadsheet indicated a very low potential for adverse effects to workers in those buildings.

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5. Can the “significant” **exposures** (identified in #4) be shown to be within **acceptable** limits?

_____ If yes (all “significant” exposures have been shown to be within acceptable limits) - continue and enter “YE” after summarizing and referencing documentation justifying why all “significant” exposures to “contamination” are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

_____ If no (there are current exposures that can be reasonably expected to be “unacceptable”)- continue and enter “NO” status code after providing a description of each potentially “unacceptable” exposure.

_____ If unknown (for any potentially “unacceptable” exposure) - continue and enter “IN” status code

Rationale and Reference(s):

Not applicable – no “significant” exposures identified in Question 4.

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6. Check the appropriate RCRA Info status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at McConnell Air Force Base, EPA ID No. KS1571924140, located at 2801 South Rock Road, Wichita, Kansas, under current and reasonably expected future conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

NO - "Current Human Exposures" are NOT "Under Control."

IN - More information is needed to make a determination.

Completed by: _____ Date _____
(signature)
Dan Gravatt, PG
Project Manager, RCRA Corrective Action & Permits Branch
EPA Region 7

Supervisor: _____ Date _____
(signature)
Lynn Slugantz,
Branch Chief, RCRA Corrective Action & Permits Branch
EPA Region 7

Location where references may be found:

EPA Region 7 Headquarters
RCRA Records Center
901 North 5th Street
Kansas City, Kansas 66101

Contact telephone and e-mail:

Dan Gravatt
(913) 551-7324
gravatt.dan@epa.gov

FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.

REFERENCES

FIGURES

(X pages)