

INSTALLATION RESTORATION PROGRAM RECORDS SEARCH MA120903

For George Air Force Base, California





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Prepared for

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AIR FORCE ENGINEERING AND SERVICES CENTER DIRECTORATE OF ENVIRONMENTAL PLANNING TYNDALL AIR FORCE BASE, FLORIDA 32403

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NOTICE

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INSTALLATION RESTORATION PROGRAM RECORDS SEARCH

For

GEORGE AIR FORCE BASE, CALIFORNIA



Prepared for

AIR FORCE ENGINEERING AND SERVICES CENTER DIRECTORATE OF ENVIRONMENTAL PLANNING TYNDALL AIR FORCE BASE, FLORIDA 32403

Ву

CH2M HILL Gainesville, Florida

Janue 54-1982

Contract No. F08637 80 G0010 0009

Approved for public rele DISTRIBUTION Noved 104 Future Long

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ACRO)nyms,	ABBREV	IATIONS,
AND	SYMBOL	S	

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AC	Acre
AFB	Air Force Base
AFESC	Air Force Engineering and Services Center
AF	Air Force Range
AG	Aerospace Ground Equipment
AGGR	Air to Ground Gunnery Range
AMU	Aircraft Maintenance Unit
AVGAS	Aviation Gasoline
BLM	Bureau of Land Management
CE	Civil Engineering
DLA	Defense Logistics Agency
DOD	Department of Defense
DPDO	Defense Property Disposal Office
EOD	Explosive Ordnance Disposal
EPA	Environmental Protection Agency
°F	Degrees Fahrenheit
ft	Foot (feet)
gpm	Gallons per minute
gpd/ft ²	Gallons per day per square foot
Max.	Maximum
MBAS	Methylene blue active substances
MEK	Methyl ethyl ketone
Min.	Minimum
MOGAS	Motor gasoline
NPDES	National Pollutant Discharge Elimination System
NDI	Non-Destructive Inspection
No.	Number
OEHa	Occupational and Environmental Health Laboratory
PCBS	Polychlorinated biphenyls
PD-680	Safety solvent
POL	Petroleum, oil, and lubricants
RCRA	Resource Conservation and Recovery Act

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STP	Sewage treatment plant
TAC	Tactical Air Command
TCE	Trichloroethylene
tel	Tetraethyl lead
USAF	United States Air Force
USGS	United States Geological Survey

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EXECUTIVE SUMMARY

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EXECUTIVE SUMMARY

A. INTRODUCTION

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- CH2M HILL was retained by the Air Force Engineering and Services Center (AFESC) on 10 August 1981 to conduct the George Air Force Base (AFB) Records Search under Contract No. F08637 80 G0010 0009 using funding provided by the Tactical Air Command (TAC).
- 2. Department of Defense policy was directed by Defense Environmental Quality Program Policy Memorandum 80-6 dated 24 June 1980 and implemented by Air Force message dated 2 December 1980 as a positive action to ensure compliance of military installations with the Resource Conservation and Recovery Act (RCRA) and implementing regulations. The purpose of DOD policy is to control the migration of hazardous material contaminants from DOD installations.
- 3. To implement the DOD policy, a three-phase Installation Restoration Program has been directed. Phase I, the Records Search, is the identification of potential problems. Phase II is the quantification of the problem and determination of corrective measures that may be required. The third phase is to contain, correct, and/or mitigate identified or potential environmental hazards that may result in hazardous contaminant migration from the installation.

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The George AFB Records Search included a detailed review of pertinent installation records, contacts with 23 outside agencies for documents relevant to the Records Search effort, and an on-site base visit conducted by CH2M HILL during the week of September 21 through September 25, 1981. An inbriefing was held with the 831st Air Division Commander to discuss the purpose of the site visit. An out-briefing was held with the 831st Combat Support Group Commander to present the preliminary findings. Activities conducted during the on-site base visit included a detailed search of installation records, interviews with 36 past and present base employees, and ground and aerial tours of the installation. Installation facilities included in the Records Search Program were:

- 1. Cuddeback Lake Air Force Range (AFR)
- 2. Leach Lake AFR
- 3. Red Mountain Light Annex
- 4. Lake Isabella Recreational Area
- 5. George AFB Outermarker
- 6. Off-base Water Supply Wells
- 7. George AFB Railroad Spur
- 5. Potentially contaminated sites were rated using a modification of the hazard rating system developed by JRB Associates, Inc. The system was modified by the Air Force, CH2M HILL, and Engineering Science. The methodology used to identify the potentially contaminated sites included a review of base industrial activities, past waste management practices, and field investigations. If no hazardous waste

contamination seemed likely at a particular site, it was deleted from further consideration. At those sites where contamination was likely, a decision was made on whether the contaminants could migrate beyond the base boundaries. If so, the site was numerically rated and prioritized.

6. Should the Records Search indicate that the potential exists for migration of hazardous contaminants beyond the installation boundaries, Phase II field work would be conducted to confirm the presence of the specific migrating contaminants and to determine the extent of migration. Restoration or containment of the hazardous waste disposal sites would comprise Phase III of the Installation Restoration Program.

B. FINDINGS

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- No direct evidence was found to indicate that migration of hazardous contaminants beyond George AFB property exists.
- 2. Information obtained through interviews with 36 past and present base personnel and field observation indicates that potentially hasardous wastes have been disposed of on George AFB property in the past.
- 3. Industrial activity at George AFB consists primarily of routine aircraft and vehicle maintenance. Generation of large quantities of hazardous wastes has

xiv

not occurred in comparison to bases having significant aircraft rework and maintenance missions; therefore, associated contamination problems are considered to be relatively small.

C. CONCLUSIONS

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- 1. The potential for off-site migration of hexardous wastes is low because of the relatively low groundwater levels, extremely low precipitation, high potential evaporation, and the absence of major surface waters. The soils are permeable, but the depth to ground water or bedrock should allow a high degree of contaminant attenuation in the soil. —
- 4. Table V-1 presents a listing of the rated sites and their overall scores. In some areas the sites are close together and possible additive effects may result from combined contaminant migration. As a result, three general areas have been identified as having the highest potential for pollutant migration and are presented in order of priority:
 - a. Industrial Outfall and Pipeline, (Site No. S-20)
 - b. Northeast Disposal Area STP percolation ponds (S-21), the most recent base landfill (L-13), the abandoned fire training area (S-6), the sludge drying beds (S-25), the original base landfill (L-12), the street sweeping disposal area (L-11) and the three unverified acid, oil, paint, and pesticide burial sites (B-9, B-8, B-10).

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Southeast Disposal Area - major base landfill c. (L-1), the TEL disposal site (L-2), the munitions disposal site (N-2), and the radioactive/toxic chemical disposal site (L-3).

The remaining sites are not considered to present a significant migration hazard. Heavy surface runoff and the resulting erosion could cause the transport of potentially hazardous debris beyond the base boundaries, but the contamination would be insignificant because of the small quantities involved.

RECOMMENDATIONS D.

- 1. Σ_{λ} limited monitoring program is suggested to substantiate the absence of contamination and contaminant migration. Significant health hasards have not been identified and no urgent need for the monitoring program exists, i.e., the priority for monitoring at George is considered moderate.
- Table 1 presents a summary of recommended ground-2. water monitoring sites, parameters to be measured, and rationale. Specifically, monitoring is suggested for the industrial drain (S-20), the northeast disposal area (S-21, L-13, S-6, S-25, L-12, L-11, B-9, B-8, B-10), and the southeast disposal area (L-1, L-2, M-2, L-3) as identified in the conclusions. Approximate monitoring well locations are shown in Figure 1.



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Table 1 SUGGESTED ANALYSES

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Site	Sample Type	Parameters	Rationale
All monitoring wells (industrial outfall, and pipeline portheast	Ground Water	Volatile organic compounds (MEK, TCE)	Organic solvents used on base
disposal area, south- east disposal area)		Phenol s	Phenolic cleaner used in past
		Gross contaminants (TOC, COD, oil and grease, specific conductance)	Indicators of non- specific gross con- tamination
		Heavy metals (Cr, Pb, Cđ, Ag)	Potential sources identified
Northeast disposal area monitoring wells only	Ground Water	Pesticides (DDT, chlordane)	Identified as pesti- cide disposal area
Industrial drain gully only	Soil	Heavy metals (Cr, Pb, Cd, Ag	Potential sources identified
		Organic chromatograph "fingerprint"	Potential organic contamination

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For the industrial drain, two monitoring wells should be installed down-gradient from the drain as indicated, and a background water quality monitoring well should be located up-gradient from the existing fire training area. The wells should be approximately 100 feet deep. Samples from these three wells plus the existing STP percolation pond monitoring well should be analyzed for volatile organic compounds, phenols, gross contaminants, and suspected heavy metals (see Table 1).

4. Exfiltration tests should be conducted to verify that the upper section of the industrial drain line is indeed perforated and to determine the exfiltration rate. If the tests indicate that significant exfiltration occurs or has occurred in the past, a limited ground-water monitoring program similar to that suggested in paragraph 3 should be considered. The wells should be located as to isolate the perforated industrial drainline, i.e., up-gradient and down-gradient of the perforated section.

. 5.

To evaluate potential migration problems due to erosion in the industrial drain gully, two background and five gully soil samples, composited from at least three 1-foot-deep samples each, should be analyzed. The gully samples should be collected in the sections preceding the retention dam (two samples), at the dam itself (two samples), and just before the base boundary (one sample). The analytical procedure would include a standard EPA extraction procedure for heavy metals analysis and an organic extraction "fingerprint." The fingerprint analysis is conducted by comparing the coincidence and magnitude of the peaks on a gas chromatograph output plot for the background and gully samples. Should organic contamination be indicated, additional analyses would be required to identify the specific organic compounds.

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- 6. To evaluate the potential migration from the northeast disposal area more fully, three additional monitoring wells, approximately 100 feet deep, are recommended along the perimeter of the entire area. Essentially the same analyses as described in paragraph 3 would be required, plus pesticide analyses (DDT, chlordane).
- 7. One background well and three monitoring wells, approximately 100 feet deep, are recommended for the southeast disposal area. The monitoring wells should be located along the northeast perimeter of the sites inside the base boundary. The wells should be analyzed for the same parameters as the industrial drain.
- 8. A magnetometer survey should be conducted to verify and locate the reported burial site of 127 barrels of acetone in the southeast disposal area (particularly Site L-1). The radioactive/toxic chemical area (L-3) should also be examined at this time for verification of chemical barrel disposal.
- 9. The jet fuel line near facility 708 should be pressure tested to ascertain whether significant fuel leakage may be occurring. Efforts should be made to isolate possibly damaged pipe sections during the testing. Unless extremely large leaks are

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detected, the likelihood of ground-water contamination is low.

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10. Specific details of the limited Phase II program outlined above should be finalized during the initial stages of Phase II. It is not the intent of Phase I to assess the depth or exact location of any groundwater monitoring wells. In the event that contaminants are detected during visual inspection of the test pit or in the water samples collected from any of the wells, a more extensive field survey program should be implemented to determine the extent of the contaminant migration. The Phase II contractor should be responsible for evaluating the results of the program outlined above and for recommending additional monitoring, as appropriate.



A. BACKGROUND

The primary legislation governing the management and disposal of solid waste is the Resource Conservation and Recovery Act (RCRA) of 1976. Regulations and implementing instructions for the Act are continuing to be developed by EPA. Under RCRA Section 3012 (Public Law 96-482, 21 October 1981) each state is required to inventory all past and present hazardous waste disposal sites. Section 6003 of RCRA requires Federal agencies to assist EPA and make available all requested information on past disposal practices. It is the intent of the Department of Defense (DOD) to comply fully in these as well es other requirements of RCRA. Simultaneous to the passage of RCRA, the DOD devised a comprehensive Installation Restoration Program (IRP). The purpose of the IRP is to identify, report, and correct environmental deficiencies from past disposal practices that could result in ground-water contamination and probable migration of contaminants beyond DOD installation boundaries. In response to RCRA and in anticipation of the Comprehensive Environmental Response, Compensation, and hiability Act of 1980, the DOD issued Defense Environmental Quality Program Policy Memorandum 80-6 (DEQPPM 80-6) on 04 June 1980 which directed the implementation of the IRP program.

To conduct the Installation Restoration Program Records Search for George AFB, the AFESC retained CH2M HILL on 10 August 1981 under Contract No. F08637-80-G0010-0009 using funding provided by the Tactical Air Command (TAC). The installations included in the Records Search are George AFB and several offsite facilities which are supported by George AFB (Figures 2 and 3) as follows:

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- 4 LAKE ISABELLA RECREATION AREA
- 5 RED MOUNTAIN LIGHT ANNEX

FIGURE 2 GEORGE AFB PROPERTIES LOCATION MAP





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STATISTICS STATISTICS

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FIGURE 3 GEORGE AFB AND VICINITY George AR # 2

1. Cuddeback Lake Air Force Range (AFR)

2. Leach Lake AFR

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3. Red Mountain Light Annex

4. Lake Isabella Recreation Area

5. George AFB Outermarker

6. Off-base Water Supply Wells

7. George AFB Railroad Spur

The Records Search comprises Phase I of the Department of Defense (DOD) Installation Restoration Program and is intended to review installation records to identify possible hazardous waste contaminated sites and potential problems that may result in contaminant migration from the insta⁷lation. Phase II is the quantification of the problem and determination of corrective measures that may be required. The third phase is to contain, correct, and/or mitigate identified potential environmental hazards.

B. AUTHORITY

Identification of hazardous waste disposal sites at military installations was directed by Defense Environmental Quality Program Policy Memorandum 80-6 (DEQPPM 80-6) dated 24 June 1980 and implemented by Air Force message dated 2 December 1980 as a positive action to ensure compliance of military installations with the Resource Conservation and Recovery Act (RCRA) and implementing regulations. George AR # 2463

C. PURPOSE OF THE RECORDS SEARCH

DOD policy is to control the migration of hazardous material contaminants from DOD installations and to abate contaminant migration that may have an adverse impact on public health or the environment. This potential was evaluated at George AFB by reviewing the existing information and conducting a detailed analysis of installation records. Pertinent information involves the history of operations, the geological and hydrogeological conditions which may contribute to the migration of contaminants off the installation, and the ecological settings which indicate sensitive habitats or evidence of environmental stress resulting from contaminants.

D. SCOPE

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9 s 1 The records search consisted of a pre-performance meeting, a preliminary coordination meeting, an onsite base visit, a review and analysis of the information obtained, and preparation of this report.

The pre-performance meeting was held at Tyndall AFB on 4 August 1981. Attendees at this meeting included representatives of AFESC, USAF OEHL, Tactical Air Command (TAC), George AFB, and CH2M HILL. The purpose of the pre-performance meeting was to provide detailed project instructions for the records search, to provide clarification and technical guidance by AFESC, and to define the responsibilities of all parties participating in the Tyndall AFB records search.

CH2M HILL representatives conducted a preliminary visit to George AFB on 11 September 1981 to become familiar with the installation and to effect coordination for the records search team onsite base visit.

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The on-site base visit was conducted by CH2M HILL from 21 September through 25 September 1981. An inbriefing was held with the 831st Air Division Commander to discuss the purpose of the site visit. An outbriefing was held with the 831st Combat Support Group Commander to present the preliminary findings. Activities performed during the on-site base visit included a detailed search of installation records, ground and aerial tours of the installation, and interviews with 36 former and present base personnel. The following individuals comprised the CH2M HILL Records Search Team:

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- Mr. Michael Kemp, Project Manager (M.S., Civil and Environmental Engineering, 1978)
- Mr. Steven Hoffman, Project Senior Consultant (B.S., Civil Engineering, 1971)
- 3. Mr. Donald Mahin, Hydrogeologist (M.S., Hydrology, 1978)
- 4. Ms. Jane Dykzeul, Ecologist (B.A., Biology, 1976)

Resumes of these key team members are included in Appendix A.

Twenty-three outside agencies (refer to Appendix B for listing) were contacted for documents relevant to the records search effort.

Key individuals from the Air Force who participated in the George AFB Records Search included the following:

- 1. Mr. Bernard Lindenberg, AFESC, Program Manager, Phase I.
- 2. Mr. Myron Anderson, AFESC, Assistant Program Manager, Phase I.

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3. Mr. Gil Burnet, TAC, Command Representative

4. Mr. Dave Dorn, George AFB, Environmental Coordinator

5. Capt. James Montgomery, George AFB, Chief, Bioenvironmental Engineering.

6. Major Gary Fishburn, USAF OEHL, Program Manager, Phase II.

E. · METHODOLOGY

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The methodology used in the George AFB Records Search is shown graphically in Figure 4. First, a review of past and present industrial operations was conducted at the base. Information was obtained from available records such as shop files and real property files, as well as interviews with past and present employees from the various operating areas of the base.

The next step in the activity review process was to determine the past management practices regarding the use, storage, treatment, and disposal of hazardous materials from the various industrial operations on the base. Included in this part of the activities review was the identification of all past landfill sites and burial sites, as well as any other possible sources of contamination such as major PCB or solvent spills or fuel-saturated areas resulting from large fuel spills or leaks.

A general ground tour and helicopter overflights of the identified sites was made by the Records Search Team to gather site-specific information including (1) evidence of environmental stress, (2) the presence of nearby drainage ditches or surface-water bodies, and (3) visual inspection of these water bodies for any obvious signs of contamination or leachate migration.



A decision was then made, based on all of the above information, whether a potential exists for hazardous material contamination in any of the identified sites. If not, the site was deleted from further consideration. If minor operations and maintenance deficiencies were noted during the investigations, the condition was reported to the Base Environmental Coordinator for remedial action.

For those sites where a potential for contamination was identified, a determination of the potential for migration of the contamination beyond the installation boundaries was made by considering site-specific soil and groundwater conditions. If there was potential for on-base contaminant migration or other environmental concerns, the site was referred to the base environmental monitoring program for further action. If no further environmental concerns were identified, the site was deleted from consideration. If the potential for off-base contaminant migration was considered significant, then the site was rated and prioritized using the site rating methodology described in Appendix H.

The site rating indicates the relative potential for contaminant migration at each site. For those sites showing a high potential, recommendations were made to quantify the potential contaminant migration problem under Phase II of the Installation Restoration Program. For those sites showing a medium potential, a limited Phase II program may be desirable to confirm that a contaminant migration problem does not exist. For those sites showing a low potential, no Phase II work would be recommended.



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II. INSTALLATION DESCRIPTION

A. LOCATION

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George Air Force Base is located in the Mojave Desert region of south-central California. The Town of Adelanto borders the west side of the base, and the City of Victorville lies approximately 6 miles southeast of the base. The Mojave River flows near the eastern and northeastern base boundaries.

In addition to the 5,347 acres of land contained within the base boundaries, George AFB is responsible for the following off-base property:

- 1. Cuddeback Lake AFR
- 2. Leach Lake AFR
- 3. Red Mountain Light Annex
- 4. Lake Isabella Recreational Area
- 5. George AFB Outermarker
- 6. Off-base Water Supply Wells
- 7. George AFB Railroad Spur

The locations of these properties were shown in Figures 2 and 3. Site photographs are presented following the reference listing.

B. ORGANIZATION AND MISSION

Construction of George AFB began in 1941. The base was known as Victorville Army Airfield and operated as an advanced flying school until 1945. Following World War II, flying operations ceased and the base was placed on inactive status from 1948 to 1950. In 1950, the base was renamed George AFB and jet fighter training began. The Tactical Air Command

(TAC) took control of the base in 1951 and maintenance of jet fighter pilot proficiency has comprised the major base mission since. A more detailed description of the base history is included in Appendix C.

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George AFB is the host of the 831st Air Division. The primary mission of the Division is to execute tactical fighter operations and to provide training for aircrew and maintenance personnel. A variety of tenant units are also located at George AFB and detailed in Appendix C.
III. ENVIRONMENTAL SETTING

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III. ENVIRONMENTAL SETTING

A. METEOROLOGY

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George AFB is located in the Mojave Desert. The climate is arid with long hot summers and short cool winters. The mean relative humidity ranges from 27 percent in July to 55 percent in January. Annual potential evaporation averages 83 inches.

Mean annual precipitation at the base is 3.0 inches with approximately 60 percent of the total occurring from November through March. Maximum daily rainfall has been as high as 2.9 inches. Mean annual snowfall for the area is 3.0 inches. The annual mean temperature is 62 degrees. Daily extreme temperatures are 9 degrees F and 111 degrees F. Winds are normally light to moderate with the velocity exceeding 10 knots only 16 percent of the year.

Refer to Table III-1 for a summary of meteorological conditions at George AFB and the surrounding area.

B. GEOLOGY

George Air Force Base is located in the Mojave Desert of southern California, a wedge-shaped portion of the Basin and Range physiographic province. The Sierra Nevada Mountain Range forms the north and west boundaries of the Mojave Desert. The east-west traverse ranges of the San Gabriel and San Bernardino Mountains form the southern boundary, with the California-Nevada state line forming the approximate eastern boundary of the Nojave Desert.

The Mojave Desert in the vicinity of George Air Force Base is a relatively level plain with a gentle downward slope to the north. Alluvial fans extending from the mountains have

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coalesced and partially form this surface. Playa deposits, stream deposits, and erosion have modified the alluvial fans to form the present land surface.

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8.1 0 Geologic units in the region can be classified as waterbearing or non-water-bearing. The non-water-bearing rocks are generally those igneous and metamorphic rocks that form the mountain and hill areas surrounding George Air Force Base. These formations also underlie the water-bearing sediments in the area. The water-bearing formations are unconsolidated to semiconsolidated alluvial deposits of continental origin and Quaternary age, composed of materials ranging in size from coarse sands and gravels to silts and clays.

Deeper sediments are generally more consolidated than those near the surface, with the exception of soils and former soils that have formed caliche layers. Caliche develops as a non-uniform layer of cemented soil with the thickness and permeability varying as a function of the site conditions during its formation. The caliche underlying George AFB is not continuous and erosion may affect the extent and thickness of the caliche layers. Where present, the caliche layers may form a partial barrier to infiltration through the soil. Figure 5 is a generalized stratigraphic column of the waterbearing units in the George Air Force Base region.

Of the water-bearing units in the area, the river deposits and younger alluvium have the highest relative permeability. The older alluvium and older alluvial fan deposits tend to have a lower permeability and are partially consolidated. The transmissivity of the river deposits and younger alluvium is relatively high and on the order of 100,000 gallons per day per foot (gpd/ft). The other water-bearing aquifers in the vicinity of George Air Force Base have transmissivities

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	George AR	# 2463	Page
SERIES	GEOLOGIC FORMATION	LITHOLOGY	MAXIMUM THICKNESS (FEET)
	RIVER DEPOSITS	000 000	90±
Z	PLAYA DEPOSITS		25±
ш С	DUNE SAND	Od	35±
R E	YOUNGER ALLUVIUM	0.001-0	100±
	YOUNGER FAN DEPOSITS	0100	75±

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FIGURE 5 **GENERALIZED STRATIGRAPHIC COLUMN** OF WATER-BEARING SEQUENCE, **MOJAVE RIVER AREA**

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Page 42 of 310 .

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(California Dept. of Water Resources, Bulletin 84, 1987)

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on the order of 25,000 gpd/ft. Consequently, the river deposits and younger alluvium generally yield higher quantities of water to wells. The river deposits form a strip along the river ranging in width from 1/4 to 1-1/2 miles wide.

The non-water-bearing rocks are generally located away from George Air Force Base or below the range of most wells in the vicinity.

C. HYDROLOGY

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The Mojave River, located east of the base, forms the major drainage in the vicinity of George Air Force Base and plays a major role in the surface-water and groundwater hydrology. Average flows in the Mojave River at Victorville are approximately 75 cubic feet per second (cfs) with a peak discharge measured at 70,600 cfs on 2 March 1939. The minimum flow at Victorville was measured at 3.4 cfs on 25 July 1975. Along its course, the Mojave River may flow above ground intermittently. The coarse river sediments permit low flows beneath the riverbed. At high flows, the river becomes continuous throughout its length.

Surface drainage patterns at George Air Force Base are shown in Figure 6. In general, runoff from the western portion of the base is directed to the northeast and eventually flows into the Mojave River far north of the base. Runoff from the flightline, industrial, and office areas (the northeast and central portions of the base) is directed to the north and east and ultimately reaches the Mojave River during infrequent periods of high rainfall. Runoff from the residential areas and the eastern and southern portions of the base flows to the east and eventually into the Mojave River.





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FIGURE 6 SURFACE DRAINAGE MAP GEORGE AFB

In the vicinity of the flightline, office, and residential areas, the drainage system consists of storm drains gutters, culverts, and some ditches. The remainder of the base stormwater system consists primarily of drainage ditches and isolated culverts.

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Ground water flows from its major recharge area along the San Bernardino Mountains to the north and east and discharges into the Mojave River near Victorville. Irrigation in the nonmountainous areas contributes to the groundwater recharge. Well water withdrawal may alter the groundwater flow direction locally, and in some cases induce discharge from the Mojave River. Ground water beneath George AFB flows to the northeast and discharges to the Mojave River.

The potential for ground water recharge from precipitation near George AFB is low because of the low precipitation and a high potential evaporation. Most of the ground water recharge occurs along the San Gabriel and San Bernardino Mountains to the south of George Air Force Base and from losses in river flow. Ground water velocity in the vicinity of George Air Force Base is estimated to be on the order of 500 feet per year to the northeast, based upon a modification of Darcy's Law as shown in Appendix M.

The location of the potentiometric surface is generally 100 feet or more below the land surface at George Air Force Base. Along the eastern edge of the base the potentiometric surface moves closer to the ground surface and eventually meets the ground surface at or near the Mojave River. Figure 7 is a map of the potentiometric surface in the spring of 1964. Irrigation and groundwater recharge may have caused the potentiometric surface to rise in some areas since 1964.



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Construction excavation on the base has encountered caliche at various depths. Test borings to depths up to 25 feet have detected caliche, but ground water has not been encountered. The log of the monitoring well adjacent to the wastewater ponds indicates ground water in a sand layer located approximately 150 feet below ground level with a static water level at about 110 feet below ground level.

Surface and ground water quality are generally good in the area. Storm flows of the Mojave River are primarily calcium bicarbonate water with less than 400 parts per million of dissolved solids. Ground water in the vicinity of George Air Force Base has a total dissolved solids concentration of approximately 200 to 400 parts per million, with better water quality found in the deeper wells. Representative groundwater data for the off-base water supply wells are presented in Table III-2.

Flash floods can occur in the area, causing significant amounts of localised erosion and transport of surface debris. Site evidence suggests recent erosion with channel depths of up to 4 feet. This erosion generally occurs in the undeveloped portions of the base.

D. ENVIRONMENTALLY SENSITIVE CONDITIONS

1. Habitat

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Native plant and animal communities on base reflect the dry climatic conditions of an upland desert region. Along the eastern border of the base near the Mojave River small groves of cottonwoods and willows are found in several areas, indicating the presence of near-surface water.

Table III-2 GEORGE AFB GROUND-WATER DATA (September 1978)

	Well Number							
	1	2		4	5	6	7	Composite
Arsenic (mg/1)	<.005	<.005	005	.≺ .005	<.005	< .005	<.005	<.005
Barium (mg/1)	<.03	<.03	<.03	< .03	<.03	<.03	<.03	<.03
Cadmium (mg/1)	<.005	4.005	<.005	< .005	<.005	<.005	<.005	<.005
Chromium (mg/1)	<.003	<.003	<.003	< .003	<.003	<.003	<.003	<.003
Lead (mg/1)	<.005	<.005	<.005	< .005	<.005	<.005	<.005	<.005
Mercury (mg/1)	<.001	<.001	<.001	< .001	<.001	<.001	<.001	<.001
Selenium (mg/1)	<.005	<.005	<.005	< .005	<.005	<.005	<.005	<.005
Silver (mg/1)	<.005	<.005	₹.005	< .005	<.005	<.005	<.005	<.005
Fluoride (mg/l)	.58	.51	.61	.55	. 38	.57	.43	.52
Nitrate (mg/l)	≺1	<1	<1	< 1	. ≺1	≺1	<1	<1
Calcium (mg/1)	21	30	28	33	34	33	39	31
Magnesium (mg/l)	3.2	8.4	7.6	9.6	9.0	8.8	9.6	8.5
Sodium (mg/1)	40	48	57	54	48	52	50	49
Potassium (mg/l)	1.6	3.5	2.1	5.6	4.3	5.4	5.8	3.9
Manganese (mg/l)	<.01	0.02	<.01	< .01	10	.08	<.01	.03
Hydroxide (mg/l)	nil	nil	nil	nil	nil	nil	nil	nil
Carbonate (mg/1)	nil	nil	nil	nil	nil	nil	nil	nil
Bicarbonate (mg/1)	146	166	166	205	176	195	205	174
chloride (mg/1)	21	40	25	37	38	40	39	39
Sulfate (mg/l)	19	44	69	43	49	39	39	44
Copper (mg/1)	<.005	<.005	<.005	< .005	<.005	<.005	<.005	<.005
Iron (mg/1)	<.01	<.01	<.01	.13	<.01	.16	<.01	0.04
Zinc (mg/l)	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005
MBAS (mg/1)	<,005	<.005	<.005	< .005	<.005	<.005	<.005	<.005
Total Alkalinity CaCO								
(mg/1) 3	120	136	136	168	144	160	168	142
Total Hardness CaCO								
(mg/1) 3	60	100	94	130	111	110	130	103
Total Dissolved								
Solids (mg/l)	193	271	283	308	289	290	315	277
pH (std. units) Specific Conductance	8.17	7.7	7.21	7.67	7.46	7.85	7.67	771
(u mho/cm)	350	490	500	540	500	510	550	497

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No.	Air Porce	Identification	State Wall No.
1	073	PG 200	6H/4H-30 PO1 8
2	073	PG 201	6H/4H-30 X01 S
3	073	PG 202	6H/4H-30 R01 8
4	073	PG 203	6H/4H-30 KD2 8
5	073	PG 204	6H/4H-30 G01 S
6	073	PG 205	6H/4W-30 G02 S
7	073	PG 206	6X/4W-30 G03 8

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Creosote bush scrub is the predominant vegetational community in the undeveloped areas on base (approximately 2,500 acres). Common plants in this community include creosote bush, burroweed, ricegrass, mormon tea, and cheese bush (Appendix J). The introduced species russian thistle or tumbleweed is often found growing in disturbed areas. Several species of cactus occur in the area but in small numbers. Among those found are jumping cholla, pencil cactus, and beavertail cactus.

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Plants indicative of the joshua tree woodland community are also found on base. This community, including such plants as the joshua tree, California juniper, boxthorn, and bladdersage, is normally found on well-drained mesas and slopes 2,500 to 4,000 feet in elevation or higher. Small springs or aquifers along the eastern border of the base support isolated patches of riparian vegetation. Cottonwoods and willows are the largest of the plant species in these areas. Cattails can be found in the understory of the wettest of these regions. Large creosote bushes were found in several of the eastern drainages supporting riparian habitats. Willows, cattails, sedges, and rushes were also noted around the STP percolation ponds.

Wildlife in the vicinity of George AFB includes both desert and riparian species. Predominant desert species include black-tail jackrabbit, Audubon cottontail, antelope ground squirrel, and others (Appendix J). Mallards, ruddy ducks, and coots were observed at the STP percolation ponds.

2. Threatened and Endangered Species

Federally listed threatened or endangered wildlife species have not been identified on George AFB. The Mojave ground squirrel <u>Citellus</u> mohavensis (California state-designated rare) is noted to occur in this area as well as the desert tortoise <u>Gopherus agassizi</u>, (Bureau of Land Management (BLM)-designated sensitive). Several candidate floral species are reported in the general vicinity. Table J-3 in Appendix J lists the sensitive, rare, and endangered species possibly occurring in the vicinity of the base and their designation.

3. Environmental Stress

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Desert ecosystems are considered sensitive ecosystems. Plant cover is necessarily sparse and not easily established. Stabilized soils around the base of many plants, such as the creosote bush, provide areas where desert fauna can construct burrows. When a desert surface is disturbed, the vegetation and animal burrows are destroyed and soils are no longer stabilized. It takes many years before such an area is reestablished with native biota.

During the on-site investigation, landfill and grading areas on base could be clearly discerned. In disturbed areas, vegetation was almost completely lacking or very spotty, or there was an establishment of russian thistle. The relative lack of vegetation in these areas limited animal life as well. Fewer burrows and tracks were noted in disturbed areas.

Desert ecosystems, though sensitive to disturbance, have relatively stable soil conditions because of a low groundwater table and the dry climatic conditions. While native systems are disrupted in the immediate vicinity of a landfill, further impacts from properly buried materials are unlikely.

Cursory on-site investigation and review of available information on George AFB revealed no significant environmental

stress caused by landfill disposal of hazardous wastes through surface erosion, surface runoff, or ground-water pathways. Application of treated effluent from the base wastewater treatment plant to the golf course has caused no apparent biological stress. Reported past application of sewage sludge and waste fuel to the perimeter road and to other areas on base also has not caused apparent biological stress. Environmental degradation associated with the use of herbicides and other pesticides was not evident.

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FINDINGS IV.

George AR # 2463 · Page 53 of 310

IV. FINDINGS

A. ACTIVITY REVIEW

1. <u>General</u>

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Major activities at George AFB contributing to the generation of potentially hazardous wastes include vehicle maintenance, ground support equipment maintenance, aircraft maintenance, and aircraft corrosion control. Other waste-generating activities include munitions disposal, pest control, and laboratory operations including photo development, non-destructive inspection (NDI), and fuels analysis.

2. Industrial Operations

A master listing of industrial operations and related activities identified during the Records Search is presented in Appendix Table D-1. The list is summarized in Table IV-1. Typical maintenance solvents and paint strippers used at the base include trichloroethane, trichloroethylene (TCE), methyl ethyl ketone (MEK), toluene, PD-680 (see Appendix L), and a phenolic-based carbon remover. Use of trichloroethylene was halted in the late 1970's. Wastes generated by the maintenance operations include spent solvent and waste oils, fuels, and greases removed from the equipment. Wastes generated by corrosion control activities include paint chips, waste paint, spent solvents, and spent strippers. Aircraft washrack activities result in the discharge of alkaline soaps, detergents, and small amounts of PD-680. Vehicle and aircraft washing produces the greatest volume of industrial waste discharge of any of the base activities.

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Table IV-1 INDUSTRIAL OPERATIONS SUMMARY

E.

Operation or Shop Waste Material Base Exchange Garage Oils, Grease, Solvents, Cleaners Vehicle Car Wash Detergents, Wax Auto Hobby Shop Cleaners, Solvents, Oils, Paints Vehicle Maintenance Cleaners, Acids, Oils, Solvents Cleaners, Acids, Oils, Solvents, AGE Maintenance Fuel Vehicle Wash Rack Detergents, Wax Engine Test Cell Waste Oil, Fuel, Solvents Corrosion Control Paints, Strippers, Solvents Pneudralics Shop Cleaners, Degreasers, Oils, Solvents Fuel Cell Maintenance Fuels, Solvents Detergents, Degreasers, Fuels Jet Engine Shop Aircraft Wash Racks Detergents, Fuels, Oils Solvents Fuels Lab Fuels, Acids, Solvents Repair and Reclamation Shop Detergents, Solvents Solvents, Paints, Oils Nonpowered AGE Shop Equipment Maintenance Cleaners, Oils, Paints, Strippers Pavements and Grounds Solvents, Adhesives, Fertilizer Entomology Shop Pesticides, Herbicides Photo Labs Developer, Acids, Process Chemicals Mobile Photo Lab Developer, Acids

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Table IV-1 INDUSTRIAL OPERATIONS SUMMARY (Continued)

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Operation or Shop	Waste Material
Paint Shop	Paints, Solvents
Machine Shop	Oil, Lubricants, Degreasers
NDI Lab	Kerosine, Penetrants, X-ray Film
Propulsion Lab	Oils, Solvents
Wheel and Tire Shop	Degreasers, Solvents, Detergents
Hydraulics Shop	Solvents, Cleaners, Hydraulic Fluid
Battery Shop, Tool Room	Acids, Grease, Solvents
Hospital	Medical Wastes, Chemicals
X-ray Lab	Developer, Fixer
Refuel Vehicle Maintenance	Oils, Lubricants, Solvents
Alert Support	Solvents, Oils, Fuel

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3. Fuels Storage and Maintenance

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Tanks currently used for fuels storage are listed in Table E-1, Appendix E. Abandoned fuels storage tanks are included in Table F-1, Appendix F. Disposition of the abandoned tanks is described in the table.

A variety of jet aircraft have been stationed at George AFB since the early 1950's. Major storage facilities have been provided for JP-4 fuel. Prior to 1950 and during the early 1950's piston-driven aircraft were located at George and an aqua-injection AVGAS system was used for leaded fuel storage and distribution. Reportedly, an 8-inch or 10-inch leaded fuel pipeline paralleling the north side of the operational apron was abandoned in place. Leaded fuel storage tanks for both MOGAS and AVGAS, abandoned or in use, are listed in the appropriate appendixes (E and F).

Disposal areas for fuels residues and tank cleaning bottoms are discussed in Section B of this chapter. Because of the low corrosion potential of the soils surrounding George AFB, tank and pipeline leakage has generally been minimal. Fuel inventories have indicated some leakage in the fuel line near facility No. 708, but the quantity has not been verified. An identified leak at 708 is discussed in Section B as are the few major spills encountered. Minor jet fuel and gasoline spills have occurred in many fuel storage and distribution areas. Current practice allows the draining of tanks on the ground to remove water but the volume of fuel loss associated with this practice is extremely small. A pollution control project is being instituted to reduce the fuel spillage even more. George AR **# 2463** Page 57 of 310

4. PCB Disposal

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PCB's are not considered to be a significant contamination problem because of the relatively small volumes involved and the low potential for migration to the ground water. Past practice has been to store unserviceable transformers for later salvage off base. Minor leaks have occurred when transformers have failed or were stored in the salvage yard. During the 1940's and early 1950's, as many as 10 PCB-laden transformers were reported to have been disposed in on-base landfills.

5. <u>Pesticide Usage</u>

Herbicides and other pesticides are applied on base for weed and pest control. Presently used chemicals inclue baygon, diazinon, malathion, dalapon, prometone, simazine, and 2, 4-D. The use of DDT was discontinued in 1962.

All pesticide operations are currently handled by the Entomology shop. Herbicides are applied to land adjacent to the runways and to vacant lots on base. Other pesticides are used in the base shops and buildings when necessary. Rodents at the golf course are baited with either warfarin or diphacione.

Herbicides and other pesticides were stored in the old incinerator building near the sewage treatment plant until 1968 and then in a Quonset hut near Civil Engineering until the present facility was completed (Building 673). Operations have not resulted in excessive amounts of pesticides requiring disposal, although a large quantity of DDT was reportedly buried east of the present sewage percolation ponds. Small amounts of excess pesticides and wastewater were normally dumped on the ground, but a concrete evaporation pit has been recently installed for this purpose. Rinsed empty cans and bags are disposed of in dumpsters.

Herbicide and other pesticide usage on base is summarized in appendix Table K-1.

6. Wastewater Collection and Treatment

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Wastes collected in the industrial/storm drain include discharge from the aircraft wash racks, wing fuel tank cleaning rinse, and water from the oil/water separator at the engine test cell located northeast of the apron. Past discharge to the industrial drain has included waste POL, fuels, solvents, paint strippers, and other miscellaneous flight line wastes.

The industrial/storm drain lies along both sides of the operational apron. Wastes collected in the south sewer pass through an often malfunctioning oil/water separator before combining with the north sewer for ultimate discharge to a drainage gulley leading to the Mojave River. Storm drainage plans indicate that the south industrial sewer is perforated for at least two-thirds of its length. Current plans call for connecting industrial waste sources currently discharging to the storm system to the sanitary sewage system by 1983.

Sanitary wastes and wastes from most of the base shops and laboratories are collected in the sanitary sewage system. Oil/water separators are provided in several areas for oil recovery prior to discharge to the sanitary sewar. Known oil/water separators are listed in Appendix G.

Typical industrial wastes collected in the sanitary sever include miscellaneous paints and solvents, photo lab wastes,

oils, cleaners, and degreasers from the various shops and maintenance activities. Incorporation of a solvent and oil recovery program in the early 1970's has reduced the industrial discharge rate.

Secondary treatment of the wastes is accomplished at the STP using trickling filters. Prior to 1977, secondary sludge was deposited in sludge drying beds and occasionally used for fertilizer on base or reportedly landfilled in an area adjacent to the industrial drain discharge gully. Recovered sludge has been disposed of off-site since 1977. No data were available on the chemical characteristics of the sewage sludge.

Secondary effluent is discharged to a series of oxidation ponds for ultimate evaporation/percolation or golf course irrigation. The base sanitary sewage system was connected to the Victor Valley Wastewater Reclamation Authority regional wastewater treatment system on 1 December 1981. On-base treatment is no longer provided. Potable water irrigation is anticipated for the golf course.

7. Other Activities

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No evidence was found concerning the use or manufacture of biological agents. A disposal site for low-level radioactive wastes was discovered and is discussed in Section B. The exact contents could not be identified but are thought to be limited to vacuum tubes.

Three sites were identified for munitions disposal following inactivation by burning. The sites are currently inactive. Inert starter cartridges are disposed of on-base as described in Section B.

8. Summary of Waste Disposal Practices

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Prior to 1976, essentially all of the solid wastes generated were disposed of on base property. Since then, the wastes have been hauled off-site. Waste POL fuels and solvents have historically been disposed of by burning either in the fill areas or for fire training. Currently, waste oils not used for fire training are salvaged in drums for off-site reclamation. The practice of waste POL salvage was initiated on a large scale at George Air Force Bage during the mid-1970's and has become increasingly effective.

Very little, if any, off-site migration of hazardous wastes is anticipated because of the relatively small quantities of hazardous wastes generated, the limited pathways available for migration, and the character of the wastes generated.

B. DISPOSAL SITES IDENTIFICATION AND RATING

Interviews with 36 past and present base personnel resulted in the identification of 51 disposal sites at George AFB. The sites included 2 current and 14 former landfills, 13 inactive miscellaneous solid waste burial or dump areas, and 25 liquid disposal or spill areas. These sites are shown on Figures 8, 9, 10, and 11. Approximate dates of major disposal site usage are shown in Figure 12. Potentially contaminated sites were rated using a modification of the system for rating the hazard potential of waste disposal facilities that was developed by JRB Associates, Inc., of McLean, Virginia, for the U.S. Environmental Protection Agency. This system was modified by the Air Force, CH2M HILL, and Engineering-Science for specific application to the Air Force Installation Restoration Program.



GEORGE AFB MUNITION DISPOSAL SITES M-1 THROUGH M-3

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	SITES	1940 1	950 19	60 19	70 1	980 11	185
No. 14-21	Munitions Disposal						
No. L-1	Bees Landfill						
No. L-2	TEL Disposel						
No. L-3.	Radioactive Disposal						
No. L-11,	Street Sweepings						
No. L-12	Original Base Landfill				2 **** 1 14 14		
No. L-13	Base Landfill]
No. 8-5	Fire Training Area					•	
No. 5-6	Abendoned Fire Trainin	ng					
No. 5-12	Golf Course					•	
No. 8-20	Industrali Outfall	-				-	
No. 8-21 8	TP Percolation Ponds					•	
No. 8-25	Sludge Drying Beds		Į				

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APPROXIMATE DATES

FIGURE 12 GEORGE AFB HISTORICAL SUMMARY OF ACTIVITIES AT MAJOR DISPOSAL SITES

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The Air Force site rating system consists of 26 rating factors that are divided into 4 categories, i.e., receptors, pathways, waste characteristics, and waste management practices, which are used to evaluate the principal targets of contamination, the mechanisms for migration, the hazards posed by the contaminants, and the facility's design and operation, respectively. Relative scores from each category are combined to give an overall score using appropriate weighting factors. A more detailed description of this hazard methodology is included in Appendix H.

The following is a brief description of each site identified during the Records Search at George AFB and the rationale used for deleting or rating each site. Table IV-2 presents a summary of the Decision Tree steps used in determining whether each site required numerical rating.

1. <u>Munitions Disposal Sites</u>

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Three on-base munitions residue burial sites were identified during the site visit. All three sites were located in the vicinity of the base landfill area south of Air Base Road.

o Site No. M-1 - located east of the existing grenade range near the abandoned small arms range. Identifiable residue found at the site included 20-mm cartridges and grenade debris. A concrete-lined burn pit filled with paint cans is located near the burial area. An unverified TNT and nitroglycerine burial site may be located near the burn pit. The site was reportedly closed in 1966 or 1967. The munitions disposed of could be hazardous if not completely inactivated but, because of low precipitation, high potential evaporation, and

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Table IV-2 DISPOSAL SITE RATING SUMMARY

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Site	Waste Type	Potential I	Migration	Mamorical Rating
Munitions				
N-1	Small Arms Residue	Yes	No .	No
M- 2	Small Arms Residue/011	Yes	Yes	Yes
H-3	Small Arms Résidue/Bombs	Yes	No	No
Landfills				
L-1	Industrial/Domestic	Yes	Yes	Yes
L-2	Fuel Tank Sludge	Yes	Tes	Yes
L-3	Radioactive/Toxic	Yes	Yes	Yes
L-4	Starter Cartridges	Yes	No	No
L-5	Paper	Ho	N.A.	No
L-6	Debris/Possible Asbestos	Yes	No	No
L-7	Construction Debris	' No	W.A.	No
L-8	Construction Debris	No	Η.λ.	No
L-9	Domestic	No	N.A.	No
L-10	Debris/Domestic	No	Η.λ.	No
L-11	Debris/Domestic/Industria	1 Yes	Yes	Yes
L-12	Industrial/Domestic	Yes	Yes	Yes
L-13	Industrial/Domestic	Yes	Yes	Yes
Othel Dumps				
B-1	Chemical Toilet Residue	No	W.A.	No
B-2	Paint	Yes	Yes	Yes
B-3	Debris/Industrial	Ho	Ж.λ.	No
B-4	Debris/Industrial	No	Ж.λ.	Ho
B-5	Rabble	Ho	Μ.λ.	Xo
B-6	Rubble/Domestic	No	Μ.λ.	No
B-7	Construction Debris	No	W.A.	lio
B8	Pesticides/Paint	Yes	Yes	Yes
B-9	Acids/011s	Yes	Yes	Yes
B-10	Pesticides/Oils	Yes	Yes	Yes
B-11	Aircraft	No	Ж.λ.	No
B-12	Aircraft Parts	Yes	Ho	No
B-13	Possible Munitions	Yes	No	No
Liquid Disp	osal or Spills			-
8-1	POL	Yes	Yes	Yes
8-2	Sanitary	No	Μ.λ.	No
8-3	POL	Yes	Yes	. Yes
8-4	Jet Fuel	Yes	Yes	Yes
8-3 8-4	POL Jet Fuel	Yes Yes	Yes Yes	. Ye Ye

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		Potential B	Numerical	
Site	Waste Type	Contamination	Migration	Evaluation
8-5	POL	Yes	Yes .	Yes
8-6 ·	POL	Yes	Yes	Yes
8-7	Jet Fuel	Yes	Yes	Yes
S-8	Jet Fuel	Yes	No	No
8-9	Creosote	Yes	No	No
8-10	Jet Fuel	Yes	No	No
8-11	Jet Fuel	Yes	No	No
8-12	STP Effluent	Yes	Yes	Yes
8-13	Jet Fuel	Yes	No	No
8-14	Jet Fuel	Yes	No	No
8-15	Jet Fuel	Yes	No	No
S-16	Leaded Gas	Yes	No	No
8-17	Jet Fuel	Yes	No	No
S-18	Solvents/Oils	Yes	No	No
8-19	Transformer Oils	Yes	No	No
8-20	Industrial	Yes	Yes	Yes
S-21	Sanitary/Industrial	Yes	Yes	Yes
8-22	POL	Yes	Yes	Yes
8-23	Jet Fuel	Yes	Yes	Yes
8-24	Sanitary/Industrial Sludge	Yes	No	No
8-25	Sanitary/Industrial Sludge	Yes	Yes	Yes

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the low ground water level, the potential for contaminant migration is extremely low. No numerical rating is required for this site.

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Site No. M-2 - located north of the tetraethyl lead (TEL) disposal site south of Air Base Road. The site is reportedly a 75-yard-long, 20-yard-wide, 10-foot-deep trench used in the late 1950's for small arms munitions residue disposal. Auto hobby shop waste oils may have been buried there from 1972 to 1976. The characteristics of the wastes may be hazardous and because of the possible disposal of waste oils at this site, some potential for hazardous waste migration exists. Numerical rating is warranted for this site.

Site No. M-3 - located south of the abandoned small arms range. A small 50-foot-square area was used for burial of burned practice bombs and small arms cartridges. Reported operational dates are conflicting, but it appears that the site may have been used until the early 1970's. The munitions disposed of could be hazardous if not completely inactivated, but because of low precipitation, high potential evaporation, and the low ground water level, the potential for contaminant migration is extremely low. No numerical rating is required.

Practice bombing was reported at a variety of sites during the early 1940's. None of the sites were on the main base and most of the property has since been excessed.

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2. Landfills

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The landfills identified at George AFB include general landfills (municipal and industrial waste) and rubble or debris disposal areas. Chemical disposal areas were identified near or within some of the landfill sites.

- Site No. L-1 located south of Air Base Road and 0 adjacent to the abandoned small arms range. The site was reportedly in operation as the major base landfill from approximately 1957 until 1970. Evidence of lube oil, paint, lacquer, naphthalene, PD-680, trichloroethylene, cleaning compound, hydraulic fluid, firefighting foams, batteries, oil spill absorbent, and general refuse disposal was found. An unverified report stated that 127 barrels of acetone (volume unknown) were buried in the southeast corner of fill. Waste oil and fuel were used for burning throughout the life of the landfill. A wide variety of potentially hazardous wastes were disposed of in this site and contaminant migration is possible due to surface erosion and because of the liquids disposed of in the landfill; numerical rating is warranted for this site.
- Site No. L-2 located within the west boundary of Site No. 1. The TEL disposal site was used for tank bottoms from leaded gasoline and JP-4 fuel storage tanks. The site was reportedly in operation from 1955 until 1966. A 200-foot-long, 15-foot-wide, 20-foot-deep trench may have been excavated in 1966 for JP-4 tank sludge disposal. Leaded gasoline sludge was disposed of following inactivation of the aviation gas aqua-system and

cleaning of the leaded gas storage tanks. Lead concentrations as high as 450 ug/1 were detected in samples collected during a 1980 test boring program. The potentially hazardous characteristics of the wastes disposed of and the potential for migration due to the disposal of liquids create the need for numerical rating of this site.

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Site No. L-3 - located directly west of Site No. 2. This site was identified on base maps as a disposal site for low-level radioactive wastes although this use could not be verified. The site may have been used for the disposal of vacuum tubes. Surface level radioactivity levels measured in 1980 were not above normal background levels. Unidentified toxic chemicals were reportedly disposed of also. The site was established in 1965 and presumably closed by 1970. The potentially hasardous characteristics of the wastes disposed of and the potential for migration due to the possible disposal of liquids create the need for numerical rating of this site.

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Site No. L-4 - located south of Site No. 3. This site was used for disposal of jet engine starter cartridges for the past 2 years. The site is currently active. The nature of the wastes could be hasardous if not properly inactivated, but because of the low precipitation, high potential evaporation and low ground water level, no potential for contaminant migration exists and the site does not require numerical rating. 0

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Site No. L-5 - located southwest of Site No. 1. This was a Privacy Act landfill used for paper disposal only with no burning. The site was operated from approximately 1972 through 1979. The characteristics of these wastes are not hazardous and numerical rating is not required for this site.

Site No. L-6 - located south of the perimeter road, northwest of the existing skeet range. This site was primarily used for wooden timbers and other debris disposal. The site may have been used for barracks demoliton and, if so, would contain waste asbestos and fiberglass. The operational dates are unknown. The nature of the wastes could be hazardous, but because of the low precipitation, high potential evaporation and low ground water level, no potential for contaminant migration exists and the site requires no numerical rating.

Site No. L-7 - located south of the perimeter road in line with southwest end of runway 21. The site was reported to be a borrow pit that was refilled with construction debris (pavement, rock). The site was possibly a ranch in the 1930's. The use dates are unknown. The characteristics of these wastes are not hazardous and numerical rating of this site is not required.

Site No. L-8 - located west of the perimeter road and the southwest end of runway 21. Concrete, asphalt, other rubble were buried here in the mid-1960's. The site may have been used for disposal (unverified) of aircraft parts and trash during the early 1940's. The characteristics of

these wastes are not hazardous and numerical rating of this site is not required.

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- Site No. L-9 located east of Building 806, north of Site No. 8. Evidence of miscellaneous trash disposal was found at this site. Operational dates for the site are unknown. The characteristics of these wastes are not considered hazardous and numerical rating of this site is not required.
 - Site No. L-10 located under the northern and eastern portions of the residential area. This site was used for construction debris and rubble disposal since 1944. Reportedly, some trash dumping and burning occurred during early 1950's. Before housing construction was completed in 1970, some debris may have been removed. The site was closed in approximately 1965. The characteristics of these wastes are not considered hazardous and numerical rating of this site is not required.
 - Site No. L-11 located north of residential area. The site is currently used for street sweeping disposal. Possible trash and rubble disposal occurred during the 1960's and early 1970's. The site was reportedly used for disposal of all base wastes from approximately 1953 until 1957 and would contain wastes similar to those of Site No. 1. The wastes may have been burned using waste oils in the mid 1950's. The potentially hasardous characteristics of the wastes disposed of and the potential for migration due to the disposal of liquids create the need for numerical rating of this site.
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Site No. L-12 - located under Building 761 (alert hangar) and apron. This site was used for disposal of nonsalvageable materials such as tools, POL, jeeps, scooters, and war supplies following the temporary base closure in 1946. Prior to 1950 all base trash was incinerated with the ash being disposed of in this area. Miscellaneous dumping and burning reportedly occurred until mid-1950's. The potentially hazardous characteristics of the wastes disposed of at this site and the potential for migration due to the disposal of liquids create the need for numerical rating of this site.

Site No. L-13 - located east of alert barn. Following closure of Site No. 1, all base wastes were disposed of at this site. No burning was allowed and a cover was placed nightly. Fuel residue disposal was minimized but the remaining wastes are similar to those of Site No. 1. The site was in operation from 1970 to 1976. Reportedly, some materials were disposed of in this site during the mid-1960's. The potentially hazardous characteristics of the wastes disposed of and the potential for migration due to the disposal of liquids create the need for numerical rating of this site.

3. Other Dump or Burial Sites

In addition to the landfills listed in the preceding section several miscellaneous dump or burial areas were reported. Use dates for most of these sites are unknown.

o Site No. B-1 - located southeast of the abandoned small arms range. Chemical toilet waste sludge disposal was reported. The characteristics of these wastes are not considered hazardous and numerical rating of this site is not required.

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- Site No. B-2 located east of the existing skeet range and adjacent to Air Base Road. The burial of 400 gallons of leaded paint during 1952 was reported. The potentially hasardous characteristics of the wastes disposed of and the potential for migration due to the disposal of liquids create the need for numerical rating of this site.
- Site No. B-3 located along the industrial drain discharge gully. Miscellaneous debris including small, empty cans and construction rubble were used for riprep at this site. The characteristics of these wastes are not considered hasardous and numerical rating of this site is not required.
- Site No. B-4 located at the off-base water supply wells (Nos. 5, 6 and 7). Miscellaneous debris including small, empty cans and construction rubble were used for riprap at this site. The characteristics of these wastes are not considered hazardous and numerical rating of this site is not required.
- Site No. B-5 located northeast of alert barn and north of landfill site No. 13. This site was a small rubble disposal area. The characteristics of these wastes are not hazardous and numerical rating of this site is not required.
- Site No. B-6 located east of STP percolation
 ponds and adjacent to the base boundary. Miscel laneous domestic trash and rubble were disposed of

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in this small area. The characteristics of these wastes are not considered hazardous and numerical rating of this site is not required.

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Site No. B-7 - located northeast of northeast end of runway 03. This site was a small construction demolition disposal area. The characteristics of these wastes are not hazardous and numerical rating of this site is not required.

Site No. B-8 - located east of alert hangar and southeast of Site No. 5. An unverified report of DDT, copper sulfate, and leaded paint disposal in this site was made. This site may be under the base landfill L-13. The potentially hasardous characteristics of the wastes disposed of and the potential for migration due to the disposal of liquids create the need for numerical rating of this site.

Site No. B-9 - located north of northeast end of runway 03. An unverified report of hydrochloric acid, sulfuric acid, oil, fuel and unidentified drum burial in this site was made. The quantity is unknown. The potentially hazardous characteristics of the wastes disposed of and the potential for migration due to the disposal of liquids create the need for numerical rating of this site.

 Site No. B-10 - located northeast of northeast end of runway 03. An unverified report of pesticide and oil drum burial in this site was made. The potentially hazardous characteristics of the wastes disposed of and the potential for migration due to 14

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the disposal of liquids create the need for numerical rating of this site.

Site No. B-11 - located southeast of STP percolation 0 ponds. This was a burial site for an F-111 aircraft. The characteristics of this waste are not considered hazardous and numerical rating of this site is not required.

Site No. B-12 - located northwest of Building 540. This was a burial site for miscellaneous aircraft parts. This site may be within the boundaries of the old salvage yard. The nature of the wastes could be hazardous, but because of the low precipitation, high potential evaporation, and low ground water level, no potential for contaminant migration exists and numerical rating of the site is not required.

Site No. B-13 - located east of Building 539. This site has served as the salvage yard since 1950 with the original boundaries extending approximately to Building 540. Possible munitions disposal was reported. The nature of the wastes could be hazardous, but because of the low precipitation, high potential evaporation, and low ground water level, no potential for contaminant migration exists and numerical rating of the site is not required.

Residue from approximately 10 aircraft crashes is reportedly buried on base property. Also, an earthern embankment on the abandoned runway was used in the 1950's to mid-1960's for gun sight alignment and "firing-in." The sand was reportedly changed once during this period and possibly hauled

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off base or to the on-site landfill. These sites are not considered to be significant sources of contamination and contaminant migration pathways a negligible.

4. Liquid Disposal or Spill Areas

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Several areas were identified where liquids were disposed of by leaching, dumping, or dumping and burning. Reported liquid spills are also included in the following listing.

- o Site No. S-1 located near Building 589. This site was a leach field for waste POL from truck maintenance. The potentially hazardous characteristics of the liquid wastes and the possible migration of these liquids, create the need for numerical rating of this site.
 - Site No. S-2 located near alert hangar. This site was a leach field for sanitary wastes and minor aircraft maintenance. An older system was abandoned but essentially the same area has been used since the early 1940's for the disposal of pri-marily sanitary wastes. The characteristics of the liquid wastes discharged are not considered hazardous and numerical rating of the site is not required.
 - Site No. S-3 located near Buildings 552 and 551. This site was a leach field for waste POL from vehicle maintenance and fuels lab. The potentially hazardous characteristics of the liquid wastes and the possible migration of these liquids create the need for numerical rating of this site.

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Site No. S-4 - located on the perimeter road especially near the engine test cells and also off the northwest end of the abandoned runway. This site was used for waste jet fuel surface disposal from 1,000-gallon bowsers. Twice-daily application rates were reported for 1965 and 1966. The potentially hazardous characteristics of the liquid wastes and the possible migration of these liquids, create the need for numerical rating of the site.

Site No. S-5 - located at the existing fire training area. Waste oils and fuels have been used to start fires at this site for training since 1970. The potentially hazardous characteristics of the liquid wastes and the possible migration of these liquids, create the need for numerical rating of the site.

- Site No. S-6 located south of the STP percolation ponds. This site is the abandoned fire training area with waste oils and fuels used to start fires from the early 1940's to 1970. The area may extend under the existing ponds and is currently used as the DPDO storage yard with reported oil, asphalt, and dust pallative spills. The potentially hasardous characteristics of the liquid wastes and the possible migration of these liquids create the need for numerical rating of this site.
- Site No. S-7 located south of Building 685 and adjacent to apron. This area serves as the wing tip fuel tank drainage area. Major dumping occurred from 1950 until 1977 with minor drainage occurring currently. The upper soil layer has

been removed in the past. The potentially hazardous characteristics of the liquid wastes and the possible migration of these liquids create the need for numerical rating of this site.

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Site No. S-8 - located near engine test cell 799. Periodic jet fuel spills have occurred at this site during testing. The wastes discharged at this site are potentially hazardous, but the suspected quantity is relatively insignificant and contamination is not anticipated. Numerical rating of this site is not required.

Site No. S-9 - located near munitions disposal area south of abandoned small arms range. Possible spills from a creosoting operation prior to 1960 were reported for this site. The wastes discharged at this site are potentially hasardous, but the suspected quantity is relatively insignificant and contamination is not anticipated. Numerical rating of this site is not required.

- Site No. S-10 located east of the missile maintenance area. A jet fuel spill of an unknown quantity was reported at this site. The wastes discharged at this site are potentially hazardous, but because of the high evaporation rate, the suspected quantity is relatively insignificant. No contamination is anticipated and numerical rating of this site is not required.
- Site No. S-11 located near Building 708. A jet
 fuel pipeline leak of an unknown quantity occurred
 at a low point drain in 1980. The wastes discharged

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at this site are potentially hazardous, but the suspected quantity discharged during this incident is relatively insignificant and no contamination is anticipated. Numerical rating of this site is not required. The reported leak may be indicative of deteriorating piping or faulty construction. Continuing fuel losses have been reported as discussed in the activity review section. The high evaporation rate minimizes the potential of contamination but continued discharge could become a problem.

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Site No. S-12 - located at golf course. Effluent from the STP percolation ponds has been used to irrigate the golf course since 1965. Several industrial operations (refer to Appendix D) discharge wastes to the sanitary sewer system. The dilution ratio is high and the wastewater undergoes secondary treatment before discharging to the ponds. The characteristics of the liquid wastes are still potentially hazardous. The golf course is located near the residential area and the off-base water supply wells and migration is possible. Numerical rating of this site is required.

Site No. S-13 - located near intersection of Phantom Street and Desert Street. This site was the accumulation point for jet fuel discharged from 5,000-gallon fuel truck in 1980. The wastes discharged at this site are potentially hazardous, but because of the high evaporation rate the suspected quantity is relatively insignificant. Possibly contaminated soils were removed from the site. Numerical rating of this site is not required.

Site No. S-14 - located near POL bulk fuel storage area at Building 549. A potential 36,000-gallon jet fuel pipeline leak in 1969 was reported at a low point drain. The fuel did not saturate the soil to the surface and the actual quantity lost was probably less than 1,000 gallons. The wastes discharged at this site are potentially hazardous, but the suspected quantity is relatively insignificant and no contamination is anticipated. Numerical rating of this site is not required.

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Site No. S-15 - located at southwest end of operational apron. Small leaks caused by faulty construction have been detected in the piping at 2 of the 3 jet fuel hydrants in pit No. 1 within the past 2 years. The wastes discharged at this site are potentially hazardous but the suspected quantity is relatively insignificant and no contamination is anticipated. Numerical rating of this site is not required.

Site No. S-16 - located near Building 690. Miscellaneous leaded gasoline spills at the aqua-system prior to the mid-1950's were reported. The wastes discharged at this site are potentially hazardous but the suspected quantity is relatively insignificant and no contamination is anticipated. Numerical rating of this site is not required.

Site No. S-17 - located near engine test cell No. 819. A jet fuel spill of 8,000 gallons occurred here in early 1950's. The wastes discharged at this site are potentially hazardous, but because of the high evaporation rate and the length of time since the

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spill occurred no effects of contamination are expected to remain. Numerical evaluation of this site is not required.

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Site No. S-18 - located at salvage yard. Miscellaneous small spills of solvents, waste oils, and other liquids stored at salvage yard were reported. The wastes discharged at this site are potentially hazardous, but the suspected quantity is relatively insignificant and no contamination is anticipated. Numerical rating of this site is not required.

Site No. S-19 - located near Building 560. This site is a temporary storage area for unservicable transformers. Subsequent minor leakage of transformer oils has occurred. The wastes discharged at this site are potentially hazardous, but the suspected quantity is relatively insignificant and no contamination is anticipated. Numerical evaluation of this site is not required.

Site No. S-20 - located in the northeast corner of the base. This site is the industrial/stormwater outfall gully and contains waste oils, fuels, solvents, and paint strippers. This drainage has been used since early 1940's. A portion of the pipeline preceding the outfall is perforated and bedded in sand and gravel. During the mid 1940's, STP percolation ponds were located in the portion of the gully near the existing ponds. A small dam near the alert hangar intercepts low flows for percolation/evaporation. The potentially hazardous characteristics of the liquid wastes and the possible migration of these liquids create the need for numerical rating of this site. 0

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Site No. S-21 - located south of alert hangar. This site consists of the STP percolation ponds that have been used since early the 1950's for treatment of primarily sanitary wastes. Waste oils and solvents from several industrial shops (refer to Appendix D) are regularly collected in the sanitary system. The abandoned fire training area may extend into the pond area. The dilution ratio is high and the wastes undergo secondary treatment before discharge to the ponds. The characteristics of the wastes are still potentially hazardous and the possibility of contamination due to migration through the fire training area exists. Numerical rating of this site is required.

- Site No. S-22 located adjacent to Building 555. A 30-foot-deep, 4-foot-diameter brick-lined drain pit or drywell is used for disposal of waste POL from equipment maintenance. The drain is currently in operation and the construction date is unknown. The potentially hazardous characteristics of the liquid wastes and the possible migration of these liquids create the need for numerical rating of this site.
- Site No. S-23 located adjacent to Building 559.
 This site is an abandoned drain pit or drywell that was used for jet fuel disposal during an unknown period. The potentially hazardous characteristics of the liquid wastes and the possible migration of these liquids create the need for numerical rating of this site.
- Site No. 8-24 located along industrial discharge gully north of the runway. Past disposal of sewage

sludge was reported. No evidence of disposal was observed, and the possibility of contamination is considered low. Numerical rating of this site is not required.

Site No. S-25 - located adjacent to the STP. This site consists of the sludge drying beds used for sanitary and industrial primary sludges resulting from residential and shop discharge to the sanitary sewage system. The beds have not been used since the mid-1970's. A large majority of the sludge resulted from residential discharge, but the presence of potentially hazardous industrial wastes and the possible migration of these contaminants create the need for numerical rating of this site.

In addition to the readily identifiable sites listed, miscellaneous shop wastes including TCE were dumped at various locations on base for grass control; rinse water for pesticide containers was disposed of at various locations; sewage sludge was used as fertilizer in various locations and spread on the perimeter road; a small amount of transformer oil was discharged at various transformer malfunction sites (less than 10 total); and miscellaneous spills may have occurred at storage areas near all of the outlying revetments. These unidentifiable sites are not believed to be potential sources for contamination because of the relatively small quantities invovled.

5. Site Rating

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Site rating using the modified hazard potential rating system, was conducted on those sites considered to have the potential for hazardous waste migration. A complete listing of disposal George AR **# 2463** Page 86 of 310

sites is presented in Table IV-2. Sites determined to require numerical rating are so indicated.

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The numerical system consists of 26 rating factors that are divided into 4 categories: receptors, pathways, waste characteristics, and waste management practices which are used to evaluate the principal targets of contamination, the mechanisms for migration, the hazards posed by the contaminants, and the facility's design and operation, respectively. Relative scores from each category are combined to give an overall score using appropriate weighting factors. A more detailed description of this hazard rating methodology is included in Appendix H.

Numerical results for each rated site are presented in Table IV-3. Copies of the rating forms for each site are included in Appendix I. Ratings for the Cuddeback Range sites are also presented. The sites are described in Section VII. George AR **# 2463** Page 87 of 310

Table IV-3 SUMMARY OF RESULTS OF SITE ASSESSMENTS^a

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		Subscores	(Percent			
<u>fite</u>	Site Description (Weighting Factor):	Receptors 0.22	Pathways 0.30	Waste Characteristic 0.24	Waste Nanagement Practices 0.24	Overall Score (Neighted Average)
Munitions		••				
M-2	Nunitions Disposal	22	16	60	57	38
Landfills						
L-1	Base Landfill	33	18	80 -	72	50
L-2	TEL Disposal Site	22	19	80	62	45
L-3	Radioactive Disposal	22	14	60	53	36
L-11	Street Sweeping Disposal	30	18	. 70	46	40
L-12	Original Base Landfill	27	12	70	64	42
L-13	Base Landfill	27	22	80	71	49
Surial Sit	•					
B-2	Paint Drum Burial	31	12	50	57	36
3-8	Pesticide and Paint Buria	1 24	16	50	57	36
B-9	Acid and Oil Burial	24	16	50	61	37
B-10	Pesticide and Oil Burial	24	16	50	57	36
Liquids Di	sposal or Spills					
8-1	POL Leach Field	33	12	50	48	34
8-3	POL Leach Field	33	12	50	48	34
8-4	Fuel and Oil Disposal	20	14	80	65	44
8-5	Fire Training Area	31	19	80	65	47
8-6	Abandoned Fire Training	27	21	80	65	47
8-7	Tip Tank Drainage Area	33	17	80	57	45
8-12	Golf Course	61	16	50 -	62	45
8-20'	Industrial Outfall and Pipeline	37	34	100	74	60
8-21	STP Percolation Ponds	27	30	60	74	47
8-22	French Drain	33	14	80	48	42
8-23	French Drain	33	14	70	48	40
8-25	Sludge Drying Beds	27	16	60	73	43
Other Site	•					
C-1	Cuddeback Range Landfill	36	16	60	64	42
C-6	Cuddeback Burial Site	36	16	60	59	41

Basis of rating is a modification of the system developed by JRB Associates, Inc., of McLean, Virginia; the system was modified by the Air Force, CR2M MILL, and Engineering-Science for application to Air Force Installation Restoration Program Records Search.



George AR # 2

V. CONCLUSIONS

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- A. No direct evidence was found to indicate that migration of hazardous contaminants beyond George AFB property exists.
- B. Information obtained through interviews with 36 past and present base personnel and field observation indicates that potentially hazardous wastes have been disposed of on George AFB property in the past.
- C. Industrial activity at George AFB consists primarily of routine aircraft and vehicle maintenance. Generation of large quantities of hazardous wastes has not occurred in comparision to bases having significant aircraft rework and maintenance missions; therefore, associated contamination problems are considered to be relatively small.
- D. The potential for off-site migration of hazardous wastes is low because of the relatively low groundwater levels, extremely low precipitation, high potential evaporation and the absence of major surface waters. The soils are permeable, but the depth to groundwater or bedrock should allow a high degree of contaminant attenuation in the soil.
- E. Table V-1 presents a priority listing of the rated sites and their overall scores. In some areas, the sites are close together and possible additive effects may result from combined contaminant migration. As a result, three general areas have been identified as having the highest potential for pollutant migration and are presented in order of priority:

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Table V-1 PRIORITY LISTING OF DISPOSAL SITES

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Site No.	Description	Overall Score	
8-20	Industrial Outfall and Pipeline	60	
L-1	Base Landfill	50	
L-13	Base Landfill	49	
S-6	Abandoned Fire Training Area	47	
S-5	Fire Training Area	47	
S-21	STP Percolation Ponds	47	
S-7	Tip Tank Drainage Area	45	
L-2	TEL Disposal Site	45	
S-12	Golf Course	45	
S-4	Fuel and Oil Disposal	44	
S-25	Sludge Drying Beds	43	
L-12	Original Base Landfill	42	
S-22	French Drain	42	
C-1	Cuddeback Landfill	42	
C-6	Cuddeback Burial Site	41	
S-23	French Drain	40	
L-11	Street Sweeping Disposal	40	
M-2	Munitions Disposal	38	
B-9	Acid and Oil Burial	37	
B-2	Paint Drum Burial	36	
B-8	Pesticide and Paint Burial	36	
B-10	Pesticide and Oil Burial	36	
L-3	Radioactive/Toxic Disposal	36	
S-1	POL Leach Field	34	
8-3	POL Leach Field	34	

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Industrial Outfall and Pipeline (Site No. S-20)

The industrial drain collects fuels, waste POL, solvents and other miscellaneous wastes from the flightline area and discharges into a gully leading to the Mojave River. Near the river, the gully bottom approaches the groundwater level. Oil saturated soils were observed in the gully and a perforated pipeline along the apron allows subsurface discharge of the wastes.

2. Northeast Disposal Area

The northeast disposal area includes the STP percolation ponds (S-21), the most recent base landfill (L-13), the abandoned fire training area (S-6), the sludge drying beds (S-25), the original base landfill (L-12), the street sweeping disposal area (L-11) and the three unverified acid, oil, paint, and pesticide burial sites (B-9, B-8, B-10).

Chemical oxygen demand (COD) analyses on samples taken from a monitoring well adjacent to the STP percolation ponds indicate some influence by the wastewater on the groundwater quality. Percolate from the ponds may pass through the abandoned fire training area. Additive effects from the proximity of several sites containing potentially hazardous liquid and solid wastes are of major concern and although the sites were individually rated, possible contaminant migration from the entire area should be considered.

3. Southeast Disposal Area

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The southeast disposal area consists of a major base landfill (L-1), the TEL disposal site (L-2), the munitions disposal site (N-2), and the radioactive/toxic chemical disposal site (L-3). Because of the proximity of these sites, the wide variety of industrial and general solid and liquid wastes that were disposed of, and the possibility of significant overlapping of the disposal areas, potential contaminant migration from the entire area should be considered.

The remaining sites are not considered to present a significant migration hazard. Heavy surface runoff and the resulting erosion could cause the transport of potentially hazardous debris beyond the base boundaries, but the contamination would be insignificant because of the small quantities involved.



. RECOMMENDATIONS

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A limited monitoring program is suggested to substantiate the absence of contamination and contaminant migration. Significant health hazards have not been identified and no urgent need for the monitoring program exists, i.e., the priority for monitoring at George is considered moderate.

Table 1 in the Executive Summary presented a summary of recommanded groundwater monitoring sites, parameters to be measured, and rationale. Specifically, monitoring is suggested for the industrial drain (S-20), the northeast disposal area (S-21, L-13, S-6, S-25, L-12, L-1, B-9, B-8, B-10), and the southeast disposal area (L-1, L-2, M-2, L-3) as identified in the conclusions. Approximate monitoring well locations are shown in Figure 1 of the Executive Summary.

For the industrial drain, two monitoring wells should be installed down-gradient from the drain along the base parimeter, and a background water quality monitoring well should be located up-gradient from the existing fire training area. The wells should be upproximately 100 feet deep. Samples from these three wells plus the existing STP percolation pond monitoring well should be analyzed for volatile organic compounds (including TCE and HEK), phenols, gross contaminants (TOC, COD, oil and grease, pH, specific conductance), and suspected heavy metals (chromium, lead, cadmium, and silver). Installation of these down-gradient wells along the base perimeter will also assist in verifying possible contaminant migration from the northeast disposal area. D. Exfiltration tests should be conducted to verify that the initial section of the industrial drain line is indeed perforated and to determine the exfiltration rate. If the tests indicate that significant exfiltration occurs or has occurred in the past, a limited groundwater monitoring program similar to that suggested in paragraph C should be considered. The wells should be located as to isolate the perforated industrial drain line, i.e., up-gradient and down-gradient of the perforated section.

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- To evaluate potential migration problems due to erosion E. in the industrial drain gully, two background and five gully soil samples, composited from at least three 1-foot-deep samples each, should be analyzed. The gully samples should be collected in the sections preceding the retention dam (two samples), at the dam itself (two samples), and just before the base boundary (one sample). The analytical procedure would include a standard EPA extraction procedure for heavy metals analysis and an organic extraction "fingerprint." Extractants for the organic "fingerprint" are made by adding 50 grams of soil to methylene chloride for a total volume of 100 millimeters. The fingerprint analysis is conducted by comparing the coincidence and magnitude of the peaks on a gas chromatograph output plot for the background and gully samples. Should organic contamination be indicated, additional analyses would be required to identify the specific organic compounds.
- F. To evaluate the potential migration from the northeast disposal area more fully, three additional monitoring wells approximately 160 feet deep are recommended along the perimeter of the entire area coordinated with the location of the industrial drain monitoring wells.

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Essentially the same analyses as described in paragraph C would be required, plus pesticide analyses (DDT, chlordane).

G. One background well and three monitoring wells approximately 100 feet deep are recommended for the southeast disposal area. The monitoring wells should be located along the northeast perimeter of the sites near the base boundary. The wells should be analyzed for the same parameters as the industrial drain.

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- H. A magnetometer survey should be conducted to verify and locate the reported burial site of 127 barrels of acetone in the southeast disposal area and particularly in Site L-1. The radioactive/toxic chemical area (L-3) should also be examined at this time for verification of chemical barrel disposal.
- I. The jet luel line near facility 708 should be pressure tested to ascertain whether significant fuel leakage may be occurring. Efforts should be made to isolate possibly damaged pipe sections during the testing. Unless extremely large leaks are detected, the likelihood of groundwater contamination is low.
- J. Specific details of the limited Phase II program outlined above should be finalized during the initial stages of Phase II. It is not the intent of Phase I to assess the depth or exact location or depth of any groundwater monitoring wells. In the event that contaminants are detected during visual inspection of the test pit or in the water samples collected from any of the wells, a more extensive field survey program should be implemented to determine the extent of the contaminant migration. The Phase II Contractor should be responsible for evaluating the results of the program outlined above and for recommending additional monitoring, as appropriate.



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VII. CUDDEBACK LAKE AIR FORCE RANGE

A. DESCRIPTION OF RANGE

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Cuddeback Air Force Range is located adjacent to the eastern edge of Cuddeback Lake, a dry lake basin. The range is approximately 50 miles north of George AFB and occupies 7,564 acres. The facility, established in the 1940's as a World War II artillery range, currently is used for bombing practice. Ordnance disposal is a significant activity at Cuddeback. Surrounding lands are, for the most part, undeveloped. A vehicle maintenance shop is located at Cuddeback along with related diesel and gasoline storage facilities. Potable water is provided by a well located near the shop/residential facil-Storage of bombing targets is also provided at ity. Cuddeback. Figure 13 shows the portion of the range where activities are concentrated. The remainder of the range extends approximately four miles to the north but has had little or no use by the Air Force.

B. ENVIRONMENTAL SETTING

1. Geology and Hydrology

Cuddeback Lake, located in the Mojave Desert, is a dry playa and is the lowest portion of a basin with interior drainage. Mountains to the north of the valley consist of volcanic rock. These mountains include Red Mountain and Almond Mountain. The western and southern edges of the valley are composed of granitic rock. Extensive alluvial fans have developed along the valley margins and extend to the playa.



Water well records in the area indicate water levels in the range of less than 30 feet to more than 200 feet beneath the ground surface, depending upon topography and location within the valley. The ground-water level beneath the playa is approximately 50 feet below the ground surface, effectively minimizing the potential for ground-water discharge to the playa surface. The water table is relatively flat at an approximate altitude of 2,510 feet above sea level (Kunkel, 1956). Groundwater flow is minimal due to the flat gradient.

Water quality is variable within the valley with a range in total dissolved solids from less than 400 milligrams per liter to more than 4,000 milligrams per liter. The well at the Cuddeback Range facility was sampled in 1980 and found to have a total dissolved solids concentration of 1,562 milligrams per liter. Detailed water quality analyses are reported in Table VII-1.

2. Environmentally Sensitive Conditions

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The vegetational community at Cuddeback Range is the same as the predominant community at George AFB, i.e., creosote bush scrub. The western border of the range approaches a transitional vegetation zone as the salt content increases towards the dry lake bed. Mojave saltbush increases and replaces creosote bush around the lake. The lake bed itself supports very little vegetation. The lake lies within the area designated to have Western Mojave Desert Mojave Saltbush Assemblage.

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Table VII-1

CUDDEBACK RANGE WELL WATER QUALITY

AUGUST 1980

Parameter	Concentration	(mg/1)
Chloride	128	
Hardness as CaCO,	849	
Total Dissolved Solids	1,562	
Sulfate	31	· ·
Surfactants	<.1	
Nitrate	1.9	
Arsenic	<.01	*
Darius	<1.0	•
Cadalun	<.01	
Chroniun	<.05	
	.07	
Morcury	<.002	•
Selenium	<.01	
Silver	<.01	
Copper	< .02	
Tron	1.57	
Tinc	< .05	1.
	273	
	40	
Solum	22	

Animal life in this vicinity consists of the same species noted to occur at George AFB including coyote, bobcat, fox, jackrabbit, ground squirrel, and various rodents and reptile species. The range personnel collect Mojave green rattlesnakes for research purposes. These animal species are likely to occur in greater abundance at the range because of the relatively undeveloped condition of the surrounding lands.

Although no detailed investigations have been conducted on the range, the Mojave ground squirrel (<u>Citellus mohavensis</u>), which the California State Department of Fish and Game designated rare, and the desert tortoise (<u>Gopherus agassizi</u>), which the BLM has designated sensitive, are suspected to exist there.

No widespread environmental stress caused by handling of hazardous substances at Cuddeback Range was found in a cursory investigation of the range. Only a relatively small portion of the range is developed. Localized areas of environmental disturbance include the landfill sites, munition burn pits, materials storage area, and test bombing ranges. These areas have been established for a number of years and do not appear to have widespread effects on biota of the range.

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Six distinct fill or disturbance sites were noted at Cuddeback Range in addition to the currently established bombing and gunnery target areas. These sites are described below.

C-1 - presently used disposal site located east of
 Tower No. 2. Small quantities of waste oil, solvent,
 paint, and pesticide containers, petroleum products

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from vehicle maintenance, and spent munitions are buried at this site. It was established in approximately 1954. The wide variety of potentially hazardous wastes disposed of in this site, the potential for migration due to the liquids disposed of, and the down-gradient location of the water supply well create the need for numerical rating of this site.

C-2 - temporary munitions residue storage site located west of the range facility building near Tower No. 1. Reportedly, some burial of miscellaneous wastes may have occurred. The nature of the buried wastes could be hazardous, but the guantity is small and no potential for contaminant migration exists because of the low precipitation and high evaporation rates. The site does not require numerical rating.

C-3 - series of three burn pits north of the range runway, used by EOD for ordnance inactivation. Current operations include disposing of spent munitions at site C-1; however, there is some indication this area may have been used for burial as well. The nature of the wastes could be hazardous, but no potential for contaminant migration exists because of the low precipitation and high evaporation rates. The site does not require numerical rating.

C-4 - bare areas just east of site C-3. These sites may be old TAC targets or disposal sites. The characteristics of the wastes that may have been buried are not considered hazardous and numerical rating is not required.

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C-5 - located south of maintenance facility. Some leakage from a 300-gallon MOGAS tank has occurred prior to repairs made in 1980. Minor diesel spills also occur in the area. The wastes discharged at this site are potentially hazardous, but the suspected quantity is relatively insignificant. Numerical rating of this site is not required.

C-6 - inactive disposal site located south of Site No. 1. Presumably, small quantities of wastes similar to those disposed of in Site No. 1 were also buried in this site during a period that could not be identified. The wide variety of potentially hazardous wastes disposed of in this site, the potential for migration due to the liquids disposed of, and the down-gradient location of the water supply well create the need for numerical rating of this site.

The approach corridor for the bomb sites is marked at night by burning waste fuels in flare pots and has received some spilled fuels. Several disturbed areas in the southern half of the range indicate possible burial sites. Additionally, some practice munitions and miscellaneous trash items were noted scattered in areas not regularly policed. Disturbances and target debris were not observed in the northern half of the range. The facility sanitary system is a septic tank and leach field draining westward towards Cuddeback Lake. No significant contaminant migration pathways or receptors exist for any of these sites and numerical rating is not required.

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D. CONCLUSIONS

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Desert ecosystems, though sensitive to disturbance, have relatively stable soil conditions because of the dry climate.

Movement of toxic substances by water in this type of system is likely to occur only if ground water is present or during flash flooding if wastes are not buried properly.

Although some spills have been noted, and vehicle maintenance activities at Cuddeback are significant, hazardous waste migration at Cuddeback Lake is not likely because of the low precipitation, high evapotranspiration, low ground-water level, and site remoteness.

Using the previously described decision tree methodology, two sites were identified at Cuddeback as having the potential for hazardous waste migration. This potential was primarily due to the combined disposal of possibly hazardous wastes with liquid wastes. The site scoring is included in Table IV-2.

B. RECOMMENDATIONS

Additional hazardous waste monitoring is not considered necessary at Cuddeback Lake because of the relatively small quantities of wastes involved and the lack of migration pathways and receptors.



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VIII. LEACH LAKE RANGE

DESCRIPTION OF RANGE A.

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The Leach Lake site is located in the northern section of the U.S. Army's National Training Center at Fort Irwin. The site is approximately 80 miles northeast of George AFB and 40 miles northeast of Cuddeback Range. The range covers 61,442 acres and is used for general bombing practice and war game activities. Date of establishment for this range is unknown. Ordnance disposal is the only significant waste management practice at Leach Lake. Figure 14 shows the portion of the range associated with waste disposal activities. The entire site ranges 7 miles to the east and 3 miles to the west of the area shown.

в. ENVIRONMENTAL SETTING

1. Geology and Hydrology

The Leach Lake site is located in an elongated valley running east to west along the Leach Lake Fault, an eastern extension of the Garlock Fault. Leach Lake is a playa within the valley between the Granite Mountains to the south and Quail and Owls Head Mountains to the north. Numerous springs are present along the edge of the Granite Mountains.

No published information is available on the groundwater conditions at Leach Lake. Field observations indicate that the ground-water table is approximately at the elevation of the playa surface, which is 1,925 feet above sea level. The water table gradient is probably very slight and in a direction



towards Leach Lake from the surrounding mountains. Leach Lake Valley is an area of interior drainage to Leach Lake, with the lake receiving the surface runoff from the area.

Sediments within Leach Lake Valley appear to be alluvial fan deposits from the surrounding mountains. Those deposits originating in the Granite Mountains tend to be coarse grained at the ground surface and may have high permeability. The alluvial fan deposits on the north side of the valley deposited from fans out of Owls Head and Quail Mountains tend to be more fine grained and probably of lower permeability.

2. Environmentally Sensitive Conditions

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The vegetation in Leach Lake Valley is similar to that found at George AFB and Cuddeback Range, i.e., creosote bush scrub. Ground-water conditions at the lake itself have resulted in a different vegetational community in the lake bed. This community type is known as alkali sink and its major components are grease wood, saltbush, inkweed, and pickleweed (Appendix J).

Animal species are likely similar to those at George AFB and Cuddeback. Wild burro and desert bighorn sheep can possibly be found in the mountains to the east of the valley.

No widespread environmental stress caused by the handling of hazardous substances at Leach Lake was found in a cursory investigation of the range. While only a small portion of the valley has been
cleared of vegetation for roads, disposal sites, and camps, evidence of explosive ordnances and vehicle tracks can be seen throughout the valley. Bare areas showed evidence of being old targets rather than disposal areas.

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Two major landfill areas and two other disturbance areas were identified at Leach Lake Range that involve disposal operations:

- o LL-1. current ordnance disposal site located northwest of the lake. This RCRA interim status site was relatively clean of miscellaneous debris and appears to be operated properly. Two active and two closed fill trenches were observed during the field visit. The nature of the wastes could be hazardous, but no potential for contaminant migration exists because of the low precipitation and high evaporation rates. The site does not require numerical rating.
 - LL-2 located west of LL-1. This RCRA interim status site is apparently not used as often as Site No. 1 and has rusted vehicular debris alongside an open trench. Unmarked closed trenches are probably contained in the site. The nature of the wastes could be hazardous, but no potential for contaminant migration exists because of the low precipitation and high evaporation rates. The site does not require numerical rating.

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LL-3 and LL-4 - general refuse disposal areas for two range personnel camps located along the southern slopes of the valley. Miscellaneous trash was noted on the surface of both disposal areas. The characteristics of these wastes are not considered hazardous and numerical rating is not required.

Target and explosive ordnance debris were noted to occur throughout the valley. There was evidence of removal of crashes from crash sites.

D. CONCLUSIONS

The potential of hazardous waste migration at Leach Lake is extremely low because of a number of factors including low precipitation, high evapotranspiration, low groundwater level in all areas except those approaching the lake, low groundwater velocities, and the remoteness of the area. The quantity and characteristics of the wastes disposed of do not facilitate transport. No sites were considered to warrant numerical rating.

E. RECOMMENDATIONS

Additional hazardous waste monitoring is not considered necessary at Leach Lake.

IX. OTHER OFF-BASE FACILITIES

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IX. OTHER OFF-BASE FACILITIES

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Five other off-base facilities were analyzed in addition to Cuddeback and Leach Lake Ranges (refer to Figures 2 and 3). These include:

- 1. Red Mountain Light Annex
- 2. Lake Isabella Recreational Area
- 3. George AFB Outermarker
- 4. Off-base Water Supply Wells
- 5. George AFB Railroad Spur

Red Mountain Light Annex is atop Red Mountain, northwest of Cuddeback Range. The records search did not indicate the use or disposal of any hazardous materials at this site.

Lake Isabella Recreational Area is located in the Sierra Nevada Range north of the Sequoia National Forest. This area is a designated recreational facility for Air Force personnel consisting of a campground and sanitary facilities including a camper sewage disposal facility. The records search did not indicate the use of or disposal of any hazardous materials at this site.

The George AFB Outermarker is a designated area north of the main runway at George AFB. Records do not indicate that an outermarker station was ever established at this site.

Because of their proximity to the base, waste disposal at the water well sites was discussed in Section IV (Site B-4).

The railroad spur is an unused line running from the railroad into George AFB along its southern border. This railroad was once used for supply transport and maintained by Air Force personnel until 1959. Supplies are now transported by truck and this spur is no longer used or maintained. The records search did not indicate any spill ever occurring along this spur.

An ingrant/outgrant listing was reviewed to identify other off-base sites where potentially hazardous wastes may have been disposed of. No other sites were discovered.

Conclusions

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Hazardous wastes were not associated with any of the other off-base sites in quantities sufficient to cause a migration problem or warrant numerical rating.

Recommendations

Additional hazardous waste monitoring is not considered necessary at any of the other off-base sites.



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PHOTO 1: SOUTH LANDFILL AREA TEL (L-2) AND RADIOACTIVE (L-3) WASTE DISPOSAL SITES

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PHOTO 2: SOUTH LANDFILL AREA (L-1), PRIVACY ACT LANDFILL (L-5), AND TEL DISPOSAL SITE (L-2)



PHOTO 3: SOUTH LANDFILL MUNITIONS DISPOSAL AREA M-1

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PHOTO 4: SOUTH LANDFILL AREA (L-1) MISCELLANEOUS WASTES

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PHOTO 6: PRIMARY DISPOSAL SITES NE OF BASE

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PHOTO 7: GEORGE AFB WWTP AND SLUDGE DRYING BEDS (S-25)

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PHOTO 9: LEACH LAKE RANGE ORDNANCE DISPOSAL AREA LL-1

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PHOTO 10: LEACH LAKE RANGE ORDNANCE DISPOSAL AREA LL-2

Appendix A

RESUMES OF KEY TEAM MEMBERS

George AR #

MICHAEL C. KEMP

Education

M.S., Civil and Environmental Engineering, Utah State University, 1978 B.S., Civil Engineering (environmental emphasis), Tennessee Technological University, 1976

Experience

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Since joining CH2M HILL in June of 1978, Mr. Kemp has participated in a variety of projects. His major project experience includes:

- On-site inspection, operations and maintenance manual preparation, and construction services for the expansion of a potato processing wastewater treatment plant in Quincy, Washington.
- Preparation of operating and closure plans for RCRA hazardous waste disposal requirements for Gulf Oil Company, Port Arthur, Texas.
- Preliminary study of sanitary landfill leachate treatment alternatives for Portland Metro.
- Feasibility of land application of pulp mill wastewaters for Australia Pulp Manufacturers, Melbourne
- Review of sampling, analysis, and treatability alternatives used in the EPA Aluminum Forming Development Document for the Aluminum Manufacturers Association.
- Miscellaneous coal fines dewatering facility design and hydraulic analyses for the Washington Irrigation and Development Company.
- Miscellaneous facility design and preparation of the operations and maintenance manual for the ITT Rayonier pulp mill wastewater treatment plant in Port Angeles, Washington.

Before joining CH2M HILL Mr. Kemp served 2 years as a laboratory research assistant at the Utah Water Research Laboratory where he conducted a wide variety of chemical and biological water quality analyses and operated a pilot scale overland flow tertiary treatment system. Mr. Kemp's other experience includes 6 months as a surveyor with the National Park Service and 1 year as an engineering assistant in a construction administration office of the Atomic Energy Commission.

Technical Certification

Engineer-In-Training, Tennessee Class II Wastewater Treatment Plant Operator, Washington

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MICHAEL C. KEMP

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Membership in Organizations

American Society of Civil Engineers Chi Epsilon Pacific Northwest Water Pollution Control Association Water Pollution Control Federation

Publications

Kemp, M.C., D.S. Filip, and D.B. George, 1978. Evaluation and Comparison of Overland Flow and Slow Rate Systems to Upgrade Secondary Wastewater Lagoon Effluent, Utah Water Research Laboratory, Logan, 70 pages.

Hansen, R.D., M.F. Torpy, M.C. Kemp, and D. Mills, 1980. Graduate Training in Water Track Environmental Engineering: Results of a Survey of Employers. Water Resources Bulletin, Vol. 16, No. 5, pp 862-865. George AR #

STEVEN R. HOFFMAN

Education

200

B.S., Civil Engineering, South Dakota School of Mines and Technology, 1971

Experience

Mr. Hoffman is a civil and sanitary engineer who is currently serving as a project manager and project technical consultant on a variety of solid and hazardous waste management projects for CH2M HILL. Examples of his project experience are:

- Project technical consultant on various aspects of municipal, industrial, and hazardous solid waste collection and disposal. Projects include collection system analysis; waste characterization and reduction; municipal solid waste landfill site selection, design, and gas recovery; and landfill disposal of hazardous and industrial sludges throughout the U.S.A.
- Project manager for a hazardous waste disposal study for an ARCO oil refinery in Washington, including waste extraction analysis, groundwater and unsaturate zone monitoring, and waste migration analysis.
- Project manager for assistance with compliance to RCRA regulations for a Gulf Oil refinery in Texas, including waste characterization, preparation of interim status plans, implementation of monitoring programs, and assistance in permit preparation.
- Assistant project manager for hazardous materials disposal site record searches for two U.S. Air Force bases to assess potential for waste migration from present and past practices and to recommend followup actions.
- Assistant project manager responsible for sanitary landfill design and preparation of operations plan and contract bid documents for a municipal solid waste landfill in Portland, Oregon.
- Project manager in developing a disposal system for and analyzing the impacts of a new land disposal technique for an industrial/hazardous sludge containing a high concentration of heavy metals, for the Monsanto Corporation, Seattle, Washington.
- Project manager for ITT Rayonier pulp and paper mill sludge disposal landfills in Grays Harbor and Clallam Counties, Washington, including site feasibility studies, final designs, and operational plans.

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STEVEN R. HOFFMAN

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- Assistant project manager for a resource recovery feasibility study and solid waste management plan for Snohomish County, Washington. The project includes alternative technology analysis, economic feasibility analysis, marketing studies, and management strategies.
- Project engineer for the Solid Waste Management Study for King County, Washington. Mr. Hoffman's responsibilities included assessing the environmental impacts of solid waste handling facilities and performing conceptual designs and costing for transfer stations, shredding and baling facilities, ocean disposal, resource recovery process systems, rail haul facilities, energy recovery systems, and sanitary landfills.
- Project manager for developing a solid waste management plan for Trinity County, California, with major emphasis on transfer, transport, sanitary landfill, and management options.
- Project manager and project engineer on a variety of water resources projects including flood studies, urban drainage and water quality studies, and environmental impact studies.
- Project engineer for developing a preliminary design for a solid waste transfer and refuse-derived fuel processing facility for the Metropolitan Service District, Portland, Oregon.
- Project engineer for preliminary and final design of a shredfill processing facility for Cowlitz County, Washington, which consisted of shredding, magnetic separation, leachate collection, treatment, and disposal.
- Project engineer for a pyrolysis and energy recovery feasibility study and a phased sanitary landfill design for Grays Harbor County, Washington. The design included a rural collection/transfer system to transport wastes to the landfill site.

Prior to joining CH2M HILL, Mr. Hoffman was a pollution control engineer with the Environmental Protection Agoncy where he conducted site investigations and wrote pollution control standards for South Dakota.

Professional Registration

Washington

Membership in Organizations

American Society of Civil Engineers

George AR # 2463

DONALD A. MAHIN Ground-Water Hydrologist

Education

M.S., Hydrology, University of Nevada, Reno, 1978 B.A., Geology, California State University, Fresno, 1976

Experience

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Mr. Mahin's responsibilities with the CH2M HILL Water Resources Discipline include all aspects of ground-water resource evaluation, protection, and modeling; water well design; and water quality studies.

Typical projects on which Mr. Mahin has worked include the following:

- The design, testing, and evaluation of high capacity wells for the Redding Municipal Airport and the City of Turlock, California, and for the Priest Rapids Fish Hatchery, Washington
- Design and evaluation of tracer experiments to determine ground-water velocities and aquifer properties for projects in the areas of wastewater disposal, hazardous waste control, and mining
- Evaluation of the potential water quality impacts of existing and proposed sanitary landfill sites in California, Oregon, Washington, and Nevada
- Design of monitoring well fields, recommendation of cleanup procedures, and cost estimation for several hazardous chemical spills
- Analyses of ground-water quality impacts of the proposed use of treated effluent for irrigation in the San Joaquin Valley and the Livermore Valley, California, and for wetlands enhancement in the Carson River Valley of Nevada
- Ground-water investigation of agricultural drainage feasibility and water supply potential, Pyramid Lake Indian Reservation, Wadsworth, Nevada
- Design of open excavation and tunnel dewatering systems and evaluation of their impacts on ground-water levels

His experience prior to joining CH2M HILL includes:

As a ground-water hydrologist with Hydro-Search, Inc., Mr. Mahin was involved in water supply development, mine dewatering, geothermal exploration, and computer modeling of surface- and ground-water hydraulics and chemistry.

DONALD A. MAHIN

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With the Water Resources Center of the Desert Research Institute, Reno, Nevada, Mr. Mahin investigated water availability in arid basins, developed a hydrologic tracer model of a complex limestone aquifer, modeled surface-water hydraulics, and investigated ground- and surface-water quality.

Professional Registration

Professional Geologist, Indiana

Technical Certification

Engineer-in-Training, Nevada

Membership in Organizations

American Association for the Advancement of Science American Association of Petroleum Geologists American Water Resources Association National Water Well Association

Publications

Analysis of Ground-Water Flow in the Edwards Limestone Aquifer, San Antonio Area, Texas. M.S. Thesis, University of Nevada, Reno, 1978.

Presentations

A Tritium-Calibrated Discrete-State Compartment Model of the Edwards Limestone Aquifer. The Ninth Annual Rocky Mountain Ground Water Conference, Reno, 1979.

Sodium Bromide as a Tracer in Ground-Water Hydrology, a Case Study. The Tenth Annual Rocky Mountain Ground Water Conference, Laramie, 1981 (with J. H. Randall).

Biologist

Education

B.A., Biology (emphasis in Marine Biology), San Francisco State University, 1976

Experience

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Ms. Dykzeul is a general biologist in the environmental sciences department of CH2M HILL. Her primary experience is in freshwater and marine biology and ecology, and in water quality sampling and analysis. She has participated in the assessment of the ecological impacts of many industrial and municipal developments.

Ms. Dykzeul's experience includes the following:

- Washington State Department of Ecology. Field data collection, laboratory water quality analysis, sanitary surveying, and report preparation for the bacteriological study of Willapa Bay
- Pacific Gas Transmission, San Francisco, California. Information search, analysis, and report preparation as aquatic biology task leader in the selection of a natural gas pipeline corridor route in Wyoming, Utah, Nevada, and California
- Grant County Public Utility District, Grant County, Washington. Literature survey and review of environmental effects of proposed additional generating units
- Idaho Power Company, Boise, Idaho. Public agencies survey and literature search for information concerning existing terrestrial and aquatic systems for a proposed hydroelectric facility on the North Fork Payette River
- Ventura Regional County Sanitation District, Oxnard, California. Field data collection, laboratory analysis, and report preparation for application for waiver of secondary sewage treatment requirements
- Yakima-Tieton Irrigation District, Yakima, Washington. Fishery analysis for the proposed irrigation system rehabilitation project
- City and County of San Francisco, California. Literature search, field data collection, and laboratory anlaysis for the Southwestern Ocean Outfall Project

George AR # 2463 Page 135 of 310

JANE E. DYKZEUL

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- Metropolitan Service District, Portland, Oregon. Feasibility study regarding potential bird hazard to nearby air traffic due to placement of a sanitary landfill in Aurora, Oregon
- City of Tigard, Oregon. Urban stream assessment relative to potential improvements in stormwater drainage systems.

Before joining CH2M HILL, Ms. Dykzeul worked for the University of Southern California's Catalina Marine Science Center, where she designed and directed field studies and prepared the final report for a reconnaissance survey of the west end of Catalina Island for the California State Water Quality Control Board. She also was involved in sampling program design and collection and analysis of water, sediment, and biological samples for the City of Avalon's sewage outfall monitoring program. Previously, Ms. Dykzeul was with the California Department of Fish and Game, where she analyzed intertidal data for the Diablo Canyon Nuclear Power Plant baseline study.

Membership in Professional Societies

American Fisheries Society American Institute of Biological Sciences Western Society of Naturalists

Publications

"Reconnaissance Survey-Santa Catalina Island; Area of Special Biological Significance-Subarea 1." State of California Department of Fish and Game. May 1978. 130 pp. Report to California State Water Quality Control Board.

George AR **# 2463** Page 136 of 310 Appendix B OUTSIDE AGENCY CONTACT LIST ۶.

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Appendix B

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OUTSIDE AGENCY CONTACT LIST

- California Regional Water Quality Control Board, South Lahontan Region, Ted Saari, 714/245-6583.
- California Department of Water Resources, Jack Coe, 213/620-4108.
- Environmental Protection Agency, Region IX, Laura Tom 415/556-8047; Bill Wilson, 1407; Kathleen Shimman, 7450; Susan Jackson, 9868.
- 4. California Department of Health Services, San Bernardino Office, Bill Gedney, Chet Anderson, Mark Bartson, 714/383-4328; Sacramento, Harvey Collins, 916/322-2337, Mark White 916/323-6043.
- 5. Mojave Water Agency, Bob Richey, 714/245-7717.
- Victorville Planning Department, John Hnatek, 714/245-3411.
- California Solid Waste Management Board, Guenther Moskat, 916/322-1387.
- California Water Quality Control Board, Lahontan Region, Bob Dodds, 714/245-6585.
- 9. U.S. Fish and Wildlife Service, Dave Purinton, 916/484-4748.
- 10. U.S. Department of Agriculture, Soil Conservation Service, Harlan McIntyre, 714/242-2906.

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		George AR # 2463 Page 138 of 310
	11.	California Department of Fish and Game, Long Beach, 213/590-5177; Victorville, Bob Vernoy, 714/245-7028; Blair Csuti, 916/322-2493.
	12.	Victor Valley College, Tom Irwin, 714/245-4271.
	13.	San Bernardino County Environmental Health Services, Jack Baker, 714/383-1433.
	14.	BLM, Tim Williams, 714/787-1655.
	15.	California Native Plant Society, Rick York, 916/322-2493; Alice Howard, 415/642-2465.
	16.	San Bernardino County Planning Department, Jim
		De Agluilera, Fred Hinshaw, 714/383-1445.
	17.	Los Angeles County Health Services, David Wong, 213/620-2143.
	18.	San Bernardino County Health Department, Richard Hornby, 714/383-1440; Wes Gibb, 714/383-3498.
	19.	U.S. Army Corps of Engineers, Ed Ketchum, 916/440-2182;
N. A.		Earl Stokes, 916/440-2103.
C	20.	U.S. Navy, San Bruno, Gil Reyes, 415/877-7453.
8	21.	USGS Laguna Niguel, Bill Hardt, 714/831-4232.
8	22.	USGS San Bernardino, Jim Bowers, 714/383-5617.
	23.	U.S. Department of Interior, Fish and Wildlife Sevice, Office of Endangered Species, Dave Harlow, 916/440-2791.
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Appendix C INSTALLATION HISTORY

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Appendix C INSTALLATION HISTORY

BASE HISTORY

George AFB, formerly known as Victorville Army Airfield, is located on 5,347 acres of land in the Mojave Desert region near Victorville, California. It was proposed as an advanced flying school on a site originally comprised of approximately 2,200 acres of land. Construction of the facility began in 1941 and was completed in 1943. The Los Angeles District of the U.S. Engineer Department (Corps of Engineers) and the Third District Regional Office, San Bernardino, designed and supervised its construction. The base was operated until 1948 when it was placed on inactive status.

In 1950 the base was renamed in honor of Brig. General Harold H. George, a World War I fighter ace who was killed in an aircraft crash at Darwin, Australia. Since the mid-1950's its facilities have been continuously improved and upgraded resulting in a mixture of new permanent structures and improved World War II-type wooden buildings.

Advanced twin-engine pilot training started in 1942 before construction was complete. The advanced twin-engine pilot school used AT-6s, AT-9s and AT-17 aircraft, while the bombardier school trained in AT-11s and BT-13s.

Before the twin-engine pilot school was transferred to Lubbock Field, Texas, in April 1943, more than 1,000 pilots had graduated here.

Victorville then added an advanced glider pilot school when two squadrons of the 63rd Troop Carrier Group arrived from Stuttgart, Arkansas. The glider pilots trained in the CG-4A. Glider training also moved to Lubbock Field after graduating 764 pilots.

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During 1943, such aircraft as the C-47, C-53, C-60A, L-3B, L-3C, L4A, PT-15, and CG-4A operated here before transferring out, leaving only the bombardier training aircraft, AT-11s and BT-15s.

In March 1944, the base began training Bell P-39 Air Cobra pilots. A total of 1,887 P-39 pilots graduated here before the school was moved to Luke Field, Arizona, in October 1944. The WW II years also saw B-25 and B-24 training at George.

When WW II ended, George was no longer needed as a training base. Consequently on October 12, 1945, all flying operations ceased, and the base was placed on standby status. The base was assigned to the Air Technical Service Command on November 1, 1945, and the mission was to store surplus B-29s, AT-7s, and AT-11s. The first of 734 B-29s arrived on October 18.

By May 1947, George's jurisdiction passed to the Sacramento Air Material Area (and later to the San Bernardino AMA). By October 14, 1948, the last of the stored aircraft had been flown away. During this storage period, George welcomed the birth of the U.S. Air Force.

In July 1950 (just after being renamed George AFB) the F-86equipped 1st Fighter Interceptor Wing moved to the high desert base. Several wings staged through George to train in the F-86 prior to deploying to Korea.

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Tactical Air Command took over the base on November 15, 1951, with the 131st and 146th Fighter Bomber Wings flying F-51 Mustangs. The 1st Fighter Interceptor Wing moved to Norton AFB, leaving the 94th Fighter Interceptor Squadron at George to fly the F-86 in the air defense role.

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Both wings at George began trading in their F-51s for T-33s in late 1952, but by January 1953, the 479th Fighter Bomber Wing absorbed the 131st FBW mission and became the host unit. The new wing began receiving new F-86F Sabres and by late 1953, the latest F-86H model.

The 479th became the first TAC wing to become operational in the new supersonic F-100 Super Sabre in September 1954. Four years later, in July 1958, the F-104 Starfighter was added to its inventory. The following year, 1959, the F100Dequipped 31st Tactical Fighter Wing was activated at George. That wing was reassigned to Homestead AFB, Florida, in May 1962.

While the 479th continued to train pilots to fly the F-100 and F-104, yet another wing was activated at George, this time to train combat readiness in the new F-4C Phantom tactical fighter. Activated as the 32nd TFW, the 8th left for Ubon AB, Thailand, in December 1956, after achieving combat ready status.

During the same part of the early 1960's, the F-105D Thunderchief-equipped 355th TFW was activated at the base. The wing was transferred to McConnel AFB, Kansas, in July 1964.

The 479th TFW got its first F-4C Phantoms in November 1964, and it became an all-Phantom wing in June 1967 when the last of the F-104s left George. Also during the early 1960s, ADCOM's 329th Fighter Interceptor Squadron flying F-106 Delta Darts was based at George. On October 1, 1971, the 35th TFW designation was transferred from Phan Rang AB, Vietnam, to replace the 479th TFW, which was inactivated. The mission continued to be one of training pilots to fly the F-4, but in 1973, the wing gained the F-105G Wild Weasel mission upon its transfer from McConnel AFB, Kansas.

Then in the spring of 1975, George AFB became the "Home of the Wild Weasels," as F-105G and F-4C WW training transferred to George from the Fighter Weapons School at Nellis AFB, Nevada. In April 1978, George AFB started receiving its first F-4G Wild Weasel aircraft and phased out the F-4C Wild Weasels in September of that year along with the rest of the base's F-4Cs. Now, there are three Wild Weasel Squadrons flying F-4G aircraft, the 39 TFTS, the 563 TFS, and the newest, 561st TFS, which is still receiving its F-4Gs.

In addition, there are two F-4E squadrons, the 20th TFTS, which trains German aircrews, and the 21st TFTS, which trains U.S. aircrews, thus giving George AFB one of the largest missions in Tactical Air Command with more than 120 tactical fighter aircraft assigned.

<u>Missions</u>

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George AFB is the host of the 831st Air Division. The primary mission of the Division is to execute tactical fighter operations and to provide training for aircrew and maintenance personnel. The 35 Tactical Fighter Wing, a major component of the Division, consists of the following squadrons:

 O 20th Tactical Fighter Training Squadron - provides flight and academic training to German Air Force crews .

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- 21st Tactical Fighter Training Squadron provides combat training for F-4E aircrews
- 39th Tactical Fighter Training Squadron provides flight and academic training for F-4G aircrews and electronic warfare officers
- o 561st Tactical Fighter Squadron provides combat training for F-4E aircrews
- 562nd Tactical Fighter Squadron active F-105
 combat squadron
- o 563rd Fighter Squadron active F4-G combat squadron
- o 35th Tactial Training Squadron provides academic instruction for the Wing
- o 3rd German Air Force Training Squadron assists
 in the welfare of German Armed Forces personnel
- Detachment 1, 84th Fighter Interceptor Squadron active F-106 interceptor squadron

Mission Support

Mission support is provided by the following units:

- o Resource Management
- o Comptroller
- o Contracting
- o 35th Combat Support Group
- o 35th Equipment Maintenance Squadron
- o 335th Aerospace Generation Squadron
- o 35th Component Repair Squadron
- o 35th Aerospace Generation Squadron

0 35th Supply Squadron

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- 35th Civil Engineering Squadron 0
- 35th Security Police Squadron 0
- 35th Services Squadron 0
- 35th Transportation Squadron 0
- Field Training Detachment 516 0
- 2067th Communications Squadron 0
- Detachment 12, 25th Weather Squadron 0
- Detachment 5, 4,400 Management Engineering Squadron 0
- Air Force Audit Agency ο

Reference: George AFB, Armed Services Press, 1981.
Appendix D

INDUSTRIAL FACILITIES

,	M	Tel STER LIST OF I	ble D-1 NDUSTRIAL OPERATIONS		
	Present Location	Part		Retinated Liquid Waste Countley	Tratment/Storage/Disposel
And Martin the and	(540). m0./vace/	(and, w. here)	MADER MECHTELL	(Service)	Abortonostan
Base Bachunge Garage	12/1966		Oils, Grease, Solvents, Cleaners	3,000	Sanitary Sever ²
Webicle Car Wash	14/1965		Detergents, Nax	I	Sanitary Sever
anto Robby Shop	10/1965	744/P ro -1965	Cleaners, Solvents, Oils, Peints	3,000	Sanitary Sawar w/Oil Recovery
Vehicle Maintenance	555/1965	520/Pro-1965	Cleanars, Acids, Oils, Bolvents		Sanitary Sever w/Oil Recovery
ACE Heinteeance	559,589,682/1965, 1943,1965		Cleaners, Acids, Oils, Bolvents, Fuel	559-4,000 589- 682-7,000	Sanitary Sewer w/Oil Recovery
Wahiqie Hash Back	363/1965		Detergents, Nax	2,000,000	Sanitary Sever
Bagino Stort Call	548, 799, 8 32/		Masta Oil, Fuel, Solvents	569-6,000 799-2,000 832-	568-Sanitary Sever/Oil Recovery 799-Off-Elta/Oil Recovery 832-Industrial Drais/Oil Recover
Corrosion Control	652/1977	693/7 78- 1977	Paints, Strippers, Solvents	120,000	Sanitary Sever
Presdralics Shop	674/1956		Cleaners, DegZeasers, Oils, Solvents	90 0	Industrial Drain ²
Fuel Cell Haistensece	485/1964		Puels, Solvents	3,000	Sanitary Showr w/Oil Recovery
Jet Ragine Shop	444/1999		Detergents, Degreesers, Fuels	7,000	Sanitary Steer
Aircraft Wash Tacks	776,696,743,681 693,765/1942,1972, 1942,1942,,	·	Detergents, Tuels, Oils, Bolvents	7,000	Industrial Drain
Thele Lab	\$51/1966		Puels, Acids, Solvents	100	Septic System
Negair and Neclamatica Shop	Salvage Tard/	626/	Detergents, Bolvents		Sanitary Sever
Houpevered Add Shop	695/1969		Solvents, Peints, Oils	30	Industrial Drain
Ngalgmont Haistensace	760/1961		Clemers, Oils, Peints, Strippers	250	Industrial Drain

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	NAST	Table ER LIST OF 1000 (cont:	D-1 Istrial operations Inued)		
	Present Loostice (Bldg. No./Dete)	Past Location (Bldg. No./Data)	Waste Naterial	Retinated Liquid Naste Quantity (gal/yr)	Trestment/Storage/Disposal Nethodology
Personents and Grounds	663,1138,599/ , 1971,	670/	Solvents, Adhesives, Pertiliser		
Intenology Shop	673/1966	674/1965,1966 670/1956-1965 WMTP/72-0-1956 789/	Pesticides, Herbicides 789-Pesticide Storage		Sanitary Sever
Photo Labe	350,107,15,196/ 1965,1942,1967, 1942	Maar 32/	Developer, Acids, Process Chemicals	250	Sanitary Sever w/Silver Recover
Mobile Photo Lab		Mear 350/	Developer, Acids		
Paint Shop	731/1942		Paints, Solvents		Sunitary Sever
Machine Shop	1	-//69	Oil, Labricents, Degressers		
WOT Lab	970/1970	682/1968-1970	Kerosine, Penetrants, X-ray Film	\$	Salvage
Propulsion Lab	1		Oils, Solvents	2,000	
Wheel and fire Shop	676/1956		Degreasers, Solvents, Detergents	1,600	Industrial Drain, Salvege
Bydrealics Shop			Bolvente, Cleaners, Bydraulic Fluid	200	
Battery Shop, Tool Noom	683/1960		Acids, Grease, Solvents	1,500	Industrial Drain, Salvage
Mospital	1155/1963		Nedical Wastes, Chemicals	8,000	Sanitary Sever, Incinerator
X-ray Lab	564/1971		Developer, Fixer	J00	
Refuel Vehicle Maintenance	352/1964		Oils, Imbricants, Solvents		Senitary Sever
Alert Support	761/1953		Solvents, Oils, Fuel	100	Septic System, Salvage
¹ Recentially all solid wasted	are presently tra	sported off base.	Solid wastes were landfilled on-	base prior t	o 1976.

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² Noth the semitary sever and industrial drains are assumed to have been installed since 1941.

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George AR **# 2463** Page 149 of 310 Ĵ. Appendix E FUEL STORAGE TANKS

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Table E-1 FUEL STORAGE TANKS

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		Berr [Ag1.)
547	JP-4	420,000
548	JP-4	209,000
556	JP-4	668,000
557	JP-4	419,000
554	JP-4	630,000
708	JP-4	six 50,000
		two 5,000
Pit 5	JP-4	5,000
Pit 6	JP-4	5,000
806	JP-4	1,000
559	JP-4	two 2,000
762	JP-4	two 1,250
660	Contaminated JP-4	12,000
12	Mogas	two 10,000
550	Mogas	two 10,000
559	Mogas	2,000
660	Mogas	two 12,000
667	Mogas	1,250
711	Mogas	1,000
723	Mogas	1,250
12	Diesel	2,000
550	Diesel	2,000
660	Diesel	12,000
711	Diesel	one 2,000
		two 1,000
723	Diesel	1,250
785	Diesel	1,100
806	Diesel	1,000

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Appendix F

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ABANDONED TANKS

Table F-1 ABANDONED TANKS

Facility	Liquid	Number/Capacity- Each (gal.)
Fuel Hydrant Pit 1	Leaded gas	1/-
Fuel Hydrant Pit 6	Leaded gas	1/-
164	Fuel oil	1/-
555	Leaded gas, waste oil	1/3,000 ²
662	Leaded gas	1/-
690	Leaded gas	5/50,000 ³
690	Leaded gas	10/25,000 ¹
731	Fuel oil	1/-1,250
744	Fuel oil	1/-
711 (Cuddeback)	Leaded gas	1/1,000

¹Sand filled.

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²Reportedly used for waste oil recovery since 1956.

³One tank used for waste oil recovery currently; four tanks contain caustic water for "pickling."

Appendix G

OIL/WATER SEPARATORS

Table G-1 OIL/WATER SEPARATORS

Pacility No.	Description	Capacity- Each (gal)	Year Installed
Base		•	
568	Engine Test Cell	1,000	1971
682	AGE Maintenance	1,300	
685	Fuel Cell Maintenance	1,300	
55775	South Industrial Drain	1,300	1970
18	Auto Hobby Shop	2,245	1975
652	Corrosion Control	4/1,500	1977
555	Vehicle Maintenance	2/400,8/1,000	1956
832	Engine Test Cell	2/1,200	
708	Hydraulic Pump House	350	1953
761	Alert Hanger	55	
552	Refuel Vehicle Repair	500	1965
683	TAC Fighter Hanger	4,500	1960
706	Aircraft Wash Rack	1,600	
559	AGE shop	250	1966
722	Squadron operations	4,500	
686	Engine shop	300	1959
12	Service station	1,250	

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711	Vehicle Maintenance	2/2,000,1/1,000
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Appendix H

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SITE HAZARD RATING METHODOLOGY

George AR # • 2463 Page 156 of 310

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HQ AIR FORCE ENGINEERING AND SERVICES CENTER AND USAF OCCUPATIONAL AND ENVIRONMENTAL HEALTH LABORATORY

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SITE RATING METHODOLOGY

FOR

PHASE I INSTALLATION RESTORATION PROGRAM

July 1981

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SITE RATING METHODOLOGY

FOR

PHASE I INSTALLATION RESTORATION PROGRAM

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1. This site rating methodology for Phase I of the Installation Restoration Program (IRP) has been jointly developed by CH_M Hill and Engineering-Science based on experience in performing Record Searches at several Air Force installations. This standard site rating system should be used for all Air Force IRP Records Search efforts to assist in Air Force prioritization and commitment of resources for Phase II survey actions.

2. The basis for the rating system is the document developed by JRB Associates, Inc. for the EPA Hazardous Waste Enforcement office. The JRB system was modified to accurately address specific Air Force installation conditions and to provide meaningful comparison of landfills and contaminated areas other than landfills.

Questions pertaining to use of the Air Force Site Rating 3. Methodology should be addressed to either Mr. Lindenberg, AFESC/DEVP, AUTOVON 970-6189 (Commercial (904) 283-6189) or Major Fishburn, AF OEHL/EC, AUTOVON 240-3305 (Commercial (512) 536-3305).

Note: Both CH_M Hill and Engineering-Science are Engineering Support contractors for the US Air Force.

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George	e AR # 2463 Page 158 of 31
WASTE DISPOSAL SITE AND SPILL	AREA ASSESSMENT AND RATING FORM
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Lentin	
Cumer/Operator	
Comments	
	PACTOR MANDA
NATING -PACTOR	(0-3) HULFIPLIER SCORE SCOR
	MCCPTCAL
Population Within	
1,000 Feet	4
Distance to Hearest Brisking Water Hall	
Bistense to Asservation	
Boundary	<u> </u>
Land Use/Jonias	3
Critical Swireenests	- 12
Matter Gallity of Hearby Suffees Mater Sudy	•
Hamber of Assumed Values Out of 6	SUBSCRALS
Hamber of Assumed Values = Out of 6 Percentage of Assumed Values =t	
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		2	3	Greater then 100	0 to 3,000 feet	0 to 1,000 feet	Residential	Major habitat of an endengend or threatened species; presence of recharge area	Potable water supplies		Positive proof from laboratory analyses	High levels greater then MCL or EPA drinking water standards	Severe contamination	0 to 500 feet	0 to 10 feet	Greeter then +20 inches	OK to 16% day (>10° cm/s)	Very permeable (>10° cm/s)	0 to 10 feet	
GUIDELINES	-	ne Scale Levels	2	26 to 100	3,001 feet to 1 mile	1,001 feet to 1 mile	Commercial or industrial	Wetlands: flood plains, and ^{ire} preserved area; presence of economically important natural resources	Shellfish propagation and harvesting		Positive proof from direct observation	Moderate levels or levels near MCL or EPA drinking water standards	Moderate contamination -	501 feat to 2,000 feet	11 to 50 feet	+5 to +20 inches	15% to 30% cley (10 ⁻² to 10 ⁻⁴ cm/k)	Relatively impermeable (10 ⁻² to 10 ⁻⁴ cm/s)	11 to 30 feet	
NATING FACTOR SYSTEM	RECEPTORS	Rati		1 to 26	1 to 3 milles	1 to 2 miles	Agricultural	Pristine natural areas	Recreation, propagation and management of fish and wildlife	PATHWAYS	Indirect evidence	Low levels, trace levels, or levels less than maximum contaminant level (MCL) or EPA drinking water standards	Suspected contamination	2,001 feet to 1 mile	51 to 500 feet	-10 to +5 inches	30% to 50% cley (10 ⁻⁴ to 10 ⁻⁶ cm/s)	Relatively impermeeble (10 ⁻⁴ to 10 ⁻⁶ cm/s)	31 to 60 feet	
			0	0	Greater than 3 miles	Greater then 2 miles	Completely remote (zoning not applicable)	Not a critical environment	Agricultural or industrial use		No contamination	No contamination	No contamination	Greater than 1 mile	Greater then 500 feet	Less then -10 inches	Greater then 50% cley (<10 ⁻⁴ cm/s)	Impermeeble (<10° cm/s)	Greater than 60 feet	
			Ratine Factors	Population within 1,000 Feet	Distance to Nearest Drinking Weter Well	Distance to Reservation Boundary	Land Use/Zoning	Critical Environments	When Quality Designation of Nearest Surface-Weter Body		Evidence of Water Contemination	Level of Water Contamination	Type of Contamination Soil/Biota	Distance to Nearest Surface Water	Depth to Ground Water	Net Precipitation	Soil Permeability	Bedrock Permerbility	Depth to Bedrock	

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digemental hazardous r	ating fro	m 30 to 100	points be	ied on the	following	guideline:					•				
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JRB RATING SYSTEM INTRODUCTION AND METHODOLOGY

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5) 10 "Methodology for Rating the Hazard Potential of Waste Disposal Sites," JRB Associates, Inc., December 15, 1980.

Note:

The following material includes Chapters 1 and 2 of the JRB report. The reader is referred to the above source for the complete report.

CHAPTER 1.0 INTRODUCTION

As part of EPA's nationwide waste management program, land disposal facilities containing hazardous wastes will be investighted and evaluated. Remedial, action plans will be formulated for those sites presenting a significant hapard. Because resources for this task are limited, the initial focus of the work must be on the most hazardous sites. Under the auspices of EPA's Office of Enforcement, JRB Associates has devised a methodology for selecting sites for investigation based on their high potential for environmental impact.

This methodology has several advantages over other wating systems:

• It is easy to use

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- It does not require users to have an extensive technical background
- It uses readily available information
- It does not require complex chemical or hydrological analyses
- It does not require users to visit the facilities in question
- It allows sites to be rated even if some data needs cannot be met.

The system consists of 31 rating factors that are divided into 4 categories: receptors; pathways; waste characteristics; and waste management practices. Factors in the receptors category determine the prime targets of environmental contamination. Factors in the pathways category assess mecha misms for contaminant migration. Factors in the waste characteristics category examine the types of hazards posed by contaminants in the site. Factors in the waste management practices category evaluate the quality of the facility's design and operation. Each rating factor has an associated four-level scale. Because all of these factors are not of equal importance, each also has been assigned a weighing factor, called a multiplier. Raters must simply decide which level of the rating factor's scale is most appropriate for a given site and multiply the numeric value of that level by the corresponding multiplier. The sum of the products for the 31 factors divided by the maximum possible score and multiplied by 100 is the site's rating. The ratings are on a scale of 0 to 100 and can be interpreted in relative or absolute terms.

Users can assign additional points when the rating factors do not adequately address all dr the problems of a site. However, only a limited number of additional points can be assigned. This arrangement helps to ensure that a site's rating is both complete and objective.

The methodology has been designed primarily for landfills, surface impoundments, and other types of land-based storage and disposal facilities. Incinerators and waste treatment facilities, however, are beyond scope with the exception of the solid wastes produced by them.

Site ratings should be performed as part of an overall investigation procedure. Prior to a site visit, ratings can be based on published materials, public and private records, and contacts with knowledgable parties. The results of this type of rating can be used to datermine which sites present the greatest potential hazard and should be visited first. A final rating can be obtained with information obtained from a visit to a site. This rating can be used as a tool to help determine how limited resources should be spent for additional sampling, which may be required to fill data gaps, and for preparing remedial action plans and/or enforcement cases for sites that represent particularly severe hazards.

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The methodology's validity has been tested at sites across the country. This testing includes comparing ratings completed for the same facilities both by different raters, and before and after site visits. Officials of New Jersey's Department of Environmental Protection agreed that the ratings on 30 sites in their state were good reflections of the true hazard potential of those sites. These results show that the methodology is an exceptionally useful and efficient tool for classifying and ranking the hazard potential of land disposal facilities. The methodology is discussed in more detail in the following four chapters. Chapter 2 describes the six basic components of the methodology. Chapter 3 identifies sources of information for the system and describes how to resolve data gaps. Chapter 4 presents the step-by-step procedure for rating sites, and Chapter 5 discusses how site ratings can be used. The three appendices provide guidance for rating sites. Finally, the glossary located at the end of this document defines all terms related to the methodology.

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CHAPTER 2.0 DESCRIPTION OF THE METHODOLOGY

The site rating methodology has been developed in terms of six elements. These are:

- Factor categories
- Rating factors
- Rating scales
- Multipliers

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- Additional points
- Hazard potential scores.

These elements are described below.

2.1 FACTOR CATEGORIES

In assessing the environmental impacts of any hazardous waste disposal site, four considerations must be addressed. These are:

- Receptors
- Pathways
- Waste characteristics
- Waste management practices.

Receptors refer to the biota (human and non-human) which are potentially affected by the materials released from a waste disposal site. Within this category, special attention is given to human populations and critical environments. Pathways refer to aspects of the routes by which hazardous materials can escape from a given site. The focus of this cateory is on the ease of migration of water soluble pollutants and on contamination due to the site. Waste characteristics refer to the types of hazards posed by materials in the facility in terms of both their health-related effects and their environmental mobility. Waste management practices refer to the design characteristics and management practices of a given disposal site as they

and have been been been and

relate to the site's environmental impact. In particular, this category examines measures that are being taken to minimize exposure to hazardous wastes.

The prime importance of the factor categories is in partitioning the rating factors into manageable groups so that site ratings can be more easily and completely interpreted. This topic is discussed in greater detail in Chapter 5.

2.2 RATING FACTORS

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The initial rating of a waste disposal facility is based on a set of 31 rating factors. Each of these has been assigned to one of the four factor categories. The receptors category has five rating factors:

- "Residential population within 1,000 feet" and "Distance to the nearest off-site building" measure the potential for human exposure to the site
- "Distance to the nearest drinking-water well" measures the potential for human ingestion of contaminants should underlying aquifers be polluted
- "Land use/zoning" evaluates the current and anticipated uses of the surrounding area
- "Critical environments" assesses the potential for advarsely affecting important biological resources and fragile natural settings.

The pathways category contains nine rating factors concerned with the potential migration and attenuation of contaminants. The primary focus is on waterborne pollutants, since they can affect the greatest number of people.

- "Distance to the nearest surface water" and "Depth to groundwater" measure the availability of pollutant migration routes
- "Soil permeability," "bedrock permeability," and "depth to bedrock" measure the potential for contaminant attenuation and ease of migration

George AR # 2463 Page 168 of 310 "Net precipitation" uses annual precipitation and evapo-'transpiration to estimate the amount of leachate a site .produces "Evidence of contamination." "type of contamination." and "level of contamination" evaluate pollution currently Apparent at the site. The waste characteristics category contains rating factors which examine the waste's environmental mobility and the adverse effects it can cause. **NAME** • "Solubility," "volatility," and "physical state" measure the extent to which mobile wastes can leave the site 12.42 • "Toxicity," "radioactivity," and "persistence" assess the site's potential to cause health-related injuries "Ignitability," "reactivity," and "corrosiveness" evaluate . the possibility of fire, explosion, or similar emergencies. TOTAL OF The waste management practices factor category evaluates site design and 3 operation. This category includes eight rating factors: 1.1 "Use of leachate collection systems," "use of gas collection systems," and "use of liners" examine features of site design for containing contamination "Site security" assesses the measures taken to limit site SCC 655 2 "Total waste quantity" and "hazardous waste quantity" measure the quantity of waste in the site, and thus, the potential magnitude of resulting contamination "Waste incompatibility" evaluates the potential for incompatible wastes to combine and pose a hazard N "Use of containers" assesses the adequacy of using containers to isolate wastes. These factors have been selected because they are relevant to an evaluation of any land-based disposal facility. The definition and purpose of each Ş rating factor appear in Appendix A. Ŗ Ъł.

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2.3 RATING SCALES

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For each of the factors, a four-level rating scale has been developed which provides factor-specific levels ranging from "0" (indicating no potential hasard) to "3" (indicating a high potential hazard). The rating factors and their corresponding rating scales for each of the factor categories are listed in Table 1. These scales have been defined so that the rating factors typically can be evaluated on the basis of readily available information from published materials, public and private records, contacts with knowledgeable parties, or site visits. Raters compare the information collected for a site with the limits set in the scales, and see which level of each scale most closely fits the information. The numeric value of that level is the factor rating for that factor. This process is described in more detail in Chapter 4. Additional guidance for assessing the rating scales appears in Appendix A.

2.4 MULTIPLIERS

The rating factors do not all assess the same magnitude of potential environmental impact. Consequently, a numerical value called a multiplier has been assigned to each factor in accordance with the relative magnitude of impact that it joes assess. These values are multiplied, hence the term multiplier, by the appropriate factor ratings (see Section 2.3) to result in factor scores for each of the rating factors. The 31 multipliers appear ar the third column from the right on the methodology's two-page Rating Form (see Figure 3).

2.5 ADDITIONAL POINTS

Special features of a facility's location, design, or operation are frequently encountered that cannot be handled satisfactorily by rating factors alone. These features might present hazards that are unusually serious,' unique to the site, or not assessable by rating scales. For example, an extremely high population density near a site should be considered even more hazardous than the rating factor for "population within 1,000 feet" indicates.

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Power lines running through sites containing explosive or flammable wastes, though not generally typical of waste disposal sites, should be considered a potential hazard. Finally, the function of the nearest off-site building might indicate a serious threat of human exposure exists, even though types of functions cannot be quantitatively evaluated by rating scales the way distance can be. In such cases, raters should assign a greater hazard potential score to a site than it might otherwise receive by using the additional points system. To guide raters as to the types of situations that might warrant additional points, several examples have been identified for each of the factor categories. These are:

RECEPTORS

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- Use of site by local residents
- · Weighboring land use
- Weighboring transportation routes, drinking water supplies, and important natural resources.

PATEWAYS

- Extreme runoff and erosion problems
- Slope instability
- Flooding
- Seisnic activity.

WASTE CHARACTERISTICS

- Carcinogenicity, mutagenicity, and teratogenicity
- Infectiousness
- Low biodegradability
- High-level radioactivity.

WASTE MANAGEMENT PRACTICES

- e Excessively large waste quantities
- Open burning of wastes
- Site abandonment
- Unsafe disposal practices
- Inadequate cover
- Inadequate safety precautions
- Inadequate recordkeeping.

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			T	ble 1					•
RATING FACTORS	AND	SCALES	FOR	EACH	œ	THE	FOUR	FACTOR	CATÉGORIES

	BATING FACTORS		RATING SCAL	E LEVELS						
l	NATING PACIDITS	0	1	2	3					
	•	W	ASTE CHARACTERIST	lics						
	TQXICITY	SAX'S LEVEL O OR NFPA'S LEVEL O	SAX'S LEVEL 1 OR NFPA'S LEVEL 1	SAX'S LEVEL 2 OR NPPA'S LEVEL 2	SAX'S LEVEL 3 OR NPPA'S LEVELS 3 OR 4					
	RADIOACTIVITY	AT OR BELOW BACK- GROUND LEVELS	1 TO 3 TIMES BACK- GROUND LEVELS	3 TO S TIMES BACK- GROUND LEVELS	OVER 5 TIMES BACK- GROUND LEVELS					
	PERSISTENCE	EASILY BIODEGRAD- ABLE COMPOUNDS	STRAIGHT CHAIN HYDROCARSONS	SUBSTITUTED AND OTHER RING COM- POUNDS	METALS, POLYCYCLIC COMPOUNDS, AND HALOGENATED HYDROCARBONE					
	IGNITABILITY	FLASH POINT GREATER THAN 200° OR NEPA'S LEVEL 0	FLASH POINT OF 140°F, 10 200°F, OR NFPA'S LEVEL 1	FLASH POINT OF 80 F. TO 140 F. OR NFPA'S LEVEL 2	PLASH POINT LESS THAN 30 F. OR NEPA'S LEVELS 3 OR 4					
	REACTIVITY	NFPA'S LEVEL O	NFPA'S LEVEL 1	NFPA'S LEVEL 2	NPPA'S LEVELS 3 OR 4					
	CORROSIVENESS	PH OF 6 TO 9	#H OF 5 TO 6 OR \$ TO 10	sH OF 3 TO 5 OR 10 TO 12	#H OF 1 TO 3 OR 12 TO 14					
	SOLUBILITY	INBOLUBLE	SLIGHTLY SOLUSLE	SOLUBLE	VERY SOLUBLE					
	VOLATILITY	VAPOR PRESSURE LESS THAN 0.1 run Hg	VAPOR PRESSURE OF 0.1 TO 25 mm Hg	VAPOR PRESSURE OF 76 TO 25 mm Hg	VAPOR PRESSURE GREATER THAN 78 own Hg					
	PHYSICAL STATE	90L10	SLUDGE		GAS					
		WASTE MANAGEMENT PRACTICES								
	SITE SECURITY	SECURE FENCE WITH	SECURITY GUARD BUT	REMOTE LOCATION OR BREACHABLE FENCE	NO BARRIERS					
	HAZARDOUS WASTE QUANTITY	6 TO 280 TONS	281 TO 1,000 TONS	1,001 TO 2000 TONS	GREATER THAN 2.000 TONS					
	TOTAL WASTE QUANTITY	O TO 10 ACRE FEET	11 TO 100 ACRE FEET	101 TO 200 ACRE FEET	GREATER THAN 280 ACRE FEET					
	WASTE INCOMPATIBILITY		PRESENT, BUT DOES NOT POSE & HAZARD	PRESENT AND MAY POSE & FUTURE HAZARD	PRESENT AND POSING AN IMMEDIATE HAZARD					
	USE OF LINERS	CLAY OR OTHER LINER RESISTENT TO ORGANIC COMPOUNDS	SYNTHETIC OR CON CRETE LINER	ASPHALT-BASE LINER	NO LINER USED					
		ADEQUATE COLLEC- TION AND TREATMENT	INADEQUATE COLLEC TION OR TREATMENT	INADEQUATE COLLEC	NO COLLECTION OR TREATMENT					
	USE OF GAS COLLECTION. SYSTEMS	ADEQUATE COLLEC TION AND TREATMENT	COLLECTION AND CONTROLLED FLARING	VENTING OR MADE- QUATE TREATUENT	NO COLLECTION OR TREATMENT					
	USE AND CONDITION OF CONTAINERS	CONTAINERS ARE USED AND APPEAR TO BE IN GOOD CONDITION	CONTAINERS ARE USED BUT & FEW ARE LEAKING	CONTAINERS ARE USED BUT MANY ARE LEAKING	NO CONTAINERS ARE USED					

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Table 1. Rating Factors and Scales for Each of the Four Factor Categories (Continued) .

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BATING FACTORS	RATING SCALE LEVELS					
	0	1	. 2	3		
		RECEPTO	RS			
		110.0	28 10 100	OMEATEN THAN 100		
DISTANCE TO NEAREST ORINKING-WATER WELL	GREATER THAN 3 MILES	1 TO 3 MILES	3,001 PEET TO	9 TO 3.000 PEET		
DISTANCE TO NEAREST OFF-SITE BUILDING	GREATER THAN 2 MILES	1 TO 2 MILES	1,001 FEET TO 1 MILE	0 TO 1.000 FEET		
LAND USE ZONING	COMPLETELY REMOTE IZONING NOT APPLI- CABLE?	AGRICULTURAL	Commercial or INDUSTRIAL			
CRITICAL ENVIRONMENTS	NOT A CRITICAL ENVIRONMENT	PRISTINE NATURAL	WETLANDS, FLOOD- PLAINS, AND PRE- SERVED AREAS	MAJOR HABITAT OF AN ENDANGERED OR THREATENED SPECIES		
		PATHWAY	\$			
EVIDENCE OF CONTAMINATION	NO CONTAMINATION	INDIRECT EVIDENCE	POSITIVE PROOF PROM	POSITIVE PROOF FROM		
LEVEL OF CONTAMINATION	NO CONTAMINATION	LOW LEVELS. TRACE LEVELS, OR UNKNOWN LEVELS	MODERATE LEVELS OR LEVELS THAT CANNOT SE SENSED DURING A SITE VISIT BUT WHICH CAN SE CONFIRMED BY A LABORATORY ANALYSIS	HIGH LEVELS OR LEVELS THAT CAN SE SENSED EASILY BY HIVEST GATONS DURING A SITE VISIT		
TYPE OF CONTAMINATION	NO CONTAMINATION	SOIL CONTAMINATION ONLY	BIOTA CONTAMINATION	AIR. WATER, 28 5000- STUFF CONTAX-NATION		
DISTANCE TO NEAREST	GREATER THAN	TO SMILES	1.001 PEET TO 9 MILE	0 TO 1.000 FEEF		
DEPTH TO GROUNDWATER	GREATER THAN	\$1 TO 100 PEET	21 TO SO FEET	0 TO 20 PEET		
NET PRECIPITATION	LESS THAN -10 INCHES	-10 TO -5 INCHES	-5 TO -29 INCHES	GREATER THA.+ -20		
SOIL PERMEABILITY	GREATER THAN	30% TO 50% CLAY	18% TO 30% CLAY	0 TO 195 CLAY		
SEDROCK PERMEABILITY			RELATIVELY PERMEABLE	VERY PERMEABLE		
DEPTH TO BEDROCK	GREATER THAN 60 FEET	31 TO 60 FEET	11 TO 30 PEET	0 TO 10 FEET		

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While this list is by no means exhaustive, and other examples may be encountered by raters using the methodology, it does include the more commonly occurring situations. Appendix B provides guidance on the number of additional points that should be assigned for these situations.

In order to maintain the objectivity of the rating methodology while allowing the assignment of additional points, the following limits are placed on the number of additional points that may be assigned in each factor category:

•	Waste management practices	30	points
•	Waste characteristics	20	points
•	Pathways	25	points
•	Receptors	50	points

The number of additional points allowed in each factor category is a function of the total available rating factor points and the relative importance of the category.

The actual procedure for assigning additional points is outlined in Chapter 4.

2.6 HAZARD POTENTIAL SCORES

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The result of a site rating is a set of five hazard potential scores. These scores are:

- Overall score
- Receptors subscore
- Pathways subscore
- Waste characteristics subscore
- Waste management practices subscore.

The overall score is based on all the rating factors and additional points that are used to rate a site. Each subscore is based on those rating factors George AR # 2463 Page 174 of 310

and additional points in that factor category which are used to rate a site. All of these scores are normalized so that they are on a scale of 0 to 100. The normalization procedure is described in Chapter 4. Associated with every hazard potential score is a percentage of missing and assumed data. These percentages flag scores that are based on large amounts of missing data and, generally, measure the reliability of the scores. Chapter 5 describes how to interpret these scores.

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Appendix I

SITE ASSESSMENT AND RATING FORMS

George AR # 2463 Page 176 of 310

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WASTE DISPOSAL SITE AND SPILL AREA ASSESSMENT AND RATING FORM

and of Site M-2	Munitions	Disposal	•	
ocation North of	TEL Site			
comence A + + 0 H	s AFB	inste POL 4	munitions	

BATING FACTOR	FACTOR MATING (0-3)	MULTIPLIER	PACTOR SCORE	NAXIMA POSSIBLE SCORE
ABCEPSO	15			
Population Within 1,000 Feet	1	4	4	12
Distance to Nearest Drinking water Well		15	15	45
Distance to Reservation Boundary	2	6	12	19
Land Use/Zoning	0	3	0	٩
Critical Environments	0	12	Ò	36
Mater Quality of Hearby Surface Water Body	0	6	0	18
Number of Assumed Values = Out of 6	s	BTOTALS	31_	138
Percentage of Assumed Values		RECORE		-22
Mumber of Missing Values =Out of 6 Percentage of Missing Values =N	. (1 Se	actor Score Di core and Multip	vided by N lied by 10	0)

: PATNIAR	8			
Svidence of Water Contamination		10	0	30
Level of Water Contamination	Q	15	0	45
Type of Contamination, Soil/Bists	0	\$	0	15
Distance to Hearest Surface Water	0	•	0	12
Depth to Groundwater	1	7	7	21
Net Precipitation	0	6	0	18
Boll Permeability	J .	6	12	19
Dedrock Permeability	1	4	4	12
Dapth to Bedrock	0	•	0	12
Disface Erection	2	4	8	12
Author of Assumed Values Out of 10			31	195
Matter of Missing Values Out of 10		Factor Score lears and Hal	Divided by Hi tiplied by 100	atem)

George AR # 2463 Page 177 of 310

	WASTE CHARACTERISTICS			
listardous	Pating: Judgemental rating from 30 to 100 points based on the following guidelines:	-		
Points	• • • •			
30	Closed damestic-type landfill, old site, no known bazardous wastes			
40	Closed demostic-type landfill, recent site, no known hezerdous wester			
50	Suspected small quantities of hazardous westes			
6	Known small quantities of hassendous wastes			
70	Suspected moderate quantities of hasardous wistes			
80	Known moderate quantites of hemordous vestor			
90	Suspected large quantities of hazardous wastes			
100	Known large quantities of hamardous wester			
	BUTBECOBE 60	-		

er Assigned Hasardous Rations : mis - aten pote-teal due to all content

WASTE HAINGENENT PRACTICES

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BATING FACTOR	FACTOR RATING (0-3)	MILTIPLIER	PACTOR SCORE	MAXIMUM POSSIBLE SCORE
Second Assurance and				
Ease of Access to Site	3	7	21	21
Masardous waste Quantity . Ho Sume	}	7	7	21
Total Waste Quantity	D	4	0	12
Maste Incompatibility	0	2	0	9
Absence of Linets or Confining Beds	3	6	18	19
the of Leachate Collection System	3	6	18	19
the of Gas Collection Systems	3	•. 2	6	6
Sile Closure	2	•	16	24
Subsuffees Flove	6	7	0	21
Mumber of Assumed Values = Out of 9 Percentage of Assumed Values =		SUBTOTALS	36	150
Number of Hissing and Hom-Applicable Values = Out of 9 Percentage of Hissing and Hom-Applicable Values =		(Factor Score Score and Hult	Divided by iplied by	100)

Overall sumber of Assumed Values = ____ Out of 25 Overail Percentage of Assumed Values - 4.

ALC: 1 1	-
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(Receptors Subscore X 0.22 plus Pathways Subscore X 0.30 plus Waste Characteristics Subscore X 0.24 plus Mants Management Subscore X 0.24)

	· · ·	George	AR #	2463	Page	178	of: 31
WASTE	E DISPOSAL S	ITE AND SPILL	. AREA AS	SESSMENT	AND RATIN	g form	
Name of Site Location Owner/Operat	south of A South of A Mayor du and	Base Land Airbase Ros MFB	£11				
				FACTOR BATTING			MAXID
RATING	PACTOR	•		(0-3)	MULTIPLIER	SCORE	8008
Population 1,000 Peet	FACTOR Within		RECEPTORS	(0-3)	MULSIPLIER	4	8008
Population 1,000 Feet Distance to Drinking We	FACTOR Within Nearest Near Well		RECEPTORS		4 15	4	
Population 1,000 Feet Distance to Drinking Wa Distance to Boundary	PACTOR Within Hestest iter Well Preservation		RECEPTORS	(0-3) 	4 15 6	4 30 12	
RATING I Population 1 1,000 Feet Distance to Drinking Ha Distance to Boundary Land Use/Zo	FACTOR Within Mearest Her Well Reservation		RECEPTORS	(0-3) 	4 15 6 3	4 30 12 0	
RATING Population 1,000 Feet Distance to Drinking Wa Distance to Boundary Land Use/Zo Critical En	PACTOR Within Descost iter Well Deservation ming Wironments		880227085	(0-3) 1 2 2 0 0	4 4 15 6 3 12	4 30 12 0	
Population 1,000 Peet Distance to Drinking Wa Distance to Boundary Land Use/Zo Critical En Water Qualit Surface Wat	FACTOR Within Hearest Hear Well Reservation Ming Wironments Hty of Hearby Her Body			(0-3) 1 2 2 0 0 0	4 15 6 3 12 6	4 30 12 0 0	
RATING I Population 1,000 Feet Distance to Drinking Wa Distance to Boundary Land Use/Zo Critical En Water Quali Surface Wat Surface Wat	FACTOR Within Decrest Ster Well Decrestion Ming Wironments Sty of Hearby Ser Body Sesured Values = _	Out of \$		(0-3) 1 2 2 0 0 0 0	4 15 6 22 6 39570TALS	4 30 12 0 0 46	
Population Population 1,000 Feet Distance to Drinking Wa Distance to Boundary Land Use/20 Critical En Water Qualit Surface Wate Percentage	FACTOR Within D Hearest Iter Well D Reservation Ming Wironments Ity of Hearby Her Body Hearby Her Body	Out of 6		(0-3) 1 2 2 0 0 0 0	4 15 6 3 12 6 385077ALS 3850078	4 30 12 0 0 46	

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	PATHNAYS				
Svidence of Meter Contamination		0	10	0	30
Level of Water Contamination		0	15	0	45
Type of Contamination, Soil/Biota		1	5	5	د
Distance to Measest Surface Mater		0	4	0	12
Depth to Groundwater		1	7	7	21
Not Procipitation		0	6	0	18
Soil Permeability		2	. "	12	19
wroth Permeability		1	4	4	12
-pth to Bedrock		0	4	0	12
Purface Eresion		2	4	8	13
Amber of Assumed Values Out of 10			SUSTOTALS	36	فوب
Arber of Assumed Values %			SUBSCORE (Factor Score	Divided by He	<u>ist</u>
Percentage of Hissing Values		Score and Multiplied by 100)			

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George AR # 2463 Page 179 of 310

	WASTE CHARACTERISTICS
Hatardays Pa	ting. Judgemental rating from 30 to 100 points based on the following guidelines:
Paints	
30	Closed demostic-type landfill, old site, no known hazardous wastes
	Closed demostic-type landfill, recent site, no known hazardous wastes
50	Suspected small quantities of heserdous westes
60	Known small quantitles of hazardous westes
20	Suspected moderate quantities of heserdous vestes
	Rnove moderate quistites of bazardous vestes
	Suspected large quantities of hazardous wastes
100	Known Large quantities of hexardous vestes

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WASTE HANAGENENT PRACTICES

NATING PACTOR	FACTOR RATENG (0-3)	NULTIPLIER	FACTOR	MAXIMUM POSSIBLE SCORE
Record Accusacy and Record Accusacy and Rase of Accuss to Site	2	7	14	
Masardous Masta Quantity Accume	3		21	21
Total Heste Quantity	3	4	12	12
Naste Incompatibility MS Sum /	1	3	3	9
Absence of Linery or Continung Dada	3	6	18	18
Bas of Loschete Collection System	3	6	1%	18
Vee of Gas Collection Systems	3	2	6	6
Site Closure	2	•	16	24
Subsurface Flows	0	7	0	21
Number of Assumed Values = <u>2</u> Out of 9 Percentage of Assumed Values = <u>22</u> A Number of Hissing and Hom-Applicable Values = Cut of 9		SUBTOTALS SUBSCORE (Factor Score Score and Mult	LOS	/50 72 Maxime 100)
Percentage of Missing and Non-Applicable Values =				

Overall Humber of Assumed Values = 2 Out of 25 Overall Forcentage of Assumed Values = 4.1

. OVERALL SCOPE

50

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(Receptors Subscore X 0.22 plus Pathways Subscore X 0.30 plus Waste Characteristics Subscore X 0.24 plus Maste Manadement Subscore X 0.24) George AR # 2463 Page 180 of 310 of 2

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WASTE DISPOSAL SITE AND SPILL AREA ASSESSMENT AND RATING FORM

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of site L-2 TEL Disposed Site tion_West of landfill L-1 . Deersto MEB CONSC Battoms TAN

BATING PACTOR	PACTOR BATING (0-3)	NULTIPLIER	PACTOR SCORE	MAXIMIM POSSIBLE SCORE
RECEPTORS				
Population Within 1,000 Feet	1	4	4	12
Distance to Measest Drinking Water Well	1	15	15	45
Distance to Reservation Boundary	2	6	12	18
Land Use/Zaning	0	3	0	9
Critical Invironments	0	12	0	36
Notes Geniity of Hearby Surface Water Sudy	0	6	0	18
Hatter of Assured Values Out of 6	S	UBTOTALS	_31_	138
Peptenhage of Assumed Valuest	8	USSCORE		_22
Masher of Missing Values =Out of 6 Personnage of Missing Values =%	(Pactor Score Divided by Maximum Score and Multiplied by 100)			

? : FATNIG	YS				
Bridence of Mater Contaminstion	. 0	10	0	30	
Lovej of Mater Contamination	0	15	0	45	
Type of Contamination, Soil/Biota	2	5	10	15	
Distance to Measest Surface Water	0	4	0	12	
Depth to Groundwates	1	7	7	21	
Wet Precipitation	0	6	0	18	
Soil Permeability	2 ·	6	12	18	
Bedrock Permeability	1	4	4	12	
Depth to Bedrock	Ø	4	0	12	
Surfere Eresien	· [4	4	12	
Nember of Assumed Values = Out of 10 Percentage of Assumed Values = %	54 54	BTOTALS	_37_	19	
Number of Hissing Values Out of 10	(1 6-	(Pactor Score Divided by naminum Score and Multiplied by 100)			

George AR **# 2463** Page 181 of 310

MASTE CHARACTERISTICS				
azardene l	lating: Judgemental rating from 30 to 100 points based on the following guidelines:			
eines.				
20	Closed demestic-type landfill, old site, no known hazardous wastes			
	Closed demostic-type landfill, resent site, no known hazardous vectos			
50	Suspected small quantities of haserdous vestes			
40	Enous small quantities of hemardous wastes			
70	Suspected soderate quartities of heserdous wester			
	Enorm moderate questites of heatsdows waster			
*	Suspected Large quantities of hazardous vastes			
100	Known large quantities of hemericus wester			

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WASTE HANGENENT PRACTICES

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BATING PACTOR	FACTOR BATENG (0-3)	MULTIPLIER	FACTOR SCORE	NAXIMA POSSIBLE SCORE
Record Accuracy and Ease of Accuss to Site	2	7	. 14	21
Assardous Maste Quantity . 19550 - 2	3	7	21	2!
Total Maste Quantity	0	4	0	12
Maste Incompatibility	0	3	0	9
Absence of Liners or Confining Bods	3	•	18	
Vee of Leachate Collection System	3	•	19	18
Voe of Gas Callection Systems	3	2	6	6
Site Closure	2	•	16	24
Subsurface Flows	0	7	0	21
Number of Assumed Values = Out of 9 Percentage of Assumed Values = Number of Hissing and Hom-Applicable Values = Out of 9 Percentage of Hissing and Hom-Applicable Values =		SUBTOTALS SUDRCORS (Factor Score Score and Nult	93 Divided by	150 52 Naciona 1001

Overall Humber of Assumed Values = ____ Out of 25 Overall Fercentage of Assumed Values = ____4

3

OVERALL JCOPE

45

1

(Receptors Subacore X 0.22 plus Pathways Subacore X 0.30 plus Maste Characteristics Subscore X 0.34 plus Maste Management Subscore X 0.24
George AR # 2463 Page 182 of: 310: . :

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WASTE DISPOSAL SITE AND SPILL AREA ASSESSMENT AND RATING FORM

nome at site L-3 Radioactive Disposal Site. MEB Operator - 55 Toxics Dispassi

4 15	PACTOR SCORE 4	HAXEDIGM POSSIBLE SCORE 12 4.5	
4	4	12	
4	4	12	
15	15	4.5	
6	12	19	
3	Ø	1	
12	0	36	
6	0	18	
TALE	31	138	
ORE		_22	
(Pactor Score Divided by Naximum Score and Multiplied by 100)			
	6 VTALS CORE Lor Score Di and Multip	6 0 TALS 31 TORE TORE Score Divided by H and Multiplied by M	

· · · · · · · · · · · · · · · · · · ·	THATS			
Evidence of Weter Contamination	. 0	10	0	30
Level of Water Contamination	0	15	0	45
Type of Contamination, Soil/Biota	0	5	0	15
Distance to Mearest Surface Mater	0	4	0	12
Depth to Groundwater	1	7	7	21
Net Precipitation	0	6	0	19
Soil Permeability	2	. 6	12	18
Bedrock Parmeability	1	4	4	12
Depth to Bedrock	0	4	0	12
Susface Erosion	1	4	4	12
Number of Assumed Values = Out of 10 Percentage of Assumed Values = %		SUSTOTALS SUBSCORE	27	175
Number of Hissing Values Out of 10		(factor Score Divided by Namimum Score and Nultiplied by 100)		

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nge of Missing Val

George AR **# 2463** Page 183 of 310

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	WASTE CHARACTERISTICS
Fatardays	Pating: Judgemental rating from 30 to 100 points based on the following guidelines:
Points	• •
30	Closed demostic-type landfill, old site, no known hazardous wastes
4	Closed demostic-type landfill, recent site, no known hasardous wastes
*	Suspected small quantities of heserdous wester
"	Repue small quantities of haserdous vestes
N	Bespectal moderate quantities of hemandous wastes
••	Room moderate quantities of bazardous vestes
	Suspected large quantities of hazardous wastes
389	Room large quantities of hasardous vestes

60 SUBSCORE even for Assigned Hashrdo to diagetim £ .1. Ns

WASTE HANGENENT PRACTICES

BATING FACTOR	PACTOR PATENS (9-3)	MULTIPLIER	FACTOR SCORE	NAXEMUN POSSEBLE SCORE
Record Accuracy and Ease of Access to Site	2		14	21
Reservous Maste Quantity - ASSUM	1	7	7	21
Total Meste Quantity	0	4	0	12
Meate Incomposibility	0	3	0	9
Absonce of Liners of Configury Data	3	¢	18	19
Whe of Leachate Callection System	3	6	18	18
Vee of Gas Collection Systems	3	•. 2	6	6
Site Cionuce	2	•	16	2.4
Subsurface Flove	0	7	0	21
Number of Assumed Values = Out of 9 Percentage of Assumed Values = N Number of Hissing and Hom-Applicable Values = Out of 9 Percentage of Hissing and Hom-Applicable Values = %)	SUBTOTALS SUBACORE (Factor Score Score and Mult	Divided by	<u>150</u> 53 y Naxime 100)

Overall Humber of Assumed Values = 1 Out of 25 Overall Percentage of Assumed Values = 4

OVERALL COPE

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5

(Receptors Subscore X 0.22 rlus Pathways Subscore X 0.30 plus Waste Characteristics Subscore X 0.24 plus Maste Management Subscore X 0.24)

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WASTE DISPOSAL SITE AND SPILL AREA ASSESSMENT AND RATING FORM

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PACTOR BATTING (0-3)	NULTIPLIER	FACTOR SCORE	NATING
2088			
2	4	9	12
	15	15	45
2	6	12	18
2	3	6	9
0	·· 12	0	36
0	•	0	18
	STOTALS	41	138
susscore _3			
(Pastor Score Divided by Maximum Score and Multiplied by 188)			
	Pactor Batting (0-3) TORS 2 1 2 2 2 0 0 8 1 1 2 0 0 0 8 1 1 0 0 0 8 1 1 0 0 1 1 1 2 0 0 1 1 1 2 0 0 1 1 1 1	PACTOR MATING (0-3) MULTIPLIER TORS 2 4 1 15 2 6 2 6 2 3 0 12 0 6 SUBTOTALS SUBSCORE (Partor Score Di Sourc and Multip	Factor Factor Factor (0-3) NULTIPLIER Factor 7085 7085 7085 2 4 9 1 15 15 2 6 12 2 3 6 0 12 0 0 6 0 SUBSTOTALS 4-1 SUBSTOTALS 4-1 SUBSTOTALS 4-1 SUBSTOTALS 4-1 SUBSTOTALS 4-1 SUBSTOTALS 4-1 SUBSTOTALS 4-1

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7 1 PAT	nays			
Svidence of Water Contamination		10	o [.]	30
Level of Mater Contamination	0	15	0_	45
Type of Contemination, Soil/Biotz	0	3	0 .	15
Distance to Mearest Surface Water	1	•	4	12
Depth to Groundwater	1	7	7	21
Met Precipitation	0	6	0	15
Soil Permeability	2 ·	6	12	15
Bedrock Permeability	1	4	4	12
Depth to Bedrock	0	4	0	12
Surface Erection	2	4	8	12
Munter of Assumed Values Out of 10 Perfectage of Assumed Values L	sui	TOTALS	35	195
Number of Hissing Vy.ues Out of 10	(F)	ctor Score	Divided by Hemi inlied by 100)	

بد ارد با دوها،

WASTE CHARACTERISTICS				
serieus	Pating: Judgemental roting from 30 to 100 points based on the following guidelines:			
dats.				
30	Closed demostic-type Lendfill, old site, as known bazardous wastes			
•	Closed depositio-type Landfill, recent site, an known basardous vestes			
50	Suspected small qualities of hasardous wastes			
60	Known small quantities of hazardove wastes			
*	Suspected moderate quantities of housedous wastes			
	Anova moderate quantites of hassadous vestes			
	Suspected large quantities of hazardous wastes			
	Known Large quantities of hezardows wester			

70 SUBSCORE ble total he fore ites SULCATIS

WARTE HANAGENENT PRACTICES

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RATING PACTOR	FACTOR RATING (0-3)	MULTIPLIER	FACTOR SCORE	HAXEMUM POSSIBLE SCORE
herene Accuracy and		· · · · · · · · · · · · · · · · · · ·		
Esee of Access to Site	2	7	14	21
Mazardous Maste Quantity . MSSUMC	2	7	14	21
Total Maste Quantity	I	4	4	12
mote incompatibility Hysume	1	3	3	9
Absence of Liners or Confining Bodo	3	6	19	19
Ose of Loochste Collection System	0	6	0	18
Ver of Gas Collection Systems	0	2	0	6
Site Cleance	2	•	16	24
Subsufface Flove	0	7	0	21
Number of Assumed Values = 2. Out of 9 Percentage of Assumed Values = 2.21		SUBTOTALS SUBSCORE	69	<u>190</u> 46
Number of Hissing and Non-Applicable Values = Out of 9 Percentage of Hissing and Non-Applicable Values =4		(Factor Score Divided by Namimum Score and Multiplied by 100)		

Overall number of Assumed Values = 2 Out of 25 Overall rescontage of Assumed Values = 4 1

OVERALL SCORE

40

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(Receptors Subscore X 0.22 plus Pathways Subscore X 0.30 plus Maste Characteristics Subscore X 0.24 plus Maste Management Subscore X 0.24) George AR # 2463 Page 186 of 310 2

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WASTE DISPOSAL SITE AND SPILL AREA ASSESSMENT AND RATING FORM

Original Base Landfill . of Site Ser. es Gen Wester Sase

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RATING FACTOR	FAC308 86,7210 (0-3)	MULTIPLIER	PACTOR SCORE	NOLEZIUM POSSIBLE SCORE
ACC	27085			
Population Within 1,000 Pest	1	4	4	12
Distance to Mearest Drinking Water Well	· 1	15	15	45
Distance to Reservation Boundary	2	•	12	18
Land Use/Zoning	. 2	3	6	9
Critical Environments	0	- 12	ò	36
Mater Quality of Hearby Surface Water Body	0	•	0	18
Mumber of Assumed Values = Out of 6		SUBTOTALS	37	138
Percentage of Assumed Values =N		SUBSCORE		27
Member of Missing Values =Out of 6 Percentage of Missing Values =0		(Faster Score Divided by Maximum Score and Hultiplied by 100)		

1 PAT	mays			
Evidence of Mater Contamination	0	10	0	30
Level of Water Contamination	0	15	0	45
Type of Contamination, Soll/Blota	0	5	0	21
Alstance to Mearest Surface Mater	0	4	O	12
Depth to Groundwater	1	7	7	
Net Precipitation	D	6	0	19
Soil Permeability	3	. 6	12	13
Bedrock Permembility	1	•	4	12
Pepth to Bedrock	0	4	0	12
Purface Erection	0	4	0	12
Number of Assumed Values = Out of 10 Percentage of Assumed Values = %		SUSTOFALS SUSSCORE	23	195
Member of Missing Values - Out of 10		(factor Score Score and Hul	Divided by Has Liplica by 100	c famaik)

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George AR **# 2463** Page 187 of 310

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	MASTE CHARACTERISTICS	. الم المحمولة ويواد عدما
Hazardous	Pating: Judgemental rating from 30 to 100 points based on the following guidelines:	
Points		
30	Closed demostic-type landfill, old sits, no known bagardous wastes	and an and a second
- 40	Closed demostic-type Landfill, recent site, no known hezardous wasted	· · · · · · · · · · · · · · · · · · ·
50	Suspected small quantities of hasardout wastes	ب الدولان المكردة والوقي المرارية. مراجع المحافظ المراجع ومهام محاف المراجع المراجع المراجع المراجع المراجع المراجع المراجع المراجع المراجع المراجع المراجع المراجع
-	tone well questities of beserdous vestes	 The same second s
(•	Suspected moderate quantities of heserdous waster	
	Enous andersta quantites of herardous vestos	
	Suspected large quantities of hazardous vestes	a da ante a
109	Known Large quantities of heserdous vestes	• •

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WARTE HAINGENENT PRACTICES

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NATING FACTOR	FACTOR RATING (0-3)	WILTIPLIER		NAXEMIN POSSIBLE SCORE
Record Accuracy and Ease of Accuss to Site	3	7	21	21
Massidous Weste guantity . Alguan a	2	7	14	21
Total Maste Quantity = 14591000 0	2	4	4	12
Maste Incompatibility ASSUME	ī	3	3	9
Absence of Liners or Confining Dode	3	•	14	18
Vee of Leschate Coljection System	3	•	15	18
Nee of Ges - Collection Systems	3	2	6	6
Site Closure]	•	4	24
Subsulface flows	0	7	Ð	21
Humers of Assumed Values - 3 Out of 9 Percentage of Assumed Values - 331		SUBTOTALS	96	150
Number of Hissing and Hon-Application Values = Out of 9 Percentage of Hissing and Hon-Application Values =%		(Factor Score Score and Mult	Divided by	100)

Overall Humber of Assumed Values - 3 Out of 25 Overall Percentage of Asymmed Values - 12.

OVERALL SCOPE

42

(Receptors Subacoce X 0.22 plus Pathways Subscore X 0.30 plus Maste Characteristics Subscore X 0.24 plus Maste Management Subscore X 0.24)

George AR # 2463 Page 188 of 319 of ?

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WASTE DISPOSAL SITE AND SPILL AREA ASSESSMENT AND RATING FORM

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Base Land fill alert hanger of Site **Operato**

INTING FACTOR	PACTOR BATTING (0-3)	MULTIPLIER	PACTOR SCORE	NAZZMAN POSSIBLE SCORE
***	EPTORS			
Population Within 1,000 Feet	1	4	4	12
Distance to Mearest Drinking Water Well	•	1\$	15	45
Distance to Reservation Boundary	3	4	18	18
Land Use/Zoning	0	3	0	9
Critical Environments	0	- 12	ò	36
Nater Quality of Nearby Surface Water Sody	0	6	0	18
Mumber of Assumed Values = Out of 6		USTOTALS	_37_	
Percentage of Assumed Valuest		UBSCORE		-27
Manhor of Missing ValuesOut of 6 Percentage of Missing Valuesb	(Pester Score Divided by Maximum Score and Multiplied by 100)			

1 PAT	nate			
Svidence of Water Contamination	U	10	0	30
Level of Water Contamination	0	15	0	45
Type of Contamination, Soil/Biota	0_	5	0	15
Distance to Mearest Surface Mater	1	4	4	12
Depth to Groundwater	2	7	14	21
Net Procipitation	0	6	0	15
Soil Permeability	2	. •	12	15
Redrott Permeability	1	4	4	12
Depth to Bedrock	Ø	4	0	12
furface treaton	2	4	8)2
Number of Assumed Values = Out of 10 Percentage of Assumed Values = %	·····	SUBTOTALS SUBSCORE	42	195
Number of Hissing Values Out of 10	(factor Score Divided by Maximum Score and Multiplied by 100)			

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	WASTE CHARACTERISTICS			
latardava	Rating. Judgemental roting from 30 to 100 points based on the following guidelines	:		
eints	•			
30	Closed domestic-type landfill, old site, no known hazardous wastes	•		
-	Closed demestic-type landfill, recent site, no known hazardous wastes			
50	Suspected small quantities of harardous vestes			
40	Xnown small guantitles of hesardous wastes			
»	Auspected adderate quantities of heserdous vestes			
	Known moderate quantites of hasardous wastes			
	Suspected large quantities of heserdous vestes			
100	Known Large quantities of hexardous wester			
		\$0		

WARTE HANAGENENT PRACTICES

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BATING FACTOR	FACTOR RATING (0-3)	MULTIPLIER	FACTOR SCORE	NAXEMEN POSSIBLE SCORE
•				
Necerd Accuracy and Rame of Accuse to Site	2	7.	14	21
Resordous Weste Questity ASSNONC	2		14	21
Total Meste Quantity AMSSUMC	2	4	5	12
Meete Incompatibility ASSUM C.		3	3	٩
Noranes of Liners or Configure Bodo		6	18	
Voo of Leachate Sollestian System	3	6	18	18
Her of Gas Sollestion Systems	3	2	6	6
lite Closure	2	•	16	24
Subsurface flows	D	7	0	21
Number of Assumed Values - 3 Out of 9 Percentage of Assumed Values - 331		SUBTOTALE SUDACORE	בסך	150
Number of Missing and Hon-Applicable Values Cut of 9 Percentage of Missing and Mon-Applicable Values		(Factor Score Score and Muit	Divided by iplied by	Nanimum 100)

Grerall number of Assumed Values - 3 Dut of 25 Grerall Fercentage of Assumed Values - 12

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. OVERALL COPE

49_

(Receptors Subacore X 0.22 plus Pathways Subscore X 0.30 plus Maste Characteristics Subscore X 0.24 plus Maste Management Subscore X 0.24)

SITE AND SPILL AREA ASSESSMENT AND RATING FORM DISPOSAL

Parat Down Bussel ARMICE S ne Benett

RATING FACTOR	FACTOR RATING (0-3)	NULTIPLEER		MAXIMUM DOSEALE SCORE
AUROPERI				
Population Michin 1.000 Pane	1	4	4	12
Matanas to Mansat Setaining water spil	1	15	15	6.5
Clitteren te Reservet.Los Permiter	3	6	19	19
Lonit Con/Insting	2	3	6	9
Cristoal Amiromene	0	14	0	36
Water Quality of Hearby Surface Veter Doby	0	4	0	19
Contract of Assumed Values Out of 6			43	132
Denner of Missing ValuesOut of 6 Percentage of Missing Values1	•	(Factor Score Of Score and Hultip	vided by I Lied by M	instantin 10)

1 M2	NE.Y3			
Svidence of Mater Contamination	0	10	0	30
Level of Water Contamination	0	15	0	45
Type of Contamination, Soll/Blota	٥	1	0	15
Platence to Mearost Surloce Hater	0	4	0	
Supth to Greenhater	1	7	٦	21
Net Procipitation	0	6	0	15
Sels Permittatty	2	. •	12	15
Sedewik Permishbility		4	4	12
Pupif to Subreck	0	4	0	12
Antiper treaten	0	4	0	12
these of housed Values Out of 10		SUSTOTALS	23	<u> 19</u> र
Manufalage of Abananod Voluco (Mainter of Milletary Voluce Out of 10 Banananana of Milleting Voluce((Fortor Score Divided by Reminum Score and Ruitipling by 1989			

	George
	AR
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Absonce of Liners or	Note Incorpecibility 0 3 0 9	Total Moster Summeller + 14250mme 0 4 0 12	Haserdous waste guantity . 1955 mg < 1 7 7 7 21	Averal Accuracy and Sister	NATING FACTOR PACTOR PA	Small velues + Karterified Sussess 50	Image Image <th< th=""><th>WASTE CHARACTERISTICS</th><th></th></th<>	WASTE CHARACTERISTICS	
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Overall inmber of Assumed Values - 2 rut of 25 Overall Percentage of Assumed Values - 8 1 Percentage of Plasing and Non-Applicable

Values

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nd Values - 22

Applicable Val

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SUBSCORE

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(Factor Score Divided by Maximum Score and Multiplied by 100)

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er of Assumed Values -

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Nee of Gae Collection Systems

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Site Closure

OVE WILL SCORE A 0.22 plus

36

(Receptors Subacore X 0.22 plus Pathways Subacore X 0,30 plus Maste Characteristics Subacore X 0,24 plue Mante Menagement Subacore X 0,241

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George AR # 2463 Page 192 of 3340 of 2

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WASTE DISPOSAL SITE AND SPILL AREA ASSESSMENT AND RATING FORM

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RATING PACTOR	FACTOR BATTING (0-3)	MULTIPLIER	PACTOR SCORE	MAXIMUM POSSIBLE SCORE
RECEPTORS				
Population Within 1,000 Feet	0	•	0	12
Distance to Nearest Drinking Water Well	· 1	15	15	45
Distance to Reservation Boundary	2	6	12	18
Land Use/Zoning	2	3	6	9
Critical Environments	0	5 12	0	36
Mater Quality of Mearby Surface Water Sody	0	6	0	19
Mumber of Assumed Values + Out of 6	S	BTOTALS	33	138
Percentage of Assumed Valuest	8	JASCORE		24
Humber of Hissing ValuesOut of 6 Percentage of Hissing Values%	. (1	Pactor Score Di Core and Multip	vided by H Lied by 10	ia <u>riunua</u> 10)

; patmiays				
Svidence of Mater Contamination	0	10	0	30
Level of Mater Contamination	Ø	15	0	45
Type of Contamination, Soll/Biota	0	5	0	15
Distance to Nearest Surface Water		4	4	12
Depth to Groundwater	1	7	7	21
Met Precipitation	0	6	0	19
Soil Formeability	2 .	6	12	18
Bedrock Permeability		4	4	12
Depth to Sedrock	0	4	0	12
Surface Exocion	1	4	4	17
Manber of Assumed Values = Out of 10	SUBTO	TALS	_31_	195
Mamber of Hissing Values Out of 10	(Factor Score Divided by Naminum Score and Multiplind by 100)			inun.

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	WASTE CHARACTERISTICS
Nazardova	Pating: Judgemental rating from 30 to 100 points based on the following guidelines:
Points	
30	Closed domestic-type landfill, old site, no known hazardous wastes
*	Closed demestic-type landfill, recent site, no known heserdous vastes
30	Suspected small quantities of hazardous wastes
60	Known small quantities of hazardous westes
70	Suspected moderate quantities of heserdows wester
80	Known moderate quantites of hezardous vastes
90	Suspected large quantities of haserdous vestes
100	Known warge quantities of hazardous westee
	sinscrift (D

WASTE HANAGENENT PRACTICES

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RATING PACTOR	ENCTOR RATING (0-3)	MULTIPLIER	PACTOR SCORE	NAXIMUM POSSIBLE SCORE
Record Accuracy and Ease of Access to Site	3	, ,	21	2/
Maserdous Waste Quantity Assume	1	7	7	21
Total Waste Quantity > MSSume	Ø	4	0	12
Heate Incompatibility 19550me	0	3	a	9-
Absence of Liners or Continung Bods	3	6	18	19
Use of Leechate Collection System	3	•	18	15
Use of Gas Collection Systems	3	. 2	6	6
Site Closure	2	•	16	24
Subsurface Flows	0	7	0	21
Humber of Assumed Values = 3 Out of 9 Percentage of Assumed Values = 33 Humber of Missing and Mon-Applicable Values =	SUBSCORE SUBSCORE of 9 (Factor Score Divided by Maria Score and Multiplied by 100)			<u></u> y Maximon 2001

Overall Humber of Assumed Values - 3 Out of 23 Overall fercentage of Assumed Values - 121

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values

OVERALL SCOPE

36

(Receptors Subacore X 0.22 plus Pathways Subscore X 0.30 plus Waste Characteristics Subscore X 0.24 plus Maste Management Subscore X 0.24) George AR # 2463 Page 194 of 310 of 2

				2 4
Hans of Site B-9 Acid & Oil Buris!		•		
Contion North of NE subman, and				
commence Unvertised Remort				
	FACTOR			
BATING FACTOR	(0-3)	MULTIPLIER	FACTOR SCORE	10
RECEPTORS				
Population Within	6		-	
Distance to Massest			<u> </u>	
Drinking Water Well		15	15	
Distance to Reservation Boundary	7	•	12	
Land Use/Zoning	2	3	6	
Critical Environments	0	12	0	
Water Quality of Nearby			^	
Member of Assumed Values a Out of 6		URTOTALS	33	
Percentage of Assumed Values		UBSCORE		_
Number of Missing Values =Out of 6		Factor Score Di	vided by B	iextim 101
Percentage of Missing Values =				
		۰.		
	•			
• PATHINATS				
Evidence of Water Contamination	0	10	0	:
Level of Water Contemination	0	15	0	
Type of Contamination, Soil/Biota	0	5	~~~~~	
Distance to Mearest Surface Water		4		
Desth to Groundwater			T	
			_ _	
mer station	0	•	0	
Soil Permoability	2.	6	12	
Solitock Permeability	1	4	4	
Depth to Bedrock	0	4	0	
Surface Erosion	U	4		
	1 .			-
Number of Assumed Values = Out of 10		USTOTALS	31	

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serdene P	ation Judgemental rating from 30 to 100 points based on the following guidelines:
inte	
X	Closed demostic-type Landfill, old site, no known hazardous wastes
40	Clough desertion type landfill, revent site, so known hereadous westes
	Suspected small quantities of heserdeus vester
	Nimon small grantities of heserdous whotes
10	Suspected activities of hemotory wester
	Room anderate questites of basedous washes
**	Seepertal large quantities of hazardoos wastes
-	Known Large questities of bearding states

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tee of Leachate Collection System

Out of Gas Collection Systems

Subcutters Tions

M of Assumed Values - 💁 Out of 9

Percentage of Assumed Values - 221 Rubber of Hissing and Han-Applicable Values - _

Percentage of Rissing and Hen-Applicathe Values -

Overall mutter of Assumed Values - A Out of 25 Overall regentage of Assumed Values - 12.

Site Cleance

INT PRACTICES PACTOR NATENG FACTOR (0-3) INTING FACTOR MULTIPLIER 8008 . ٠ . Neceré Assuracy and Ease of Ascess to Site 3 7 21 Maserdone Maste Quantity Assur 7 ł 7 **Total Maste Quantity** 4 Accur 0 0 Note Incompatibility 3 2 Assus are of Liners or infineny Dede З 6]ĝ

STREE STRANGER

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SUMPOTINGS

SUBSCORE

18

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(Factor Score Divided by Maximum Score and Maltiplied by 100)

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(Persphere Subscore X 0.22 plus Pathwaye Subscore X 0.30 plus Name Characteristics Subscore X 0.24 plus Mante Honsessum Subscore X 0.24)

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Out of 9

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George AR # 2463 Page 196 of 310 c: 2

WASTE DISPOSAL SITE AND SPILL AREA ASSESSMENT AND RATING FORM

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		PACTOR BATING		FACTOR	MAZINEM POSSIBLE
RATING PACTOR			MULTIPLIER	SCORE	SCORE
	MCEPTON				
Population Within 1,000 Peet		0	•	0	12
Distance to Hearest Drinking water Wall		. 1	15	15	45
Distance to Reservation Boundary	· · · ·	2	6	12	18
Land Use/Zoning		2	3	6	4
Critical Environments		0	- 12	0	36
Nater Quality of Mearby Surface Water Body	-	0		0	18
Mamber of Assumed Values Out of 6			UNTOTALS	3.3	138
Percentage of Assumed Valuest			UBSCORE		37
Momber of Missing ValuesOut of 6 Percentage of Missing Values5	•	(Pactor Score Divided by Maximum Score and Multiplied by 100)			

7 1 PAT	MAYS			
Svidence of Mater Contamination	0	10	0	`
Level of Water Contamination		15	0	4
Type of Contamination, Soil/Biota	0	5	0	ى
Distance to Mearest Surface Water	0	4	0	12
Depth to Growndwater	1	7	7	2
Not Procipitation	0	6	0	19
Soil Permeability	2	. •	12	18
Bedrock Permeability		4	4	
Dapth to Bodrock	0	4	0	12
Purface Broslan	2	4	9	1
Restor of Assumed Volues Out of 10 Percentage of Assumed Volues t		SUBTOWALS SUBSCOME	3	192
Number of Missing Values Cut of 10	(Partor Score Divided by Northman Score and NottipList by 1991			

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	WASTE CHARACTERISTICS	•		a classe of AT Sy
Hatertant		on the following guidaling	11	•
Pairie.				مىرىغى بىيەت مەمىيە يەت. مەرىپى دەرىپىيە تەرىپى مەرىپى دەرىپى دەرىپى
30	Closed demostic-type landfill, eld site, no known	hazardous vestes		un turner anna un sa
-	Closed demostic-type landf121, recent site, no kas	wn hezerdous vestes		
(*	Suspected small quantities of hazardous wastes			an a
40	Incus small quantities of hatardove wester			
	Suspected moderate quantities of hemordows vector		• •	
	Enorm moderate quantities of hearings ventos	• ·		
99	Suspected large quantities of heardous vestes			
				-
		SUBSCORE	_50	<u>/</u>

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WARTE HAINGENENT PRACTICES

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		ENCTOR INITING (0-3)	MULTIPLIER	FACTOR	
	•			• •	
Notoril Apparently and Shoe of Access to Site		3	,	21	
Masserdous Maste Quantity . 193554-1		1	7	7	21
Total more grantity + MSSUMC		٥	4	0	12
Weste Incorportbilley		0	3	Ð	9
Alientry of Linnin or Confidency Body		3	•	15	19
the of Louchets Collection System				19	19
Way of Cas Collection Systems			8		6
Site Classes		2	•	16	24
Simmerfore Flove		Ø	7	0	21
Menter of Assessed Values - 2 Out of 9 Percentage of Assessed Values - 221	- · ·		SUBTOTILE SUBSCORE	-\$6_	57
Number of Missing and Mon-Applicable Values Out of 9 Personnage of Missing and Mon-Applicable Values			(Factor Score Score and Hult	Divided by	Soot

Greenil Humble of Annual Values - 2. Out of 25 Greenil Percentage of Annual Values - 2.

OVERALL SCOPE

(Receptors Subscore X 0.22 plus Pathways Subscore X 0.30 plus Meste Characteristics Subscore X 0.34 plu Maste Management Subscore X 0.34)

George AR # 2463 Page 198 of 310 2

WASTE DISPOSAL SITE AND SPILL AREA ASSESSMENT AND RATING FORM

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EATING FACTOR	Factor Bating (0-1)	MULTIPLIER	PACTOR SCORE	JOLETHER POSSIBLE SCORE	
	EPTORS				
Population Within 19	3		12	12	
Distance to Mearest Drinking Water Well	1	15	15	45	
Distance to Reservation Boundary	2	6	12	18	
Land Use/Zoning	2	3	6	•	
Critical Invironments	0	5 12	0	36	
Water Quality of Hearby Burface Water Body	0	6		18	
Amber of Assumed Values Out of 6		STOTALS	45	138	
Personage of Assumed Valuest		ascore		_33	
Number of Missing Values =Out of 6	(Paster Score Divided by Maximum				
Percentage of Hissing Values	Score and Multiplied by 100)				

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9 : PATH	4.TS	-		
Svidence of Water Contamination	0	10	0	<u></u>
Level of Water Contamination	0	15	0	45
Type of Contamination, Soil/Biota	0	5	0	15
Distance to Measest Surface Water	0	4	0	12
Depth to Groundwater	1	7	7	21
Net Precipitation	0		0	9
Bell Permeebility	2	. •	12	15
Podrock Parmenbility	1	4	+	12
Depth to Bolecek	D	4	0	12
Serface Exection	0	4	0	/2
Number of Assumed Volumes Out of 10		SUSTOTALS	23	كفت
Perventage of Assumed Values		SUBSCORE		12
Number of Missing Values = Out of 10 Percentage of Missing Values =	(factor Score Divided by Maximum Score and Multiplied by 2007			

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	WASTE CHARACTERISTICS					
Hatarday	Pating: Judgemental rating from 30 to 100 points based on the following guidelines:					
Points						
30	Closed domestic-type landfill, old site, no known hazardous wastes					
-	Closed demestic-type landfill, recent site, no known hatardous wastes					
(v	Suspected small quantities of hazardous wastes					
60	Known small quantities of hezardous wastes					
70	Suspected moderate quantities of hetardous wastes					
80	Rnown moderate quantites of hesardous vestes					
90	Suspected large quantities of hazardous wastes					
100	Known Large quantities of hezardous wastes					

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WASTE HANAGENENT PRACTICES

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SUBSCORE

RATING FACTOR	FACTOR RATING (0-3)	MULTIPLISE	FACTOR	PAXDEN POSSIBLE BCORE
Record Accusacy and Enso of Accusa to Site	2	7	. 14	21
Reservous Heste quantity 1950mc	1	7		21
Total Heste Quantity ASSIM C	0	4	0	12
Waste Incompatibility	0	3	0	•
Absence of Liners or Confining Bode	3	•	18	18
The of Leachate Chilection System	NA	•	~	-
Vor of Gas Chiloczian Systems	A/A	2	-	
Site Cleante	NA	•	-	
Subsulface Flore	A/A	7	-	
Rumber of Assumed Values = 2 Out of 9 Percentage of Assumed Values = 225 Rumber of Hissing and Non-Applicable Values = 4 Out	of 9	Sustemble Sustemble (Factor Board Sacro and Sola	. <u></u>	
Persontage of Missing and Hon-Applicathe Values -				

Overall Humber of Assumed Values + ____ fue of 25 Overall rescentage of Asymmed Values - 4.

re x 0.22 rive Meters Sub re X 0.30 plus -Muste Cherseteristics Subscore ± 0.34 plus Monte Management Subscore ± 0,247

George AR # 2463 Page 200 of 2

WASTE DISPOSAL SITE AND SPILL AREA ASSESSMENT AND RATING FORM

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BATING PACTOR	FACTOR BATING (0-3)	NULTIPLIER	FACTOR SCORE	NAXTHEM POSSIBLE SCORE
		,		
Pegulation Within 1,000 Pest	3	4	12	12
Distance to Hearest Brinking water Well		15	15	45
Distance to Reservation Boundary	2	6	12	18
Land Use/Zoning	2	2	6	9
Critical Environments	0	- 12		36
Meter Quality of Hearby Surface Water Body	0		0	/9
Mather of Assumed Values = Out of 6		SUSTOTALS	45	135
Persentage of Assured Valuest		SUBSCORE		33
Humber of Missing Values =Out of 6 Percentage of Missing Values =t	(Paster Score Divided by Maximum Score and Multiplied by 100)			extern 0}

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? : N	THATS			
Svidence of Water Contaminetion	0	10	0	30
Lovel of Mater Contamination	0	15	0	45
Type of Contamination, Soil/Biota	0	5	0	15
Platance to Hearest Surface Water	D	4	0	12
Pepth to Groundwater	1	7	7	21
Not Precipitation	0	6	0	15
Roil Parmeability	2	• . •	12	1
Redrock Permosbility	1	4	4	12
Papth to Balcock	0	•	0	12
Putless Exector	D	4	0	12
Patter of Assumed Values Cut of 10 Personnage of Assumed Values 1 Cutlen of Master Values 1				<u></u>
		Sevre and Hal	tiplied by 100)

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George AR **# 2463** Page 201 of 310 -----

	WASTE CHARACTERISTICS
Heterdout	Pating: Judgemental rating from 30 to 100 points based on the following guidelines:
Paints	
30	Closed demostic-type landfill, old site, no known hazardous wastes
*	Closed demostic-type landfill, recent site, no known hazardous wastes
50	Suspected small quantities of hezerdous westes
60	Enden small quantities of hazardous wastes
70	Suspected moderate quantities of hazardous wastes
••	Anown moderate qualitites of basardous vestes
. 90	Suspected large quantities of hasardous wastes
100	Known large quantities of hezardous wester

50 SUBSCORE small. field - also solvente but volume Weste POL unvarified vice

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MITING FACTOR	FACTOR RATING (0-3)	MULTIPLIER	FACTOR	MAXIMUM POSSIBLE SCORE
Record Accuracy and Ease of Access to Site	2	7		21
Masardous Maste Quantity . USS Non 2	1	7	7	21
Total Meste Quantity + Masone	0	4	0	12
Weste Incompatibility	0	3	0	9
Absence of Liners of Confining Bods	3	6	18	
Ves of Leschete Collection System	NA	6		_
Ver of Gay Cellection Systems	NA	2	_	
Site Closure	NA	8	-	
Subsurface flows	NA	7	_	-
Humber of Assumed Values = 2 Out of 9 Percentage of Assumed Values = 223 Humber of Hissing and Hon-Applicable Values = 4 Out of 9 Percentage of Hissing and Hon-Applicable Values = 445		SUBTOTALS SUBSCORE (Factor Score Score and Hult	39 Divided by	9/ 98 98 1001

Overall Humber of Assumed Values - ____Out of 25 Overall Fercentage of Assumed Values - 3.

· OVERALL SCOPE

1

(Receptors Subscore X 0.22 rius Pathways Subscore X 0.30 rius Maste Characteristics Subscore X 0.24 plus Wante Management Subscore X 0.24)

WASTE DISPOSAL SITE AND SPILL AREA ASSESSMENT AND RATING FORM

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NATING PACTOR	PACTOR RATING (0-3)	MULTIPLIER	FACTOR SCORE	NAXIMA POSSINI SCORE
RECEPTORS	8			
Population Within 1,000 Femt	.1	•	4	12
Distance to Nearest Brinking Water Well	0	15	0	45
Distance to Reservation Soundary	3	6	18	18
Land Use/Zoning	2	3	6	9
Critical Environments	0	12	0	36
Mater Quality of Meerby Burface Mater Body	0	. 6	0	18
Nober of Assumed Values = Out of 6		SUBTOTALS	29	139
Percentage of Assumed Values	1	SUBSCORE		20
Number of Missing Values =Out of 6 Percentage of Missing Values =%	(Factor Score Divided by Maximum Score and Multiplied by 100)			estimus C)

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Intaq :	ars			
Evidence of Water Contamination	. 0	10	0	30
Level of Mater Contamination	0	15	0	45
Type of Contamination, Soil/Biota	·]	5	5	15
Bistance to Hearest Surface Mater	0	4	0	12
Papth to Groundwater	1	7	7	21
Art Procipitation	0	6	0	19
Soil Permerbility	2		12	15
Rodcosk Permeability	1	4	4	12
Supth to Bolirook	. 0	•	0	13
Sutless Broolen	. 0	4	0	12
futbor of Assumpt Volume = Out of 18		SUSTOTALS	-28	195
Number of Missing Values Out of 10		(Factor Score Score and Hull	Divided by Nem Liplied by 100)	1

80

MASTE CHARACTERISTICS				
Hasardous	Pating: Judgemental rating from 30 to 100 paints based on the following guidelines:			
Points				
30	Closed domestic-type landfill, old site, no known hazardous westes			
40	Closed demestic-type landfill, recent site, no known hazardous vestes			
50	Suspected small quantities of hasardous wastes			
60	Known small quantities of hazardous wastes			
70	Suspected moderate quantities of hatardous wastes			
(H)	Known moderate quantities of hessidous vistos			
	Suspected large quantities of hezerdous wastes			
100	Known large quantities of basardous wester			

· Fuel Cumping

÷., WASTE HANAGENENT PRACTICES

SUBSCORE

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MATING FACTOR	FACTOR RATING (0-1)	MULTIPLISA	FACTOR SCORE	NAXEMUM POSSIBLE SCORE
Second Accuracy and Ease of Access to Site	2	7		21
Masardous Hasto Quantity . ASSIM	3	7	21	21
Total Meste Quantity	0	•	0	12
Maste Incompatibility	0	3	0	9
Absence of Linors or Configure Dods	3	6	19	:
Voo of Louchste Collection System	WA	6	-	~
Vor of Gas Collection Systems	NA	2	-	-
Site Closure	A/A	•	-	-
Subsuffece Flows	A/B	7	~	· _
Number of Assumed Values Out of 9 Percentage of Assumed Values Number of Hissing and Mon-Applicable Values	Cut of 9	SUSTOTALS SUBSCORE (Factor Score	S3	<u>91</u> <u>65</u> Maximum
Percentage of Higsing and Hon-Applicable Values -	44	Score And Mult	iplied by	700)

Greeall Humber of Assumed Values - ____ Out of 25 Overall Forcentage of Assumed Values - 4.

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OVERALL SCOPE

44

*

(Receptors Subscore X 0.22 plus Pathways Subscore X 0.30 plus Waste Characteristics Subscore X 0.24 plus Maste Management Subscore X 0.24)

WASTE DISPOSAL SITE AND SPILL AREA ASSESSMENT AND RATING FORM

OMEROPERATOR GRADEL MER				
Comenta				
		· · · · ·		
RATING FACTOR	FACTOR RATING (0-3)	MULTIPLIER	FACTOR	NAXTHIN POSSIBLE SCORE
RECEPTO	RS			
Population Within 1,000 Feet	1	4	4	12
Distance to Nuarest Drinking Water Wall	1	15	15	
Distance to Reservation Boundary	3	6	18	19
Land Use/Zoning	2)	6	9
Critical Envir saments	0	. 12	Ò	36
Hater Quality 20 Nearby Surface Water Mady	0	6	0	19
Number of Asswood Values = Out of 6 Percentage ofsumed Values =%		SUBTOTALS SUBSCORE	43	138
Number of Hissing Values =Out of 6 Percentage of Missing Values =	,	(Factor Score Divided by Maximum Score and Multiplied by 100)		
· •		1		
• PATHWAYS				
Luidence of Wate: Contamination	0	10	0	<u> </u>
Level of Mater Contamination	0	15	0	•4
Npe of Contamination, Seil/Biota	2	5	10	15
Distance to Near-at Surface Water	0	4	0	12
epth to Groundwater	1	7	7	21
let Presipitation .	0	6	0	18
Soil Permeability	<u>ີ</u>	. 6	12	18
edrock Permeability	<u></u>	4,	4	
Dept! to Nedrock	0	4	0	
Surf. se Erosion	<u>_</u>	4	4)2
Aumber of Assumed Values * Out of 10		SURTOTALS SURSCORE	37_	195
Number of Missing Values Out of 10		(factor Score D Score and Hultig	luided by Hu plied by 100	nimm.))

I-29 BEST AVAILABLE COPY

	MASTE CHARACTERISTICS		
Kezerdous	Pating - Judgemental rating from 30 to 100 points based on the following guide	Lines:	
Points	•		
30	Closed domestic-type landfill, old site, no known hazardous wastes		
	Closed demostic type landfill, recent site, no known hazardous wastes		
50	Suspected small quantities of hazardous wastes		
60	Known small quantities of hezardous wastes		
70	Suspected moderate quantities of heserdous wastes		
	Known moderate quantites of hezerdous wester		
-	Suspected large quantities of heserdous wester	•	
100	Known large quantities of hazardons wastes		
			80

Disposal & burning - large questities POL

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WASTE HANAGENENT PRACTICES

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FACTOR Rating (0-3)	MULTIPLIER	FICTOR	NAXEMUM POBSIBLE BCOME
	•		
2	7	14	21
3		21	21
0	4	0	12
0	3	0	9
3	6	18	/ 9
NA	6	_	
NA	2		-
NA	•	-	-
NA	7		· •
of 9	SUBTOTALS SUDECORS (FActor Score Score and Hult	<u>53</u> Divided by	<u>8/</u> <u>65</u> Nan imum 100)
	PACTOR NATING (0-3) 2 3 0 0 3 N/A N/A N/A N/A N/A 0 5	PACTOR PATING (0-3) NULTIPLIER 2 7 3 7 0 4 0 3 3 6 N/P 6 N/P 2 N/A 8 N/P 7 SUBTOTALS SUBSTOTALS SUBSCORE (Factor Score Score and Mult Score	PACTOR PACTOR NATING NULTIPLIER (0-3) NULTIPLIER 2 7 2 7 2 7 2 7 2 7 2 7 2 7 0 4 0 3 0 3 3 6 14 3 7 2 7 14 3 3 6 14 0 3 6 14 0 3 6 14 0 3 6 14 0 3 0 3 6 14 0 3 0 3 6 14 14 15 14 16 14 17 14 18 19 19 11 10 10 10 10 10 10 10 10 10 10 10 10 10 10

Overall Humber of Assumed Values - ___ Dut of 25 Overall fercentage of Asmmed Values - 4 .

OVERALL	10080
OVENILL	JCUTE

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(Receptors Subscore X 0.22 plus Pathways Subscore X 0.30 plus Waste Characteristics Subscore X 0.24 plus Maste Management Subscore X 0.24)

WASTE DISPOSAL SITE AND SPILL AREA ASSESSMENT AND RATING FORM

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of site 5-6 Abandoned Fire Training Area of WWTP Pand ocation South s/operator George MFB ·. .

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BATING PACTOR		PACTOR BATING (0-3)	HULTIPLIER	FACTOR SCORE	NATION POSSIALE SCORE
	RECEPTORS				
Population Within 1,000 Feet		1	4	4	12
Distance to Mearest , Drinking Water Well			15	15	45
Distance to Reservation Boundary		2	6	12	1
Land Use/Zoning		2	3	6	2
Critical Environments		0	5 12	Ó	36
Nater Quality of Nearby Surface Water Body		0	6	0	18
Number of Assumed Values = Out of 6		\$	USTOTALS	37	. 139
Percentage of Assumed Values		\$	UBSCORE		27
Number of Hissing Values =Out of 6 Percentage of Hissing Values =N		(Pactor Score Divided by Maximum Score and Multiplied by 100)			

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1	PATHIAYS			
Evidence of Mater Contamination	0	10	0	30
Level of Mater Contamination	0	15	0	45
Type of Contamination, Soil/Biota	2	5	10	15
Distance to Measent Surface Mater	0	4	0	12
Depth to Groundwater		7	7	21
Not Procipitation	0	6	0	1
Soil Permeability	2	. •	12	19
Bedrock Permeability	1	4	4	12
Depth to Bedrock	0	4	0	12
Surface Brosion	2	4	8	12
Number of Assumed Values Out of 10		SUSTOTALS	41	کھت
Percentage of Assumed Values = \		SUBSCORE		-21
Number of Hissing Values = Out of 10 Percentage of Hissing Values =b		(Factor Score Score and Hul	Divided by Ma tiplici by 100	n Janum)

	WASTE CHARACTERISTICS
eterdeus	Pating: Judgemental sating from 30 to 100 points based on the following guidelines:
eiets	and a second
30	Closed demestic-type la.dfill, old site, no known hazardous wester
-	Closed demostic-type landfill, recent site, so known hezardous wastes
50	Suspected shall quantities of haserdous vastes
60	Enoun small quantities of baserdous vestes
70	Suspected moderate quantities of heserieus uastes
	Enous moderate quantites of basardous vaptes
*	Suspected large quantities of hazardous vestes
100	Known large quantities of hasardous wester

MASTE HAUNGENENT PRACTICES

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NATENG FACTOR	ENCTOR NATENG (0-3)	MOLTIPLIER	FACTOR SCORE	HAXIMIM POSSIBLE SCORE
Record Accuracy and		• ;		
Ease of Access to Site	2	7.	14	21
Assardous Hasto Quantity . Assume	3	7	21	21
Total Hasto Quantity A	0	4	0	12
Maste Incompatibility Masuma	0	3	0	9
Absonce of Liners of Confining Bodo	3	6	18	
Ver of Loochste Collection System	الم	•	-	-
the of Gas Callertian Systems	NA	2		-
Site Closure	A/19	•	-	
Subsurface Flora	NA	7	-	•
Mundos of Assumed Values2 Out of 9	·	SUBTOTALS	53	12
Percentage of Assumed Values - 23. Mumber of Missing and Mon-Applicable Values - 4 Out of 9 Percentage of Missing and Mon-Applicable Values - 44.		SUBSCORE (Pactor Score Score and Hult	Divided by ipiled by	6.5 Maximum 2001

Overall number of Assumed Values - 2 Out of 25 Overall rescontage of Assumed Values - 5

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(Peceptors Subacore X 0.22 plus Pathways Subacore X 0.30 plus Maste Characteristics Subacore X 0.24 plus Maste Management Subacore X 0.24)

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BATING FACTOR		MATING (0-3)	MULTIPLIER	FACTOR SCORE	POSSIBLE
	RECEPTORS				
Population Within 1,000 Feet		3	4	12	12
Distance to Nearest Drinking water Well	•	1	15	15	. 45
Distance to Reservation Boundary		2	6	12	15
Land Use/Zoning		2	3	6	.9
Critical Environments		0	· 12	Ö	36
Natar Quality of Nearby Surface Water Dody		0	6	0	18
Member of Assumed Values =	Out of 6	1	UBIOIALS	45_	139
Humber of Missing Values =Ou Percentage of Missing Values =	it of 6		Pastor Score Di Gore and Hultip	vided by H Lied by 10	10)

? 1 Pi	1700AYS	······		
Svidence of Mater Contamination		10	0	
Level of Water Contamination	0	15	0	+
Type of Contamination, Soil/Biota	2	5	10	Ľ
Distance to Henrest Surface Water	0	4	0	
Bapth to Groundwater	1	7	7	1
Not Precipitation	0	6	0	
Soil Permeability	2	. "	12	1
Podrock Permonbility	1	4	4	12
Pepth to Beirock	0	4	0	12
Purface Erecton	0	4	0	12
Number of Assumed Volues Out of 10 Percentage of Assumed Values 1		SUSTOTALS SUBSCORE	33	192
Number of Missing Values Out of 10		(Factor Score Secre and Hel	Divided by Ne tiplied by 100	n Email)

ی وال ا	4	u .	,
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	WASTE CHARACTERISTICS	
Hazardous	Pating: Judgemental rating from 30 to 100 points based on the following guidelines:	
Points		
30	Closed demestic-type landfill, old site, no known hazardous wastes	aran tulan A
	Closed demostic-type landfill, recent site, no known hazardous wastes	
50	Suspected small quantities of hazardous westes	i di di sense se
60	Known small quantities of hasardous wastes	i destruer i I Secondenti i e e t
N	Suspected moderate quantities of heserdous vestes	
	Known moderate quantitop of hezardous whates	
90	Suspected large quantities of hasardous vastes	
100	Known large quantities of hexardous wester	
	SUBSCORE	80

WASTE HANGENENT PRACTICES

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NATING FACTOR	PATING (0-3)	MULTIPLICA	FACTOR SCORE	MAXEMUM POSSIBLE BCONE
Neerd Accuracy and Ease of Access to Site	2	7	14	21
Mesardous Maste Quantity . Assume	2	7	1+	21
Total Weste Quantity a	0	4	0	12
Meste Incompetibility	0	3	0	9
Absence of Liners or Continung Bode	3	6	18	1
the of Loschete Collection System	NA	•	-	-
toe of Gas Callection Systems	NB	2	-	-
Site Clesure	NA	• •		~
Suboutface Flave	NA	7	-	
Rubber of Assumed Values = Out of 9 Percentage of Assumed Values =	· ·	SUBTOTALS SUBRCORE	4	끐
Moment of Hissing and Hon-Applicable Values = 4 out of 9 Percentage of Hissing and Hon-Applicable Values = 44.9		(Factor Boore Score and Pult	Divided by	y Nambandh 2009

Overall number of Assumed Values = ____ Dut of 25 Overall resonage of Assumed Values = ____

Possibly large veluge of JP-4

OVERALL JCORE

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(Receptors Subscore X 0.22 plus Pathways Subscore X 0.30 plus Neste Characteristics Subscore X 0.24 plus Maste Management Subscore X 0.24)

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WASTE DISPOSAL SITE AND SPILL AREA ASSESSMENT AND RATING FORM

Golf Course 5-12 MFM arato: Alwent Irrigation WWTP A

RATING PACTOR	PACTOR MATING (0-3)	MULTIPLER	FACTOR SCORE	10.53105 2055234.2 50512
MICEPTORS				
Population Within 1,000 Feet	3	4	12	12
Distance to Mearost Drinking Mater Well	3	15	45	45
Distance to Reservation Boundary	3	•	19	15
Lond Use/Soning	3	3	9	4
Critical Environments	0	- 12	0	36
Mater Quality of Hearby Surface Mater Body	0	•	0	15
Mamber of Assumed Values = Out of 6		UNTOTALS	94	138
Persentage of Assumed Valuest	9	JESCORE	-	<u> </u>
Humber of Hissing Values =Out of 6 Percentage of Hissing Values =%	(Factor Score Divided by Namimum Score and Multiplied by 100)			

2 PATINIA	YS			
Svidence of Meter Contamination		10	0	. 30
Level of Mater Contamination	0	15	0	45
Sype of Contamination, Soil/Blots	0	\$	0	15
Distance to Mearest Surface Mater	2	4	8	12
Depth to Groundwater	1	7	٦	21
Net Precipitation	0	6	0	
Soil Permeability	2 ·	6	12	19
Bedrock Permoshility	1	4	4	12
Bapth to Balzeak	Ø	•	0	12
Surface Broston	0	4	0	12
Ruther of Assumed Values = Out of 10		TOTALS	_3	195
Personage of Assumed Velues \	80 (1) 80	pecons actor Score are and Hul	Divided by Re Liplical by 109	alatan Alatan N

George AR # 2463 Pac

	WASTE CRAMACTERISTICS
lasardous Pat	ing: Judgemental rating from 30 to 100 points based on the following guidelines:
Dints	· .
30	Closed demostic-type landfill, old site, no known hazardous wastes
40	Closed demostic-type landfill, recent site, no known hazardous wastes
30	Suspected small quantities of hazardous wastes
60	Known small quantities of hezerdous westes
70	Suspected moderate quantities of haterdows wester
	Enove moderate quantites of besardous vastes
10	Suspected large quantities of hazardous wastes
100	Known large quantities of hazardous westes

50 SUBSCORE discharged to sum to-0.1. Cherus 12 Semilie

WASTE HANAGENENT PRACTICES

BATING FACTOR	PACTOR BATING (0-3)	MULTIPLIER	PACTOR	NAXEMAN POSSIALE SCORE
Necord Accuracy and Ease of Accuss to Site	2	7	14	
Massedous Maste Quantity 1950000	2		14	21
Total Maste Quantity	1	4	4	12
Weste Incompatibility	0	3	0	9
Absance of Liners of Configure Bods	3	6	19	15
Ver of Leechate Collection System	NA	•	-	~
Ver el Gas Collection Systeme	NA	2	-	-
Site Cionce	A/10	•	-	-
Subsuclace flows		7	~	-
Musbor of Assumed ValuesOut of 9 Percentage of Assumed ValuesN Number of Missing and Mon-Applicable Values Out Percentage of Missing and Mon-Applicable Values	of 9	BUBTOTALS SUBSCORS (Factor Score Score and Mult	50 Divided by	41 62 Nanimon 1001

Overall masher of Assumed Values = ____ Out of 25 Overall recombage of Assumed Values = ____

OVERALL SCOPE

45

1

(Receptors Subscore X 0.22 plus Pathways Subscore X 0.30 plus Naste Characteristics Subscore X 0.24 plus Maste Menorement Subscore X 0.24? George AR # 2463 Page 212 of 310 of 2

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WASTE DISPOSAL SITE AND SPILL AREA ASSESSMENT AND RATING FORM

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5-20 Industrial Outfall + Pipelone ers AFA Pipe Sections, Gulley Discharge

RATING FACTOR	FACTOR RETING (0-3)	MULTIPLIER	FACTOR SCORE	NAXIMIN POSSIBLE RCORE
ACCEPTO	8			
Population Within 1,000 Peet	3	4	12	12
Distance to Measest Drinking Water Well	··	15	15	45
Distance to Reservation Soundary	3	6	18	19
Land Use/Zoning	2	3	6_	q '
Critical Environments	0	- 12	0	36
Noter Quality of Nearby Surface Mater Body	0	4	0	18
Humber of Assumed Values Out of 6		STOTALS	51	138
Perfentage of Assumed Values	3	URSCORE		-32
Humber of Hissing ValuesOut of 6 Perventage of Hissing Values9	(Pector Score Divided by Maximum Score and Multiplied by 100)			

7 1 PATH	MAYS				
Bridense of Motor Contamination	•	0	19	0	30
Level of Motor Contenination		0	15	0	4
Pype of Contamination, Soil/Biota		2	5	10	Ľ
Motonue to Moorest Surface Mater		3	4	12	13
Pupth to Groundwater	-	3	7	21	2
Not Prezipitation		b	6	0	19
Poll Posnabélity		2	. •	12	18
Budzück Pasmenbility	•	1	4	4	2
Papels to Bodrock		0	4	0	12
Burlass Resellen		2	4	8	11
Number of Assumed Values Out of 10 Publishings of Assumed Values %			SUSTOTALS SUBSCORE	_67_	195
Refer of Rissing Values Out of 10 Percentage of Rissing Values6		(Pactor Score Divided by Maximum Score and Multiplied by 100)			nilmum)

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George AR # 2463 Page 213 of 310

	WASTE CHARACTERISTICS	
lazardeus	- Pating: Judgemental rating from 30 to 100 points based on the following guidelines:	
-	•	
30	Closed demestic-type landfill, old site, no known hazardous wastes	
•	Closed demostic-type landfill, recent sits. no known hazardous vastes	
50.	Suspected small quantities of hazardous wastes	
66	Known small quantities of hazardous wastes	
70	Suspected moderate quantities of hazardous wastes	
80	Snown moderate quantites of hezardous vester	
10	Supported large quantities of hazardous vestes	
100	Known large quantities of hexardous wested	
		100

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MASTE NAMAGENENT PRACTICES

BATING PACTOR	FACTOR MATING (0-3)	MULTIPLISM	FACTOR SCORE	NAXEMUM POSSIBLE SCORE
•				
Record Accuracy and Ease of Accuss to Site	2	7.	14	21
Masardous Maste Quantity - 14 554 Mac	3	7	21	21
Total Meste Quantity	1	4	4	12
Heate Incompatibility Massing C		3	3	9
Absonce of Linors or Confining Sodo	3	6	18	: /9
Vse of Leochate Collection System	NA	6	-	-
Wer of Gas Collection Systems	NA	2	-	-
Site Clasure	NB	•	~	-
Subsuffece Flove	~~	7	-	~
Number of Assumed Values = 2 Out of 9		SUSTOTALS	60	_8_
Percentage of Assumed Values - 22.		SUBRCORE		74
Number of Hissing and Hon-Applicable Values = Percentage of Hissing and Hon-Applicable Values =	Cut of 9	(factor Score Score and Hult	Divided b Liplied by	y Naximan 1001

Grecali number of Assumed Values - 2 Out of 25 Grecali Ferrentage of Assumed Values - 9 4

OVERALL SCOPE

(Receptors Subscore X 0.22 plus Pathways Subscore X 0.30 plus Naste Characteristics Subscore X 0.24 plus Maste Management Subscore X 0.24)

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George AR # 2463 Page 214 of 310 : c. ?

MASTE DISPOSAL SITE AND SPILL AREA ASSESSMENT AND RATING FORM

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alting factor	PhG908 MAT2108 (9-3)	HULFIPLIER	FACTOR SCORE	NAXINON POSSIALE SCOR
Auctor Carter	2084			
Pegulation Within 3,000 Pool	1		4	12
Distanto to Hearast Brisking Heter Hell	1	15	15	45
Distanto to Recorvation Boundary	2	6	12	1\$
Land Une/Baning	2	3	6	9
Critical Environments	0	12	0	36
Nator Quality of Headby Surface Nator Dudy	b	•	0	
Matter of Assumpt Values Opt of 6		NYOTALE	37	131
Persontage of Assund Values		Descone		27
Number of Hissing Valuesfut of 6	uns =flat of 6 (featur Secre Divided by Hamim			
Persentage of Missing Valuest		nee and Muicip	free of te	()

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<u>}</u> , 20150	11.75			
Bridenzo of Motor Contamination	2	10	20	20
Sevel of Mater Contamination		15	15	45
Type of Conteminetion, Soil/Biota	0	5	0	15
Distance to Macrost Surface Water	0	4	0	/2
Dapth to Groundwater		7	7	21
Not Presipitation	0	•	0	
Boil Permembility	2	. •	12	15
Dedrock Parmenbility	1	4	4	12
Depth to Defront	0	4	0	12
Derlage Exection	· 0	4	0	12
Namber of Asymmet Values Out of 10 Fertentage of Asymmed Values 1		SUBTOTALS SUBSCORE	_58_	195
Matter of Missing Values Out of 10 Percentage of Missing Values		(factor Score Score and Mul	Divided by Ma siplied by 100	Riana)

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	WASTE CHARACTERISTICS
Hotordaut	Pating: Judgemental ratikg from 30 to 100 paints based on the following guidelines:
Polate	· · ·
30	Closed demestic-type landfill, old site, no known hazardous wastes
	Closed demostic-type landfill, recent site, no known hazardous wastes
50	Suspected small quantities of hazardous wastes
40	Anown small quantities of hazardous wastes
70	Suspected moderate glimities of heterdove vestes
•	Ensus anderate quantites of hazardous vastes
90	Suspected large quantities of hazardous wastes
100	Known large quantities of heardows worthe
	SUBSCORE 60

Research For texternal House to Bastan		
MARRING COL VORTHING LASTICOM MICTUAL		•
Miscellinging solvents	other chemicals discharged	to
sanitary server		

WASTE HAMAGENENT PRACTICES

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NATING FACTOR	FACTOR RATING (D-3)	MULTIPLIER	FACTOR	MAXIMUM POSSIBLE SCORE
Lacord Accuracy and			<u> </u>	
Ence of Access to Sits	2	7.	-14	21
Resordous Maste Quantity . A 590 m c	3	-, .	21	21
Total Maste Quantity a	1	•	4	12
Maste Incompatibility Assume	1	3	3	9
Absence of Liners or Cantinuing Bode	3	6	/3	
Tee of Louchate Collection System	NA	6	-	
Ver of Ges Collection Systems	NA_	2	~	-
Site Closure	A	•	-	
Subauclace flove	NA	7	-	-
Humber of Assumed Values . 2 Out of 9		SUBTOTALS	60	31
Persentage of Assumed Values - 22.1		SUBRCORE		-74-
Number of Missing and Mon-Applicable Values - 4 Out of 9 Percentage of Missing and Mon-Applicable Values - 44.		(factor Score Score and Mult	Divided by Lplied by	100)

Overall Humber of Assumed Values = ____ Out of 25 Overall Fercentage of Assumed Values = ____t

OVERALL SCOPE

<u>___</u>

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(Receptors Subscore X 0.22 plus Pathways Subscore X 0.30 plus Waste Characteristics Subscore X 0.24 plus Maste Menegement Subscore X 0.24)

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George AR # 2463 Page 216 of 310.

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WASTE DISPOSAL SITE AND SPILL AREA ASSESSMENT AND RATING FORM

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of site S-22 French Drain Operator_ George astin POL £.]] Wat

RATING FACTOR	PACTOR BATING (0-3)	NULTIPLIER	FACTOR SCORE	NULEHEN POSSIBLE SCORE
RECEPTORS				
Population Within 1,000 Feet	3	4	12	12
Distance to Mearest Drinking Water Well	. 1	15	15	45
Distance to Reservation Boundary	2	6	12	15
Land Use/Zoning	2	3	6	9
Critical Environments	0	12	Ò	36
Water Quality of Mearby Surface Water Body	0	6	0	
Number of Assumed Values = Out of 6 Percentage of Assumed Values =6		SUBTOTALS SUBSCORE	45	139
Number of Hissing ValuesOut of 6 Percentage of Hissing Values0	(Paster Score Divided by Hamiman Score and Hultiplied by 100)			oyinati O)

1 PAT	MATS					
Evidence of Water Contamination	0	19	0	. 30		
Level of Water Contamination	0	15	0	45		
Type of Contamination, Soil/Blots	1	\$	5	در		
Distance to Mearest Surface Mater	0	4	0	12		
Depth to Groundwater	1	7	ר	21		
Net Precipitation	0	6	0	18		
Soil Permeability	2	. •	12	15		
Bedrock Permeability	l	4	4	12		
Depth to Bedrock	0	4	0	12		
Surface Erosion	0	4	0	12		
Number of Acounted Volues Out of 10 Persontage of Acounted Values V			29	- 195		
Restor of Hissing Values Out of 10 Percentage of Hissing Values		(Pactor Score Divided by Maximum Score and Multiplied by 1000				

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WASTE CH	ARACTERISTICS
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Heterdays Deting: Judgemental rating from 30 to 100 paints based on the following guidelines: Points

30 Closed demostic-type landfill, old site, no known hazardous wastes

40 Closed demostic-type landfill, recent site, no known hezerdous wester

- 50 Suspected small quantities of hazardous wastes
- 40 Enove small quantities of hezardous vastes

70 Suspected moderate quantities of heterdous vestes

00 Engun adderate quantites of hezerdous vistor

Suspected large glafflities of hazardous wastes

Known Large quantities of hazardovs wastes

80 SUBSCORE alanal Hasardows Bating, wats Primarily Waste

MASTE HAMAGENENT PRACTICES

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NATING PACTOR	PACTOR RATENG (0-3)	MULTIPLIER	FACTOR SCORE	MAXIMUM POSSIBLE SCORE
Second Accuracy and Read of Accuracy and	1	7.	7	21
Hasardous Haste Quantity . 1955Um C	2	7	14	21
Total Heste Quantity	0	4	ø	12
Neste Incompatibility	0	J	0	9
Absence of Liners or Continung Bodo	3	4	18	: /9
Teo of Laorhate Collection System	NB	6	-	
War of Cas Collection Systems	NA	2	~ `	-
Site Closure	NB	•	-	-
Subsectore Flows	NA	7	-	
Render of Assumed Values Out of 9 Percentage of Assumed Values Render of Hissing and Hen-Applicable Values	Own of 9	SUBTOTALS SUBICORE (Factor Score	39	48 48
Persontage of Missing and Hon-Applicathe Values -		Scare and Hultiplied by 1009		

Overall number of Assumed Values = _____ for of 28 Overall resconcess of Assumed Values = _____

OVERALL SCOPE

42

1

(Peroptors Subscore X 0.22 plus Pathways Subscore X 0.30 plus Naste Characteristics Subscore X 0.24 plus Naste Renacument Subscore X 0.24)
WAGTE DISPOSAL SITE AND SPILL AREA ASSESSMENT AND RATING FORM

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NATING FACTOR	FACTOR BATING (0-3)	NULTIPLIER	ÉACTOR SCORE	NULTINING POSSIBLE SCORE
RECEPTOR	5			
Population Within 1,000 Feet	3	4	12	12
Distance to Nearest Drinking Water Well	1	15	15	45
Distance to Reservation Boundary	2	6	12	18
Lin: See/Zoning	2	3	6	9
Critical Environments	0	· 12	Ó	36
Mater Suality of Nearby Surfac - Mater Bosiy	0	6	0	19
Number of Assumed Values Out of 6		SUBTOTALS	4.5	138
Percentage of Assumed Values =		SUBSCORE		_33
Number of Missing Values =Out of 6 Percentage of Missing Values =%		(Factor Score Di Score and Hultip	vided by a blied by 10	lexi stin 20)

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۹. ۲۲۲۴ <u>۱</u> ۶۸۳۲۴	WAYS			
Evidence of Water Contamination	0	10	0	30
Lavel of Mater Contamination	0	15	0	45
Type of Contamination, Soil/Biota	1	5	5	15
Distance to Newrest Surface Water	0	· 4	0	12
Depth to Groundwater	1	7	7	2/
Wet Precipitation	Ó D	6	0	19
Soll Permeability	2	. •	12	19
Bedrock Permedility	1	4	4	12
Depth to Nedrock	0	•	0	12
Sur(»ce Erosion	0	٩	6	12
Number of Assimad Values Out of 10		SUSTOTALS	28	192
Percontage of Assumed Values = N Number of Missing Values = Out of 10 Percentage of Missing Values =N		SUBSCORE (Factor Boord Score and Hu)	Divided by Hu tiplied by 100	inima))

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	NASTE CHARACTERISTICS	
lasardous P.	Pating: Judgemental rating from 30 to 100 paints based on the following guidelines:	
Polats -		
30	Closed domestic-type landfill, old site, no known bazardous wastes	
	Closed demostic-type landfill, recent site, no known baserdous wastes	
50 · · · · ·	Despected small quantities of Reservous vestes	
40	Known small quantities of heserdous vestes	
	Suspected underste quantities of heastdown wasted	,
	Rnown moderate quantites of bezerdous whotes	
	Suspected large quantities of hazardous vestes	
100	Known Large quantities of hesardens vestes	
	SUBSCORE	70

WASTE HANAGENENT PRACTICES

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MATING FACTOR	FACTOR RATING (0-3)	MULTIPLIER	FACTOR SCORE	HAXIMIM POESIBLE SCORE
Record Accusacy and Ease of Access to Site	1	7	. 7	21
Heserdous Maste guantity . Assume	2	7	14	21
Total Maste Quantity	0	4	0	12
Weste Incompetibility	0	3	0	9
Absence of Liners or Confining Bods	3	•	18	:
Vee of Leschete Collection System	NA	•	-	-
Vee of Gas Collection Systems	NA	2	_	-
Site Clourd	NA	•	-	-
Subsuffees flows	NA	7	-	•
Musber of Assumed Values = 1 Out of 9 Persontage of Assumed Values = 11 A Musber of Hissing and Hon-Applicable Values = 4 Out of 9 Personnage of Hissing and Hon-Applicable Values = 44 A		SUBTOTILS SUBSCORE (Factor Score Score and Mult	39 Divided by	91 48 Naxima 1001

Overall Humber of Assumed Values - 1 Out of 25 Overall Percentage of Assumed Values - 4.

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(Receptors Subscore X 0.22 plus Pathways Subscore X 0.30 plus Maste Characteristics Subscore X 0.24 plus Maste Management Subscore X 0.24)

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WASTE DISPOSAL SITE AND SPILL AREA ASSESSMENT AND RATING FORM

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BATING FACTOR	FACTOR BATING (0-3)	NULTIPLIER	FACTOR SCORE	NAXIMIN POSSIBLE SCORE
RECI	PTORS			
Population Within 1,000 Feet	1	4	4	12
Distance to Mearest Drinking Water Well	1	15	15	45
Distance to Reservation Boundary	2	6	12.	18
Land Use/Zoning	2	3	6	9
Critical Environments	0	12	0	36
Meter Quality of Mearby Surface Mater Body	0	6	0	18
Humber of Assumed Values = Out of 6		SUBTOTALS	37	132
Percentage of Assumed Values =t	1	SUBSCORE	•	27
Number of Missing Values =Out of 6 Percentage of Missing Values =%		(Factor Score Di Score and Multip	vided by M lied by 10	oximum O)

1 PATR	a ye			
Svidence of Water Contamination	Ø	10	0	30
Level of Water Contamination	0	15	0	45
Type of Contamination, Soil/Biota	0	5	0	15
Distance to Mearest Surface Mater	. 0	4	0	12
Depth to Groundwater	1	7	7	21
Net Precipitation	0	6	0	18
Soil Permeability	2	. •	12	18
Bedrock Permembility	1	4	4	12
Depth to Bedrock	0	4	0	12
Suclass Erosion	· 2	4	8	12
Rumber of Assumed Values = Out of 10 Percentage of Assumed Values = %		SUBTOTALS SUBSCORE	_3 _	195 26
Number of Hissing Values Out of 10		(Factor Score Score and Hull	Divided by Ma Liplied by 100	ximm)

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WATE CONVETENTIES

Natardaus Pating Ĭ ental rating from 30 to 100 points based on the following **Tablelles**

1 min ž 8 X Closed do Cloand d Suspected large quantities of hazard Known Large qu Bupected frown small quantities of h un moderata small quantities attertype L stic-type landfill, old site, me antities of he -----Ì **dE111**, p t F in the factor nt site. a ious veste NOW WARKED E

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anting factor (c				SUCCE Fragment
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Report Accuracy and Report Accuracy and	0	,	2	21
Resirtons waste quantity . 49510m c		, ,	2	2
Total Maste Quantity a adjust a	3	•	12	21
Maste Incompatibility	1	1	J	٩
Absence of Liners or Canfining Peds	ω _.	•	18	.
Des of Leschate Collection System	3	•	19	-
Nee of Gas Collection Systems	ש י		6	•
Site Closure	ω	-	24	24
Subsurface Flows	0	۲	D	2
number of Assumed Values - 2 Out of 9		PINIOINI	109	teo teo
threating of Assumed Values - 22	2	104CONE		
Number of Missing and Num-Applicable Values Cut of 9	83	Actor Secre D	plied by	Numine 1001

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WASTE DISPOSAL SITE AND SPILL AREA ASSESSMENT AND RATING FORM

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Landfill Site . Wester, Munitions - Genera

RATING FACTOR	- daar ar waa na daar ah	FAC208 RATING (0-3)	MULTIPLIER	FACTOR SCORE	MAXIMIN POSSIBLE SCORE
	RECEPTOR	6		-	
Population Within 1,000 Fest	ی معنی کریں ہے۔ اور اور	2	4	8	12
Distance to Nearest Drinking Water Wall		2	25	30	45
Distance to Reservation Soundary		2	6	12	19
Lant Use/Zoning		0	3	D	9
Critical Environments		0	- 12	Ö	36
Water Quality of Mearby Surface Water Body	· · ·	0	4	0	18
Masher of Assumed Values Out	of 6		OBTOTALS	50	138
Percentage of Assumed Valuest			UBBCORE		_36_
Humber of Missing Values =Out of Percentage of Missing Values =t	t 6 · ···		Paster Score Di loore and Hultig	vided by S Lied by 10	10)

2 3 Mil	MATS			
Svidence of Mater Contamination		19	0	3(
Level of Mater Contamination	0	15	0	45
Type of Contamination, Soil/Biota	0	5	Ø	15
Distance to Mearest Surface Water	0	4	0	12
Pepth to Groundwster		7	7	21
Net Procipitation	ò	6	0	19
Soil Permeability	2	. •	12	S
Bedrock Permeability	1	4	4	12
Depth to Sedrock	0	4	0	12
Surface Erosion	3	4	8	12
Number of Assumed Values = Out of 10 Percentage of Assumed Values = %			31_	192
Number of Hissing Values Out of 10 Percentage of Hissing Values %		(Pactor Score Score and Hult	Divided by Hes Liplical by 1001	1.

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	MASTE CHARACTERISTICS	ین : اینداز ایند : 	
lozordowa Inista	Pating: Judgemental rating from 30 to 100 points based on the following guidelines:		a faria di Aliana Managera
30	Closed domestic-type landfill, old site, no known basardous wastes	اله وهېرېوره التو و	1
40 50	Closed demostic-type landfill, recent site, no known hazardous wastes Sespected small quantities of hazardous wastes		A. 122.
40 70	Rnovn small quantities of hazardous vestes Suspected moderate quantities of hazardous vestes		
	Snown anderate quantites of basardous whetes		<i>.</i>
199	Known large quantities of hasardous wastes		1997 - 19
	SUBSCORE	60	

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WASTE HANAGENENT PRACTICES

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BATING FACTOR	PACTOR RATENG (0-3)	NULTIPLIER	FACTOR	JUNICIPALITY POSSIBLE SCORE
Record Accuracy and Ease of Accuss to Site	2	7	-14	21
Masardous Maste Quantity ASSUME	3	7	21	21
Total Moste Quantity	0	4	0	12
Meste Incompatibility	1	3	3	٩
Absence of Liners or Continue Bodo	3		18	:
The of Lanchate Collection System	3	6	18	14
Ver of Gas Collection Systeme	3	2	6	6
Site Closure	2	•	16	24
Subsurface Flove	0	7	6	<u></u>
Number of Assumed Values = Out of 9 Percentage of Assumed Values = Number of Hissing and Hum-Applicable Values = Out of 9 Percentage of Hissing and Hum-Applicable Values =		SUBTOTALS SUBACORE (Factor Score Score and Pull	96	150 64 Nazime 1001

Overall number of Assumed Values - ____ Out of 25 Overall rescontage of Assumed Values - 4.

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OVERALL SCORE

1

(Receptors Subscore X 0.22 plus Pathways Subscore X 0.30 plus Maste Characteristics Subscore X 0.24 plus Maste Mensement Subscore X 0.24)

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WASTE DISPOSAL SITE AND SPILL AREA ASSESSMENT AND RATING FORM

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RATING FACTOR	FACTOR BATING (0-1)	MULTIPLIER	PACTOR SCORE	NAXIMIN POESTELE SCORE
NICEP	1085			
Population Within 1,000 Peet	2	4	8	12
Distance to Noarest Drinking water Well	2	15	30	45
Distance to Reservation Roundary	2	•	12	18
Land Use/Zoning	0	3	0	9
Critical Environments	0	12	Ò	36
Natar Quality of Nearby Sufface Mater Body	0	6	0	18
Humber of Assumed Values = Out of 6		UNTOTALS	50	138
Percentage of Assumed Values1	1	UBSCORE		-36
Mumber of Missing Values =Out of 6 Percentage of Missing Values =9	(Factor Score Divided by Maximum Score and Multiplied by 100)			lextinum 0]

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	PATHWAYS				
Svidence of Mater Contamination		0	10	0	30
Level of Mater Contamination		0	15	0	45
Type of Contamination. Soil/Biota		0	5	0	V
Distance to Mearest Surface Mater		0	4	0	12
Papth to Groundwater		1	7	7	2
Het Procipitation		0	6	0	19
Soil Permodulity		2	. •	12	18
Bedrock Permeability		1	4	4	/2
Popth to Bodrock		0	4	0	12
Surface Erosian	•	2	4	8	12
Rember of Accuracy Values Out of 10 Percentage of Accuracy Values 1			SUBTOTALS SUBSCORE	3/	195
Number of Missing Values Out of 10			(Factor Score Score and He)	Divided by Ma Liplied by 100	rienn)

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WASTE CHARACTERESTICS				
lazardana I	ating: Judgemental roting from 30 to 100 points based on the following guidelines:			
to inte	· · ·			
30	Closed demostic-type landfill, eld site, so known hazardees vastes			
40	Closed demostis-type landfill, resent site, no known hasesfous wastes			
*	Suspected mall quantities of hearsdows wester			
G	Known small quantities of haderdous wester			
70	Suspected moderate quantities of hamandous vestes			
	Known moderate quantites of hesardous westes			
90	Suspected large quantities of hasardous vestes			
109	Known large quantities of hazardous wastes			

Bessen for Assigned Hasardows Miting: EOD & Waste POL

WATE HANGENENT PRACTICLE

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SUBSCORE

RATING FACTOR	FACTOR RATINS (9-3)	MULTIPLIER	FACTOR SCOPE	MAXEMEN POSSIBLE SCORE
•		•		
Neceré Accuracy and Ease of Accuracy to Site	2	,	14	21
Masardous Waste Quantity 19554010	2	7	14	21
Total Waste Quantity	0	•	0	12
Maste Incompetibility	1	3	3	9
Absence of Liners or Confining Deds	3	6	18	19
The of Loochste Collection System	3	6	18	18
Boe of Gas Collection Systems	3	2	6	6
Site Closure	2	•	16	24
Subauclace Flove	0	7	0	21
Number of Assumed Values = Out of 9 Percentage of Assumed Values = Number of Hissing and Hon-Applicable Values = Out of 9		SUBTOTALS SUDECORS (Factor Score Score and Mult	89_	<u>150</u> <u>59</u> Naxima 1001
Latested of wrashed and how whit reards a the				

Overall member of Assumpt Values - 1 Out of 25 Overall forcentage of Assumed Values - 4.

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OVERALL SCOPE

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(Receptors Subscore X 0.22 plus Pathways Subscore X 0.30 plus Maste Characteristics Subscore X 0.24 plus Mante Menseemant Subscore X 0.24) George AR # 2463

Appendix J

REGIONAL FLORA AND FAUNA

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Table J-1 REPRESENTATIVE VEGETATION IN THE VICINITY OF GEORGE AFB

Common Name Creosote Bush Scrub and Other Xerophitic Species Creosote bush Burroweed Goldenhead Box thorn Cheese bush Galleta grass Krameria Mojave yucca Rice grass Pincushion flower Winged fruit popcorn flower Mentzelia Cotton thorn Mojave sage Buckwheat Desert allysum Saltbush Hoary saltbush Mormon tea Joshua tree Barrel cactus Beavertail cactus Pencil cactus Jumping cholla Tumbleweed (introduced) Jimsonweed

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Riparian Species Fremont cottonwood Western sycamore Willows Tamarix

Freshwater Marsh Species Cattails Sedges Rushes

Ornamental Species Silk tree Ash Arisona sweet gum Fruitless mulberry

Larrea divaricata Franseria dumosa Acamptopappus sphaerocephalus Lycium spp. Hymenoclea salsola Hilaria rigida Krameria parvifolia Yucca mojavensis Oryzopsis hymenoides Chaenactis xantiana Cryptantha pterocarpa Mentzelia veatchiana Tetradymia spp. Salvia mojavensis Eriogonum spp. Lepidium fremontii Atriplex parryi Atriplex canescens Ephedra nevadensis Yucca brevifolia Echinocactus acanthodes **Opuntia basilaris** <u>Opuntia</u> ramosissima <u>Opuntia</u> bigelovii Amaranthus albus Datura meteloides

Scientific Name

<u>Populus fremontii</u> <u>Platanus racemosa</u> <u>Salix spp.</u> <u>Tamarix pentandra</u>

<u>Typha</u> spp. <u>Carex</u> spp. <u>Juncus</u> spp.

<u>Albizia julibrissin</u> <u>Fraxinus velutina</u> <u>Liquidambar styraciflua</u> <u>Morus alba</u>

J-1

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Common Name

London plane tree Western sycamore White poplar Black locust Siberian elm Desert gum Privet Persian lilac

Euonymus Japanese privet Heavenly bamboo Oleander Firethorn Cypress Juniper Aleppo pine Chinese arborvitae California fan palm English ivy Japanese honeysuckle Pampas grass Ice plant Periwinkle

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Scientific Name

Platanus acerifolia Platanus racemosa Populus alba Robinia pseudoacacia Ulmus pumila Eucalyptus rudis Ligustrum spp. Syringa persica Viburnum burkwoodii Viburnum carlesii Viburnum opulus roseum Euonymus japonica Ligustrum japonicum Nandina domestica Nerium oleander Pyracantha spp. Cupressus spp. Juniperus spp. Pinus halepensis Thuja orientalis Washingtonia filifera Hedera helix Lonicera japonica Cortaderia selloana Mesembryanthemum spp. Vinca minor

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Table J-2 WILDLIFE OCCURRING IN THE VICINITY OF GEORGE AFB

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Common Name	Scientific Name	Desert	Riparian
Amphibians			
Western Toad	Bufo boreas	x	х
Red-spotted Toad	Bufo punctatus	x	
California Treefrog	Hyla californiae		x
Pacific Treefrog	Hyla regilla		X
Bullfrog	Rana catesbeiana		X
Reptiles			
Desert Tortoise	Gopherus agassizi	х	
Banded Gecko	Coleonyx variegatus	x	
Collared Lizard	Crotaphytus collaris	x	
Zebra-tailed Lizard	Callisaurus draconoides	x	
Desert Spiny Lizard	Sceloporus magister	x	
Western Fence Lizard	Sceloporus occidentalis	x	
Side-blotched Lizard	Uta stansburiana	X	
Long-tailed Brush Lizard	Urosaurus graciosus	x	
Coast Horned Lizard	Phrynosoma coronatus	x	
Desert Horned Lizard	Phrynosoma platyrhinos	x	
Desert Night Lizard	Xantusia vigilis	x	
Western Whiptail	Cnemidophorus tigris	x	
Coachwhip Snake	Masticophis flagellum	x	
Striped Racer	Masticophis lateralis	x	
Western Patchnosed Snake	Salvadora hexalepis	x	
Glossy Snake	Arizona elegans	x	
Gopher Snake	Pituophis melanoleucus	x	
Common Kingsnake	Lampropeltis getulus	x	
California Lyre Snake	Trimorphodon vandenburghi	x	
Western Gartersnake	Thampophis couchi		x
Western Rattlesnake	Crotalus viridis	x	
Mojave Rattlesnake	Crotalus scutulatus	x	
Speckled Rattlesnake	Crotalus mitchelli		X
Birds			
Turkey Vulture	Cathartes aura	x	
Red-tailed Hawk	Buteo jamaicensis	x	X
Red-shouldered Hawk	Buteo lineatus		X
Golden Eagle	Aguila chrysaetos	х	
Prairie Falcon	Falco mexicanus	X	
Sparrow Hawk	Falco sparverius	X	X
Gambel's Quail	Lophortyx gambeli	X	
Mourning Dove	Zenaidura macroura	X	
Roadrunner	Geococcyx californianus	x	
Barn Owl	Tyto alba		x
Long-eared Owl	Asio otus		X
Screech Ovl	Otus asio	x	X

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Common Name	Scientific Name	Desert	Riparian
Great Horned Owl	Bubo virginianus	x	
Burrowing Owl	Spectyto cunicularia	x	
Poor-will	Phalaenoptilus nuttallii	x	
Lesser Nighthawk	Cordeiles acutipennis	x	
White-throated Swift	Aeronautes saxatilis	x	
Costa's Hummingbird	Calvote costae	x	
Anna's Hummingbird	Calvote anna		x
Ladderback Woodpecker	Dendrocopos scalaris	x	x
Red-shafted Flicker	Colaptes cafer		x
Western Kingbird	Tyrannus verticalis	x	x
Ash-throated Flycatcher	Myarchus cinerascens	x	x
Black Phoebe	Savornis nigricans	x	
Sav's Phoebe	Savornis sava	x	
Western Flycatcher	Empidonax difficilis	x	X
Vermilion Flycatcher	Pyrocephalus rubinus	x	
Horned Lark	Fremophila alpestris	x	
Cliff Swallow	Petrochelidon pyrrhonota	x	
Scrub Jay	Aphelocoma coerulescens	x	x
Common Raven	Corvus corax	x	
Pinvon Jav	Cymnorhinus cyanocephalus	x	
Plain Titmouse	Parus inornatus		x
Verdin	Auriparus falviceps	х	
Common Bushtit	Psaltriparus minimus		· X
Bewick's Wren	Thryomanes bewickii		X
Cactus Wren	Campylorihinchus		
· · · · · · · · · · · · · · · · · · ·	brunneicapillum	X	
Long-billed Marsh Wren	Telmatodytes palustris		X
Rock Wren	Salpinctes obsoletus	X	
Mockingbird	Mimus polyglottos	x	X
California Thrasher	Toxostoma redivivum	х	X
Robin	Turdus migratorius		X
Western Bluebird	Sialia mexicana		X
Blue-gray Gnat-catcher	Polioptila caerulea	X	X
Phainopepla	Phainopepla nitens	x	
Logger Shrike	Lanius Iudovicianus	x	
Gray Vireo	Vireo vicinior		X
Yellow Warbler	Dendroica petechia		X
Yellowthroat	Geothlipis trichas		x
Western Meadowlark	Sturnella neglecta	X	
Red-winged Blackbird	Agelaius phoeniceus		X
Brewer's Blackbird	Euphagus cyanocephalus	X	
Cowbird	Molothrus ater	X	X
Hooded Oriole	Icterus cucullatus	X	X
Western Tanager	Piranga Iudoviciana		X
Summer Tanager	Piranga rubra		X
House Sparrow	Passer domesticus	X	X
Black-headed Grosbeak	Pheucticus melanocaphalus		X
Laguli Bunting	Passerina amoena		X

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Common Name	Scientific Name	Desert	Riparian
House Finch	Carpodacus mexicanus	x	X
American Goldrinch	Spinus tristis	v	X
Lesser Goldfinch	Spinus peartria	X	X
Lawrence's Goldrinch	Spinus lawrencei	X	
Ruious-sided Townee	Pipilo erythrophthalmus	X	
Brown Townee	Pipilo ruscus	x	X
song sparrow	Melospiza melodia		X
Black-throated Sparrow	Amphispiza bilineata	x	
Mammal s			
California Leaf-nosed Bat	Macrotus californicus	X	
Fringed Myotis	Myotis thysanodes	X	
Hairy-winged Myotis	Myotis volans	x	
California Myotis	Myotis californicus	X	
Western Pipistrel	Pipistrillus hesperus	x	
Big Brown Bat	Epistesicus fuscus	х	
Pallid Bat	Antrozous pallidus	x	
Audubon Cottontail	Sylvilagus auduboni	X	
Black-tailed Jack Rabbit	Lepus californicus	x	
Antelope Ground Squirrel	Ammospermophilus leucurus	X	
Beechey Ground Squirrel Round-tailed Ground	Ammospermophilus beecheyi	x	
Squirrel	Citellus tereticaudus	x	
Mohave Ground Squirrel	Citellus mohavensis	x	
Botta Pocket Gopher	Thomomys bottae	x	
Little Pocket Mouse	Perognathus longimembris	X	
Long-tailed Pocket Mouse	Perognathus formosus	х	
San Diego Pocket Mouse	Perognathus fallax	X	
Spiny Pocket Mouse	Perognathus spinatus	X	
Merriam Kangaroo Rat	Dipodomys merriami	х	
Desert Kangaroo Rat	Dipodomys deserti	х	
Western Harvest Mouse	Reithrodontomys megalotis	X	
Canyon Mouse	Peromyscus crinitus	Χ.	
Cactus Mouse	Peromyscus eremicus	X	
Deer Mouse	Peromyscus maniculatus	X	
Southern Grasshopper			
Mouse	Onychomys torridus	х	
Desert Woodrat	Neotoma lepida	x	
California Vole	Microtus californicus		X
Covote	Canis latrans	x	
Kit Fox	Vulpes macrotus	X	
Raccoon	Procyon lotor		x
Bobcat	Lynx rufus	x	
Mule Deer	Odocoileus hemionus	x	÷

J-5

Table J-3 DESIGNATED AND CANDIDATE SENSITIVE, RARE, THREATENED OR ENDANGERED, ANIMALS AND PLANTS: MOJAVE DESERT, SAN BERNARDINO COUNTY (VARIOUS SOURCES)

- •

			Status		
Common Name	Scientific Heme	State	Federal	BLN	Habitat
Nojave chub	<u>Gila mohavensis</u>		B		Soda Lake
Mojave ground squicrel	Citellus mohavensis	R			Low desert with scattered brush
Desert tortoise	<u>Gopherus</u> agassizi			8	Various desert habitats
Summer tanager	<u>Piranga</u> <u>rubra</u>			8	Riparian
Weasel phacelia	<u>Phacelia</u> <u>mustelina</u>		с		3,000' to 6,000', creosote bush shrub mountains or Death Valley area
Live-for-ever	Dudleya saxosa ssp saxosa*		С		Creosots bush shrub to pinyon juniper woodland; dry stony slopes 3,000' to 7,000'
Goldstone locoweed	Astragalus jaegerianus		с		Low granite hills 3,000' to 3,800'; Josh tree woodland
	Eriophyllum mohavense		C		(Boni to Barstow) 2,000' to 3,000'; sandy rocky places; creesote bush scrub
No' 'e spiny herb	Chorizanthe spinosa		С		2,500' to 3,500' and Joshua tree creosote bush scrub; dry, sandy places
Barrel cactus	Sclerocactus polyancistrus		с		2,000' to 6,000', occasional gravelly mesas and slopes, Joshua tree, creesote bush scrub

Endangered
Threatened

Rare

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- Candidate С

- Sensitive

George AR # 2463 Page 232 0f 310 George AR **# 2463** Page 233 of 310

Table J-4ALKALI SINK COMMUNITY REPRESENTATIVE PLANT SPECIES

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Common Names	Scientific Names
Cattle spinach	<u>Atriplex polycarpa</u>
Quailbrush	<u>A lentiformis</u>
Brewer's saltbush	<u>A Breweri</u>
Mojave saltbush	<u>A spinifera</u>
Parry saltbush	<u>A Parri</u>
Greasewood	<u>Sarcobatus vermiculatus</u>
Pickleweed	<u>Allenrolfea occidentalis</u>
Inkweed	<u>Suaeda torreyana var. ramosissima</u>

Appendix K

HERBICIDE AND OTHER PESTICIDE USAGE

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	Table K-1	
REPORTED	HERBICIDES AND OTHER PESTICIDES	USED
	ON GEORGE AIR FORCE BASE	

GI GHITCHT	
Current	
Simazine	Soil Sterilant; 22ac around base
Disodium Methanearsonate	Herbicide; - 35 ac around base
2, 4-D	Herbicide; 6 ac in housing and
	base lawns
Dacthal	Herbicide; 35 ac around base
Monuron	Herbicide; 28 ac, taxiways
Prometone	Herbicide; taxiways
Diphacinone	Rodenticide Anticaogulent; golf course
Strychnine Alkaloid	Rodenticide; golf course
Warfarin	Rodenticide Anticoagulent; base buildings
p-Dichlorabenzene	Pesticide; base buildings and housing attics
4-Aminopyridine	Pesticide; bait for pigeons in aircraft hangars
Diazinon	Insecticide; inside base building and housing units
Bagon	Insecticide; base buildings
Malathion	Insecticide; outside base housing
Phenoxy Benzyl	Insecticide, base building and housing
Carbaryl 1	Insecticide; trees on base
Past	

Chloradine (2%)/DDT (5%)

Chemical

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Insecticide used until 1962; usage locations unknown



09-13-17 P-D-680 AMERICANENT-S June 9, 2004

SUPERSIEDDNO Amerikant-S August 27, 1955

FEDERAL SPECIFICATION

DRY CLEANING SOLVENT

This amendment, which forms a part of Pederal Specification P.D.400, dated March 27, 1983, vede approved by the Commissioner, Pederal Supply Service, Conoral Services Administration, for the new of all Policies

> Page 2, table I: Delste "Color, Saybolt, not greater than" and substitute "Color, Eaybolt, not darker than".

Page 2, table I, Under distillation range: Delate "50% distilled by vol., min." and substitute "Minimum 50 percent distilled, "F.".

MILITARY INTERESTS:

Army-MU MR GL

Navy-Sh

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Air Force-MAAM

PBC 6850

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09-15-17

P-D-680 March 27, 1983

SUPERSEDING Int. Pod. Spoc. P-S-09661c(GSA-P3S) June 12, 1962 and Pod. Spot. P-S-661b April 6, 1963

FEDERAL SPECIFICATION

DRY CLEANING SOLVENT

This specification was approved by the Commissioner, Pederal Supply Beroles, General Services Administration, for the use of all Pederal agencies.

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers two types of petroleum distillates employed for dry cleaning of textile materials, and referred to industrially as "Stoddard Solvent" and as "140° F. Solvent".

1.2 Classification.

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1.2.1 Types. Dry-cleaning solvent shall be of the following types, as specified:

Type I.--100°F. Solvent (Stoddard Solvent).

Type II.-140°F. Solvent.

2. APPLICABLE SPECIFICATIONS, STANDARDS, AND OTHER PUBLICA-TIONS

2.1 Specifications and Standards. The following specifications and standards, of the issues in effect on date of invitation for bids, form a part of this specification:

Foderal Standards:

- Fed. Std. No. 102-Preservation, Packaging, and Packing Levels.
- Fed. Std. No. 123-Marking for Domestic Shipment (Civilian Agencies).
- Fod. Test Method Std. No. 791-Lubricanta, Liquid Fuels, and Related Products; Methods of Testing.

(Activition outside the Federal Government may obtain copies of Federal Specifications, Standards, and Handbooks as outlined under General Information in the Index of Federal Specifications, Standards, and Randbooks and at the prices indicated in the Index. The Index, which includes cumulative monthly supplements as issued, is for sale on a subscription basis by the Superintradent of Documents, U. S. Government Printing Office, Washington 28, D. C.

(Single copies of this specification and other product specifications required by activities outside the Federal Government for bidding purposes are available without charge at the General Services Administration Regional Offices in Boston, New York, Washington, D. C., Atlanta, Chicago, Kansas City, Me., Dallas, Denver, San Francisco, and Aubura, Wash.

(Federal Government activities may obtain copies of Pederal Specifications, Standards, and Handbooks and the Index of Pederal Specifications, Standards, and Mandbooks from established distribution prints in their agencies.)

Military Standards:

- MIL-STD-105—Sampling Procedures and Tables for Inspection by Attributes.
- MIL-STD-129-Marking for Shipment and Storage.
- MIL-STD-290—Packaging, Packing and Marking of Petroleum and Related Products.

(Copies of Military Specifications and Standards regulared by contractors in connection with specific procorrement functions should be obtained from the procuring activity or as directed by the contracting effect.)

FSC 6850

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George AR #

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2.2 Other publications. The following publications form a part of this specification. Unless otherwise indicated, the issues in effect on date of invitation for bids shall apply:

American Society for Testing and Matericle Publication

Part 7-Petroleum Products and Lubricants.

(Copies may be obtained from the American Soelety for Testing and Materials, 1916 Race Street, Philadelphia 3, Pennsylvania.)

Uniform Classification Committee Publication:

Uniform Freight Classification Rules.

(Application for copies should be addressed to Uniform Classification Committee, 202 Union Station, Ohicage 6, Illinois.)

3. REQUIREMENTS

3.1 Material. The material shall be a petroleum distillate.

3.2 Physical and chemical properties. The physical and chemical properties of the solvents shall conform to the requirements specified in table I.

3.3 Workmanship. The dry cleaning solvent shall be clear, free from suspended matter and undissolved water as determined by visual inspection.

4. SAMPLING, INSPECTION, AND TEST PROCEDURES

4.1 The supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the supplier may utilize his own or any other inspection facilities and services acceptable to the Government. Inspection records of the examinations and tests shall be kept complete and available to the Government as specified in the contract or TABLE I. Physical and chemical properties

	Туре І	Type II	Toot Para.
Appearance	Clear, free pended m undissolve	from sus- atter, and ad water	443
Celor, Saybolt, not	.		
greater than	E1 Comot	Z1	
Conversion of en-	0	SWINC	
per strip 212" F.	Slight terpish ¹		
Distillation range:			
Initial boiling pt.			1
min. 50% distilled by	300° F.	350° F.	
vol., min	250° 7.	275° P.	
End point, max Distillation resi-	41 0* P .	415* P .	
due, 1841	1.5%	1.5%	4.4.4
Acidity-reaction of residue to mothy?			
erange	Neutral	Neutral	4.4.5
Dector test	Negative	Negative	4.4.1
Flash Point, Tag			
Closed Cup, min.	100° F.	13 8° P .	4.4.1
Sulfuric add ab-			
sorption, max	1270	67 .	6.4.1

¹ Shall correspond to classification number 1 of ASTM designation D 130.

order. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure that supplies and services conform to prescribed requirements.

4.2 Sampling.

4.2.1 Lot. For purposes of sampling, a lot shall consist of solvents from one batch or tank offered for delivery at one time. If material cannot be identified by batch or tank, a lot shall consist of not more than 10,000 gallons offered for delivery at one time.

4.2.2 Sampling for inspection of containers ers. A random sample of filled containers shall be taken by the Government inspector in accordance with Military Standard MIL-



8TD-105 at inspection level I and acceptable quality level - 2.5 percent defective to verify compliance with this specification in regard to fill, closure, marking, and other requirements not involving tests.

4.2.3 Sampling for tests. Prom each inspection lot (see 4.2.1), the inspector shall take two containers at random. From each of the two containers 1-quart specimens shall be taken and placed in separate, clean, dry, metal, or glass containers, and then sealed, marked, and forwarded to the testing laboratory designated by the procuring activity.

4.3 Inspection of containers. Each sample filled container shall be examined for defects of construction of the container and the closure, for evidence of leakage, and for unsatisfactory markings; each filled container shall be weighed to determine the amount of contents. Any container in the sample having one or more defects, or under required fill, shall be rejected and if the sumber of defective containers in any sample exceeds the acceptance number for the appropriate sampling plan of MIL-STD-105, the lot represented by the sample shall be rejected.

4.4 Test procedures

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4.4.1 Physical and chemical properties. These determinations shall be made in accordance with the methods specified in table II.

4.4.2 Appearance. Examine the solvent for undissolved water, sediment and suspended matter by the use of transmitted light.

4.3 Odor. If the odor is questionable the following test shall be performed. Desized and laundered bleached cotton cloth of 3.6 to 4.0 ounces per square yard shall be used for this test. The cloth when lightly steamed shall have no odor except that of clean cotton cloth. The cloth shall be conditioned at 30 to 80 percent R.H. and 65°

TABLE II. Test procedures

	Applicable method in Fed. Test Nothed Std. No. 791	Tust method para- graph	Require- ment pare- graph
Appearance	-	64.8	Table I
Color	101.6	-	Table I
Oder	-	443	Table 1
Copper Corresion . Distillation	5325.2	-	Table I
Distillation range Distillation runi-	1001.9		Table I
des		44.4	Table I
Acidity	_	44.5	Table I
Decter test	5203.2	-	Table I
Flack point	1101.5		Table I
Salfuric Aeld Ab.			
sorption	(See Note)	-	

Note: Determine according to ASTM D494-52.

to 90°P. for 4 hours. A piece of the conditioned cloth approximately 12 inches square shall be placed in 100 milliliters of solvent so as to be completely submerged, and allowed to soak for 5 minutes. The cloth shall then be removed, drained, but not squeezed or extracted and hung at room temperature for 3 hours. The cloth shall then be dried in a stream of fresh air heated to 140° to 160° F. (60° to 71°C.) for 1 hour. The odor of. the dried cloth when steamed over boiling water for 4 to 5 seconds, shall not differ from that of an untreated sample similarly gleamed.

4.4.4 Distillation residue. Four the distillation residue from the flask into a small cylinder graduated to 0.1 milliliter. Cool, measure and record the volume as residue.

6.4.5 Acidity. Make this test immediately after recording the volume of distillation residue. Transfer the cooled residue to a test tube, add three volumes of distilled water, and shake the tube thoroughly. Allow the mixture to separate and remove the aqueous layer to a clean test tube by means of a pipette. Add 1 drop of 0.1 percent aqueous solution of methyl orange. A pink or red color indicates the presence of mineral acid.

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5. PREPARATION FOR DELIVERY

For civil agency procurement, the definitions and applications of the levels of packaging and packing shall be in accordance with Fed. Std. No. 102.

5.1 Packaging and packing.

5.1.1 Lovels A and B. The solvent shall be packaged and packed in accordance with MIL-STD-290 as specified for the applicable lovel (see 6.2).

5.1.2 Level C. Commercial unit and bulk containers shall be packed so as to be acceptable by common or other carriers for safe transportation to point of destination specified in ahipping instruction at the lowest transportation rate.

5.2 Marking.

5.2.1 Civil agencies. In addition to any special marking required by the contract or order, marking for shipment shall be in accordance with Fed. Std. No. 123.

5.2.2 *Willtary agencies.* In addition to any special marking required by the contract or order, marking for shipment shall be in accordance with MIL-STD-129.

6. NOTES

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6.1 Intended use. The product is intended for use as a dry-cleaning solvent.

6.1.1 Type I is intended for use as a comparatively safe dry-cleaning solvent.

6.1.2 Type II is intended for use in drycleaning plants where a solvent with a higher flash-point is desirable as an additional safety factor.

6.2 Ordering data. Procurement documents should specify the following:

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- (a) Title, number and date of this specification.
- (b) Type of solvent required (see 1.2).
- (c) Size of containers and level of protection required (see 5.1 and 5.2).

6.3 Purchase unit. The solvent shall be purchased by volume, the unit being a U.S. gallon of 231 cubic inches at 60°F. (15.8°C.). The volume may be determined by dividing the net weight, in pounds, by the weight per gallon.

6.4 Transportation description. Transportation descriptions and minimum weights applicable to this commodity are:

Reil:

Chemicals, not otherwise indexed by name.

Carload minimum weight 24,000 pounds, subject to Rule 34, Uniform Preight Classification.

1

Motor:

Chemicals, not otherwise indexed.

Truckload minimum weight 24,000 pounds, subject to Rule 115, National Motor Freight Classification.

6.5 Certification. Solvent delivered in enne, drums, or tank cars shall either be accompanied by an official gager's certifients showing the net contants of each container and also the temperature of the contents at the time of gaging or shall be subject to gaging by the Government inspector. In the absence of a statement of the temperature at the time of gaging on the official gager's certificate, or in case the barrels show evidence of loss by leakage or other ahortages, the delivery shall be subject to George AR # 2463 Page 243 of 310

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re-inspection and re-gaging by the Government inspector.

Notice. When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government precurpment operation, the United States Government thereby incurs no responsibility, nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or is any way sopplied the sold drawings, specifications, or other data, is not to be regarded by implication or otherwise, as in any manoff Resening the holder or any other person or corporation, or convering any rights or permission to manufacture, use, or coll any potented investion that usey in any way be related therein.

MILITARY INTERESTS:

Army-MU MR GL

Navy-8h

Air Force-MAAMA

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Appendix M GROUNDWATER VELOCITY

Darcy's Law for the Estimation of Groundwater Velocity:

$$V = K \times I$$

Where,

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e, V = Estimated groundwater velocity

- K = Hydraulic conductivity
- I = Hydraulic gradient
- n = Effective porosity

Estimate of Hydraulic Conductivity:

K = T/b

Where,	T	*	Transmis	ssivity
	ь	=	Aquifer	thickness

The following assumptions are made:

 $T = 25,000 \text{ gpd/ft } (3,340 \text{ ft}^2/\text{day})$ b = 100 ft

 $K = T/b = \frac{250 \text{ gpd/ft}^2 (33.4 \text{ ft/day})}{1 = 0.01}$ n = 0.25

$$V = K \times I = 1.34 \text{ ft/day (488 ft/year)}$$

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Appendix N NEW HAZARDOUS ASSESSMENT RATING METHODOLOGY

USAF INSTALLATION RESTORATION PROGRAM HAZARD ASSESSMENT RATING METHODOLOGY

BACEGROUND

The Department of Defense (DOD) has established a comprehensive program to identify, evaluate, and control problems associated with past disposal practices at DOD facilities. One of the actions required under this program is to:

"develop and maintain a priority listing of contaminated installations and facilities for remedial action based on potential hasard to public health, welfare, and environmental impacts." (Reference: DEGPEN 81-5, 11 December 1981).

Accordingly, the United States Air Force (USAF) has sought to establish a system to set priorities for taking further actions at sites based upon information gathered during the Records Search phase of its Installation Restoration Program (IRP).

The first site rating model was developed in June 1981 at a meeting with representatives from USAF Occupational Environmental Health Laboratory (OBHL), Air Force Engineering Services Center (AFESC), Engineering-Science (ES) and CH_N Hill. The basis for this model was a system developed for EPA by JRB Associates of McLean, Virginia. The JRB model was modified to meet Air Force needs.

After using this model for 6 months at over 20 Air Porce installations, certain inadequacies became apparent. Therefore, on January 26 and 27, 1982, representatives of USAF CHEL, AFESC, various major commands, Engineering Science, and CH_N Hill met to address the inadequaries. The result of the meeting was a new site rating model designed to present a better picture of the basards posed by sites at Air Force installations. The new rating model described in this presentation is referred to as the Masard Assessment Rating Methodology.

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PURPOSE

The purpose of the site rating model is to provide a relative ranking of sites of suspected contamination from hasardous substances. This model will assist the Air Force in setting priorities for follow-on site investigations and confirmation work under Phase II of IRP.

This rating system is used only after it has been determined that (1) potential for contamination exists (hazardous wastes present in sufficient quantity), and (2) potential for migration exists. A site can be deleted from consideration for rating on either basis.

DESCRIPTION OF HODEL

Like the other hazardous waste site ranking models, the U.S. Air Force's site rating model uses a scoring system to rank sites for priority attention. However, in developing this model, the designers incorporated some special features to meet specific DOD program meeds.

The model uses data readily obtained during the Record Search portion (Phase I) of the IRP. Scoring judgments and computations are easily made. In assessing the hazards at a given site, the model develops a score based on the most likely routes of contamination and the worst hazards at the site. Sites are given low scores only if there are clearly no hazards at the site. This approach meshes well with the policy for evaluating and setting restrictions on excess DOD properties.

Site scores are developed using the appropriate ranking factors according to the method presented in the flow chart (Figure 1). The site rating form is provided in Figure 2 and the rating factor guidelines are provided in Table 1.

As with the previous model, this model considers four aspects of the hazard posed by a specific site: the possible receptors of the contamination the waste and its characteristics, potential pathways for waste contaminant migration, and any efforts to contain the contaminants. Each of these categories contains a number of rating factors that are used in the overall hazard rating.

The receptors category rating is calculated by scoring each factor, multiplying by a factor weighting constant and adding the weighted sucres to obtain a total category score.

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100 points. contuminant migration exists, Lighast firect evidence 100 points Fation contaminant migration ligration or an evaluation Į Water Higration, route. each route pathwaya ğ of the potential 녩 indirect category The Toke three pathways Long flooding, possible of the highest potential rating ç 1007 01 orpedate is t TOUCAS Ę E an points bead ļ lociated with 5 group pathways. K G 8 . 8 given Ŗ ļ er idence Ē Maigned these routes are K the particular ainigration. (worst case) the highest score evidence R ta tound, B ğ 02-80 to 8 ģ F

eludge Finally, Must, a punntity and the hasard (worst of hich acts Kç. 녩 ŗ Liquid w F point und solids Wasta confide 8 rating is characteristics catego Bo t score is multiplied by tur ther assigned information modified by if the waste J Ż associated with the 2 5 8 is scored in three steps. F ç score, while scores for a vaste persistence ļ physical factored into very persistent. Ŗ site. 8 6 f 2 5 Eactor N Lat

jontai na F Ï contalia H 5 Ē Į algulat ļ normalised Ŗ Ë int practice category is scored. 5 ğ reduced by 5 not reduced in g ğ Q **Derkind** of the three categories 8 reduced by g percent. X possible White 8 8007 **85** score of 100. percent. Ŗ R practices category is contained categorie sites with limited at which these Į final then the Ę 5

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HAZARDOUS ASSESSMENT RATING PORM

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	-					 			-			 	_		-	

L RECEPTOR

Bables Forder	Toptor Totlay (0-3)	Hultiplier	Testor Score	Possible Score
A. Remainsion within 1,000 feet of site		4		
1. Distance to second well		10		
C. Lest services within 1 mile ration		3		
Be Bietenet in construction bewiles?		6		
Le Crigient estimate visita i alle reflue of ette		10		
P. Balar molify of concert matters where body	·	6		
G. Count weter un of whiteset this dir		,		
I. Population served by series water supply within 3 miles downstreams of site -				
1. Population corved by ground-water supply within 3 miles of the		•		

Subtrate .

ecophers subscore (100 X factor acces subtotal/sexims ecces subtotal)

I. WASTE CHARACTERISTICS

- A. Select the factor store blood on the estimated quantity, the degree of hasard, and the confidence level of the information.
 - 1. Weste quantity (S = small, H = medium, L = Large)
 - 2. Confidence level (C = confirmed, S = suspected)
 - 3. Recept rating (H = high, H = medium, L = low)

Factor Schooses & (from 20 to 100 based on factor soore matrix

5. Apply pertistance factor Factor Subserve & X Persistance Factor - Subserve

. Apply physical state multiplier

Subscore 2 % Mysical State Multiplier - Maste Characteristics Subscore

	sserge the "	240	100	aye 252 (51 510
					Base 5 -4
					100 × 01
PATHWATS		Teator			Maximum
Rating Factor		Reting (0-3)	Multiplie	Tagtor Score	Possible
If there is evidence of significant	l bezacione anetaziane	ta, atala	antina fi	ator subscore	of 100 points
direct evidence or 30 points for in evidence or indirect evidence etists	Lizet evidence. If d	LIGHT OVI	ience exist	then proceed	to C. If no
	•			Subecore	
Inte the migration potential for 3 ;	potential patiways: a	urfaca vei	ter sigratio	m, flooding,	and ground-wat
nigration. Select the highest ratio	ng, and general to C.				•
1. Surface value algorithm					
Distance to segreat ourface with					+
Het. Brestal totion			<u>6</u>		+
Sutting erecting				+	
Buctom paragetitre			€		
taisfall, istensility					
			Subteti		
Subacti	pe (198 X Easter addre	, subtutal,	Apartizan en	i i	1
1. <u>Floring</u>			1		
	Subconce	(1 60 x £	Feec 900ca'	(3)	
3. Ground-voter migration				I	1
Desta to ground water				+	
				+	
		+		+	
				+	
Direct advert to around write					
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	Le (100 x 2950er sente	SEPCOLAL,		NCO MEDICICEL)	
August printy and the set		-			
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hultipijer Potable water supplied mter source available dust: 1 a e irrigation, no oti areas major Breater than 1, 000 Breater than 1,000 Freder Chin 10 1,001 feet to 1 mile 0 to 1,000 feet 3,001 feet to 1 mile 0 to 3,000 fee 3 8 9 **Teldential** rais otland Į tion and hervesting. adnor vet ristine netural Commercial or Infunetrial a structured The second **999'I - 15** N - 18 miles Scale Levels Brates than 3 gilles 1 to 3 siles Greater than 2 miles 1 to 2 miles t la la **\$** 1 1 Completely nearts (number net appliheriouloural of industrial untet a existent installation A Ban/Basing (vithia Critical antromata printin 1 allo radius) Population anread j ji ji gulation servi vithin 3 ailes aguiter augulio 3 miles of site Batten Pueberi urface unter and in the second it is more 22 1] å đ đ đ đ

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T		7.005 at 100's	Mark poles at 10'7 to 100'7	Mark point loss than 10'7
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TNALE 1 (Continued)

(Cont'd) RATTRG METHODOLOGY GUID BAZARDOUS AS

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Persistence Criteria	artile, pripriette energende, and helopietted byferende, and transformed and other ring compared printed attention to appende	cal State Miltiplier

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Ayrelae

TABLE 1 (Continued)

METING N **WORKENI**

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•		Paties Bolls Law	ate -		
netian Protos	•	-		-	<u>dtiplier</u>
aletanos lo marcat artico unior (indiates Arainego diteine and stors anura)	Greater them 1 mile	2,001 feet to 1 mile	III feet to 3, II		•
Het precipitation	Loss than -10 in.	-10 to + 5 la.	45 to +28 la.	Greeter that +20 in.	•
Buctaon ecosion		slight	Hodec at a		•
Bur Lace promobility	M tog 154 alar (>10 ⁻² al/sea)	loss/up the state	(14 to 10 advert	Friedre then for alay	•
beinfall intendity buend on 1 year 24-br rainfall	41.6 inch	1.6-2.6 jacker	2.1-2.6 inches	-3.4 (potes	•
8-3 POINTIAL FOR FLOODING					•
Floodyia.	brynnd 100-year Floodplain	In 26-year flood- plain	In 18-year Cloud- piain	Floods annally	-
POTENTIAL FOR SECTION 5	R OUTSHIPPETICH		•	•	
bepth to grown retor	Greater than 500 ft	Se to See Seet	il to 54 feet	A to 10 Sect	•
Net presipitation	Less then -10 in.	-10 to +5 in.	+5 to +28 in.	Greeter than +28 in.	•
Soil permembility	coster than 500 clay (>10 av/see)	ton to the order	tore the set of the set	60 to 150 alay (x10 ⁻² an/sea)	•
Anhaucteon Cloum	Bottom of sits great- er than 5 feet above high ground-water level	Botton of site oppasionally ethnorged	Bottom of fits frequently mb- marged	Bottom of sits lo- cated below mean ground-unter level	
Direct access to ground water (through Amilto, control of the set	the evidence of rist	Low rist	Nodeceto zisk	Ngh siat	•

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George AR #

TABLE 1 (Continued)

(Cont 'd) NITANDIN ADONODULAN BATTAG BAGARDOUE

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multipliers are then applied to the total risk points (from A):

tion the second s	- • •		fur finne Jageundankan	o Liners in good condition	o pound that and advantage
Wete Mungemut Tree	F contributed timited containent NULY contained and t Rell compliance	tor fully contained:	-	et other impermemble cover	sollaction system

-

- <u>A</u>
- Linera In
- intering volla ł

Bellios

- pulot apill cloanup action
- soil removed
- cofic bell and/or unter anaples (total element of the splil

and toring wells

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<u>Pice Prosotion Treining Acone</u>

- itace and bern
- station for pretreats oli/vater
- Effluent from oil/water separator to treatment Plant.

unscal Note: If data are not available or known to be complete the factor ratings under items I-A through I, III-B-1 III-B-3, then leave blank for calculation of factor score and maximum possible score.

Appendix O NEW SITE RATING FORMS

Site		(% of Maxim	um ?ossible	Score in Each Category)	Overall Score
Ho.	Site Description	Receptors	Pathways	Waste Characteristics	(Sum of Subscores/3)
H-2	Munitions Disposal	44	28	50	41
L-1	Base Landfill	50	28	60	46
I-2	TEL Disposal Site	44	28	60	44
L-3	Radioactive Disposal Site	44	28	60	44
I-11	Street Sweepings Disposal	47	28	40	38
L-12	Original Base Landfill	44	28	40	37
L-13	Base Landfill	48	35	60	48
B-2	Paint Drum Burial	48	28	40	39
B-8	Pesticide and Paint Burial	48	28	40	39
B-9	Acid/011 Burial	41	28	30	33
B-10	Pesticide and Oil Burial	41	28	40	36
8-1	POL Leach Field	49	28	24	34
8-2	POL Leach Field	49	28	24	34
8-4	Fuel/Oil Disposal	42	28	54	41
8-5	Fire Department Training Area	46	28	54	43
8-6	Abandoned Fire Department				
	Training Area	44	28	54	42
8-7	Tip Tank Drainage Area	49	28	48	42
8-12	Golf Course	63	28	40	44
8-20	Industrial Outfall and Pipeline	52	56	80	63
8-21	WMTP Percolation Ponds	44	28	· 60	44
8-22	French Drain	49	28	54	44
8-23	French Drain	49	28	36	· 38
8-25	Sludge Drying Beds	44	28	30	34
C-1	Landfill	44	28	60	44
C-6	Miscellaneous Burial	- 44	28	50	41

Table 1 SUMMARY OF RESULTS OF SITE ASSESSMENTS

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George AR #

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HAZARDOUS ASSESSMENT RATING FORM

NAME OF SITE: H-2, Hunitions Disposel LOCATION: George AFB, California DATE OF OPERATION OR OCCURRENCE: --OWNER/OPERATOR: George AFB, California CONNENTS/DESCRIPTION: Hunitions residue POL SITE RATED BY: Michael Keep

I. RECEPTORS

	Rating Factor	Factor Rating (0-3)	<u>Multiplier</u>	Fector Score	Maximum Possible <u>Score</u>
۸.	Population within 1,000 feet of site	1	4	•	12
8.	Distance to nearest well	1	10	10	30
c.	Land use/zoning within 1 mile radius	3	3	9	9
D.	Distance to reservation boundary	2	6	12	18
ε.	Critical environments within 1 mile radius of site	0	10	0	30
F.	Water guality of nearest surface-water body	0	6	0	18
G.	Ground Water use of uppermost equifer	3	,	27	27
н.	Population served by surface-water supply within 3 miles downstream of site	0	6	0	18
۱.	Population served by ground-water supply within 3 miles of site	3	6	18	18
			Subtotals	80	180
	Receptors subscore (100 x factor score subtotal/maxis	num subtota	ນ້		#
н.	WASTE CHARACTERISTICS				
۸.	Select the factor score based on the estimated quant level of the information.	ity, the de	gree of hazard,	end the co	nfidence
	1. Waste quantity (S = small, H = modium, L = large)			S
	2. Confidence level (C = confirmed, S = suspected)				C
	 Hazard rating (H = high, H = medium, L = low) 				N ·
	Factor Subscore A (from 20 to 100 based on factor so	pro _{metrix})			50
8.	Apply persistence factor Factor Subscore A × Persistence Factor = Subscore B				
	$50 \times 1.0 = 50$				
c.	Apply physical state multiplier				
	Subscore B × Physical State Multiplier = Waste Charac	cteristics	Subscore		

50 x 1.0 = <u>50</u>

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III. PATHWAYS

AND AN IN THE REAL PROPERTY.

	Rating Factor	Factor Rating (0-3)	<u>Multiplier</u>	Factor Score	Haximum Possibi <u>Score</u>
۸.	if there is evidence of migration of hazardous 100 points for direct evidence or 80 points for then proceed to C. If no evidence or indirect	contaminants, as indirect eviden evidence exists,	sign maximum fac ce. If direct of proceed to B.	ctor subscor rvidence exi	re of ists
		•	S	ubscore	0
8.	Rate the migration potential for three potential and ground-water migration. Select the highest	l pathways: sur rating, and pro	face-water migra	tion, flood	ding,
	1. Surface-water migration				
	Distance to nearest surface water	0	8	0	24
	Not precipitation	0	6	0	18
	Surface erosion	2	8	16	24
	Surface permeability	1	6	6	18
	Rainfall intensity	0	8	0	24
			Subtotals	. 22	108
	Subscore (100 × factor score subtotal/maximum s	core subtotal)			20
	2. Flooding	0	1	0	100
		Subscore	(100 x factor	score/3)	0
	3. Ground-water migration				
	Depth to ground water	1	8	. 8	24
	Net precipitation	0	6	0	18
	Soil permoability	2	8	16	24
	Subsurface flows	0	8	0	24
	Direct access to ground water	· 1	8	8	24
			Subtotals	32	114
	Subscore (100 × factor score subtotal/maximum a	core subtotal)			28
c.	Highest pathway subscore				
	Enter the highest subscore value from A, B-1, (-2, or 8-3 above	•		
			Pathways Sub	SCOLO	28
			-		=
			. and antimum		
۸.	Average the three subscores for receptors, was	e cheracteristic	s, and pernweys	•	
			Waste Charac	teristics	50
			Total 122 div	rided by 3 =	28 • • • • • 1
				Gro	oss Total
8.	Apply factor for waste containment from waste i	anagement practio	008		
	Gross Total Score x Waste Management Practices	Factor = Final Se			
			41 x 1.0 =		41
	0	- 4			1

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HAZARDOUS ASSESSMENT RATING FORM

NAME OF SITE: L-1, Base Landfill George AFB, California LOCATION: DATE OF OPERATION OR OCCURRENCE: --OWNER/OPERATOR: George AFB, California CONMENTS/DESCRIPTION: Industrial, domestic SITE RATED BY: Michael Kemp

I. RECEPTORS

<u></u>	Rating Factor	Rating (0-3)	<u>Multiplier</u>	Factor Score	Possible Score
۸.	Population within 1,000 feet of site	1	٠	4	12
в.	Distance to nearest well	2	10	20	30
c.	Land use/zoning within 1 mile radius	3	3	9	9
D.	Distance to reservation boundary	2	6	12	18
E.	Critical environments within 1 mile radius of site	0	10	0	30
F.	Water quality of nearest surface-water body	0	6	· 0	18
G.	Ground-water use of uppermost aquifer	3	9	27	27
н.	Population served by surface-water supply within 3 miles downstream of site	0	6	o	18
۲.	Population served by ground-water supply within 3 miles of site	3	6	18	18
			Subtote1s	90	180
	Receptors subscore (100 × factor score subtotal/maxis	num subtote	1)		50
п.	WASTE CHARACTERISTICS				
۸.	Select the factor score based on the estimated quant level of the information.	ity, the de	gree of hazard,	and the co	nfidence
	1. Waste quantity (S = small, H = modium, L = large)			M
	2. Confidence level (C = confirmed, S = suspected)				С
	3. Hezard rating (H = high, H = modium, L = low)				M -
	Factor Subscore A (from 20 to 100 based on factor so	ore matrix)			60
8.	Apply persistence factor Factor Subscore A x Persistence Factor = Subscore B				
	$60 \times 1.0 = 60$				
c.	Apply physical state multiplier				

Subscore B × Physical State Multiplier = Waste Characteristics Subscore

60 x 1.0 = _60

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III. PATHMAYS

	Rating Factor	Factor Rating (0-3)	<u>Hultiplier</u>	Factor Score	Naximun Possibl Score	•
A.	If there is evidence of migration of hazardous (100 points for direct evidence or 80 points for then proceed to C. If no evidence or indirect (contaminants, ass indirect evidence evidence exists,	ign maximum fac be. if direct of proceed to B.	ctor subsco widence ex	re of Ists	
			St	ubscore	0	
8.	Rate the migration potential for three potential and ground-water migration. Select the highest	i pathways: suri rating, and proc	ace-water migra	tion, floo	ding,	
	1. Surface-water migration					
	Distance to nearest surface water	0	8	0	24	
	Net precipitation	0	6	0	18	
	Surface erosion	2	8	16	24	
	Surface permeability	1	6	6	18	
	Rainfall intensity	0	8	0	24	
			Subtotals	22	108	
	Subscore (100 × factor score subtotal/maximum s	core subtotel)			20	
	2. Flooding	0	1	0	100	
		Subscore	(100 x factor :	core/3)	0	
	3. Ground-water migration	• • •				
	Depth to ground water	1	8	8	24	
	Net precipitation	0	6	0	18	
	Soil permeability	2	8	16	24	
	Subsurface flows	0	8	0	24	
•	Direct access to ground water	1	8	8	24	
			Subtotals	32	114	
	Subscore (100 × factor score subtotal/maximum s	core subtotal)			28	
c.	Highest pathway subscore					
	Enter the highest subscore value from A, 8-1, B	-2, or B-3 above	•			
			Pathways Sub	score		
IV.	WASTE MANAGEMENT PRACTICES					
A.	Average the three subscores for receptors, wast	a characteristic:	s, and pathways	•		
			Receptors Waste Charac Pathways Total 138 di	teristics vided by 3 : Gr	50 60 28 46 Des Total	Scor
8.	Apply factor for waste containment from waste m	anagement practi				
	Gross Total Score x Waste Management Practices i	Factor = Final Se	ore			
			46 x 1.0 ≠		46	

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HAZARDOUS ASSESSMENT RATING FORM

NAME OF SITE: L-2, TEL Disposel Site LOCATION: George AFB, California DATE OF OPERATION OR OCCURRENCE: --OWNER/OPERATOR: George AFB, California CONNENTS/DESCRIPTION: Leaded fuel sludge SITE RATED BY: Michael Keep

I. RECEPTORS

	Reting Fector	Rating (0-3)	<u>Multiplier</u>	Factor Score	Possible Score
۸.	Population within 1,000 feet of site	1	• •	•	12
8.	Distance to nearest well	1	10	10	30
c.	Land use/zoning within 1 mile radius	3	3	9	9
D.	Distance to reservation boundary	2	6	12	18
ε.	Critical environments within 1 mile radius of site	0	10	0	30
F.	Nater quality of nearest surface-water body	0	6	0	18
G.	Ground-water use of uppermost aquifer	3	9.	27	27
H.,	Population served by surface-water supply within 3 miles downstream of site	0	. 6	0	18
۱.	Population served by ground-water supply within 3 miles of site	. 3	6	18	18
			Subtotels	80	180
	Receptors subscore (100 x factor score subtotal/maxis	mum subtota	1)		44
п.	WASTE CHARACTERISTICS				
۸.	Select the factor score based on the estimated quant level of the information.	ity, the de	gree of hezard,	and the co	nfidence
	1. Waste quantity (S = small, H = modium, L = large) .			N
	2. Confidence level (C = confirmed, S = suspected)				c
	3. Hezard rating (H = high, H = modium, L = low) .				H ·
	Factor Subscore A (from 20 to 100 based on factor sc	ore matrix)			80
8.	Apply persistence factor Factor Subscore A x Persistence Factor = Subscore B				
	80 x 1.0 = 80				
c.	Apply physical state multiplier				

Subscore B × Physical State Multiplier = Waste Characteristics Subscore

80 x .75 = <u>60</u>

2 of 2

· .	Reting Fector	Factor Rating (0-3)	<u>Multiplier</u>	Factor Score	Heximum Possibi Score
• .	if there is evidence of migration of hazardous 100 points for direct evidence or 80 points for then proceed to C. If no evidence or indirect	s contaminants, as or indirect eviden : evidence exists,	sign maximum fa ce. If direct (proceed to B.	ctor subsco evidence ex	re of ists
		•	S	ubscore	0
•	Rate the migration potential for three potenti and ground-water migration. Select the higher	ial pathways: sur it rating, and pro	face-water migrated to C.	stion, floo	ding,
	1. Surface-water migration				
	Distance to nearest surface water	0	8	0	24
	Net precipitation	0	6	0	18
	Surface erosion	1	8	8	24
	Surface permeability	1	6	6	18
	Rainfall intensity	0	8	0	24
•			Subtotals	14	108
	Subscore (100 × factor score subtotal/maximum	score subtotal)			13
	2. Flooding	0	1	0	100
		Subscore	(100 × factor	score/3)	0
	3. Ground-water migration				
	Depth to ground water	1	8	· 8	24
	Net precipitation	0	6	0	18
	Soil permeability	2	8	16	24
	Subsurface flows	0	8	0	24
	Direct access to ground water	1	8	8	24
	•		Subtotals	32	114
	Subscore (100 x factor score subtotal/maximum	score subtotal)			28
,	Highest pathway subscore				
	Enter the highest subscore value from A, 8-1,	8-2, or 8-3 above	•		
			Pathways Sub	score	
	WASTE MANAGEMENT PRACTICES	<i></i>			
	Average the three subscores for receptors, was	ste characterístic	s, and pathways	•	
			Receptors Weste Cherac Pathways Total 132 di	teristics vided by 3	44 60 28 - 44 015 Total
,	Apply factor for waste containment from waste	management practi	085		
	Gross Total Score x Waste Management Practices	factor = final S	00 re		
			AA 1 0		

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HAZARDOUS ASSESSMENT RATING FORM

NMME OF SITE: L-3, Radioactive Disposal Site LOCATION George AFB, California DATE OF OPERATION OR OCCURRENCE: --OWNER/OPERATOR: George AFB, California COMMENTS/DESCRIPTION: Possible taxies SITE RATED BY: Hichgel Kemp

RECEPTORS 1.

	Rating Factor	Rating (0-3)	Nultiplier	Fector Score	Possible Score
Ă.	Population within 1,000 feet of site	1	•	•	12
B.	Distance to mearest well	1	10	10	30
c.	Land use/zoning within 1 mile radius	3	3	9	9
D.	Distance to reservation boundary	2	6	12	18
E,	Critical environments within 1 mile radius of site	0	10	0	30
F	Water quality of nearest surface-water body	. 0	6	0	18
G.	Ground-water use of uppermost aquifer	3	9	27	27
H.	Population served by surface-water supply within 3 miles downstream of site	0	6	0	18
1.	Population served by ground-water supply within 3 miles of site	3	6	18	18
			Subtotels	80	180
	Receptors subscore (100 × factor score subtotal/maxim	um subtota	1)		<u>_++</u>
п.	WASTE CHARACTERISTICS			• .	
۸.	Select the factor score based on the estimated quanti level of the information.	ty, the de	gree of hezard,	and the co	nfidence
	1. Waste quantity (S = small, H = modium, L = large))			5
	2. Confidence level (C = confirmed, S = suspected)				c
	3. Hezerd rating (H = high, H = medium, L = low)				H -
	Fector Subscore A (from 20 to 100 based on factor so	ore matrix)			60
8.	Apply persistence factor Factor Subscore A × Persistence Factor = Subscore B				
	$60 \times 1.0 = 60$				
c.	Apply physical state multiplier				

Subscore B x Physical State Multiplier = Waste Characteristics Subscore

60 x 1.0 = 60

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III. PATHMAYS

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	Rating Factor	Factor Beting (9-3)	<u>Neitiplier</u>	Fector Score	Neximum Possible Score
A.	If there is evidence of migration of hezordous (100 points for direct evidence or 80 points for then proceed to C. If no evidence or indirect (indirect eviden vidence exists,	ign maximum fac be. If direct o proceed to 8.	stor subsco pvidence exi	re of ists
			54	bscore	Q .
8.	Rate the migration potential for three potential and ground-water migration. Select the highest	pathweys: sur rating, and proc	ace-water algre	tion, floo	ting,
	1. Surface-water migration				
	Distance to mearest surface water	0	8	0	24
-	Not provipitation	0	6	0	18
	Surface erosten	1	•	8	24
	Surface permaability	1	6	6	18
	Reinfell intensity	0	8	0	24
			Subtotals	14	108
	Subscore (100 × factor score subtots)/maximum e	(fateddue oros	·		13
	2. Flooding	•	1	0	100
		Subseare	(100 × fector :	core/3)	0
	3. Ground-mater algretion				
	Depth to ground water	1		•	24
	Not procipitation	• .	. 6	0	18
	-Sof1 permeability	2	•	16	24
	Subsurface flows	0		0	24
	Direct access to ground water	1		8	24
			Subtotals	32	114
	Subscore (100 × factor score subtotal/maximum s	(fstotele eroc			28
c.	Highest pathway subscore				
	Enter the highest subscore value from A, 8-1, 8-	-2, or 8-3 above.	•		
			Pathways Suba	100F0	
IV.	WASTE HANAGEMENT PRACTICES				
۸.	Average the three subscores for receptors, waste	- characteristics	, and pathways.		
	•		Receptors Weste Charact Pathways Total 132 div	eristics	44 60 28 44
8.	Apply factor for weste containment from weste m	n agement practic		urt	və ivudi 40
	Gross Total Score × Weste Henegement Practices	actor = Final Sc	ene:		
			44 x 1.0 =		*

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HAZARDOUS ASSESSMENT RATING FORM

NAME OF SITE: L-11, Street Sweepings Disposal LOCATION: George AFB, California DATE OF OPERATION OR OCCURRENCE: --OWNER/OPERATOR: George AFB, California CONMENTS/DESCRIPTION: Possible industrial domestic SITE RATED BY: Michael Kemp

I. RECEPTORS

	Rating Factor	Factor Noting (0-3)	Muitiplier	Factor Score	Naximum Possible Score
۸.	Population within 1,000 feet of site	2	•	8	12
8.	Distance to nearest well	1	10	10	30
c.	Land use/zoning within 1 mile radius	3	3	9	9
D.	Distance to reservation boundary	2	6	12	18
E.	Critical environments within 1 mile radius of site	0	10	0	30
F.	Water quality of nearest surface-water body	0	6	0	18
G.	Ground-water use of uppermost equifer	3	9	27	27
H.	Population served by surface-water supply within 3 miles downstream of site	0	6	o	18
۱.	Population served by ground-water supply within 3 miles of site	3	6	18	18
			Subtotal s	84	180
	Receptors subscore (100 × factor score subtotal/maxis	num subtota	1)		47

II. WASTE CHARACTERISTICS

۸.

- A. Select the factor score based on the estimated quantity, the degree of hazard, and the confidence level of the information.
 - 1. Maste quantity (S = small, H = medium, L = large)
 H

 2. Confidence level (C = confirmed, S = suspected)
 S

 3. Hazard rating (H = high, H = medium, L = low)
 H

 Factor Subscore A (from 20 to 100 based on factor score metrix)
 40

 Apply persistence factor
 40
 - Factor Subscore A x Persistence Factor = Subscore B

 $40 \times 1.0 = 40$

C. Apply physical state multiplier

Subscore B x Physical State Multiplier = Waste Characteristics Subscore

40 x 1.0 = 40

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III. PATHMAYS

1

	Rating Factor	Factor Nating (0-3)	Nultiplier	Factor Score	Naximu Possibi Soore
A.	If there is evidence of migration of hazardous o 100 points for direct evidence or 80 points for then proceed to C. If no evidence or indirect e	onteminents, est indirect evidend vidence exists,	ign maximum fa be. If direct (proceed to B.	ctor subsco evidence ex	re of Ists
			S	ubscore	0
B.	Rate the migratich potential for three potential and ground-water migration. Select the highest	pathways: suri rating, and proc	ece-water migr	ation, floo	ding,
	1. Surface-water migration				
	Distance to mearest surface water	· 1	. 8	8	24
	Not procipitation	0	6	0	18
	Surface erocion	2	8	16	24
	Surface permaability	1	- 6	6	. 18
	Reinfell intensity	0	8	0	24
			Subtotels	30	108
-	Subscore (100 × factor score subtots1/maximum so	ore subtotal)			28
	2. Flooding	0	1	0	100
		Subscore	(100 x factor	score/3)	0
	3. Ground-water migration				
	Depth to ground water		. 8	8	24
	Net precipitation	0	6	0	18
	Soil permosbility	2	. 8	16	24
	Subsurface flows	. 0	8	0	24
	Direct access to ground water	1,	8	8	24
			Subtotals	32	114
	Subscore (100 x factor score subtotal/maximum sc	ore subtotal)			28
•	Highest pathway subscore				-
	Enter the highest subscore value from A. 5-1. 5-	2, or 3 -3 above.	н		
		-	Pathways Sub	score	28
v	MARTE MANAGEMENT PRAFTINES			•	
••					
•	Average the three subscores for receptors, waste		, and perimeys	•	
			Neceptors Weste Charac Pathways Total 115 di	teristics vided by 3 (Gro	40 28 38 555 Total
	Apply factor for waste containment from waste ma	nagement practic	10 5		
	Gross Total Score x Waste Menagement Prectices F	actor = Final Sc	iore		
		•	38 x 1,0 =		_38
	A -	19			=
	0-	••			

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HAZARDOUS ASSESSMENT RATING FORM

WHE OF SITE: L-12, Original Date Landfill 1. 2. 4 George AFB, California CALL LICATIN

We grann ton an accumence, "ere the wortab for "1.5"

ENTL/DESCRIFTION: Industrial, domestic

I. RECEPTORS

\$ 10 \$ 60%

Malach

.

	Reting Fector	Factor Reting (0-3)	Mittelfer	Factor Score	Haximm Possible Score
۸.	Population within 1,000 feet of site	1		• • • • •	12
B,	Distance to nearest well	1	10	10	30
C.	Land use/zoning within 1 wile radius	3	3	9	9
Đ.	Distance to receivetion boundary	2	6	12	18
ε.	Critical environments within 1 mille redius of size		10	0	30
F.	Water quality of nearest surface-water body	0	6	. 0	18
G.	Ground-water use of uppermost squifer	3	9	27	27
н.	Population served by surface-mater supply within 3 miles downstream of site	0	6	0	18
۱.	Population served by ground-water supply within 3 miles of site	3		18	18
			Subtotala	80	180
	Receptors subscore (100 x fector score subtotal/max	xf mum subtota	1)		<u>++</u>
п.	WASTE CHARACTERISTICS				
A.	Select the factor score based on the estimated quar level of the information.	ntity, the de	gree of hezard,	and the co	nfidence
	1. Waste quantity (S = small, H = modium, L = larg	90)			M
	2. Confidence level (C = confirmed, S = suspected)			\$
	3. Hezard rating (H = high, H = medium, L = low)				Ν.
	Factor Subscore A (from 20 to 100 based on factor :	score metrix)			40
8.	Apply persistence factor Factor Subscore A x Persistence Factor = Subscore (
	40 x 1.0 = 40				

Apply physical state multiplier C.

Subscore B x Physical State Multiplier = Weste Characteristics Subscore

$$40 \times 1.0 = 40$$

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FIT. PATHMAYS

 $\sum_{i=1}^{n} \sum_{j=1}^{n} \sum_{i=1}^{n} \sum_{i=1}^{n} \sum_{i=1}^{n} \sum_{j=1}^{n} \sum_{i=1}^{n} \sum_{i=1}^{n} \sum_{i=1}^{n} \sum_{j=1}^{n} \sum_{i=1}^{n} \sum_{i=1}^{n} \sum_{i=1}^{n} \sum_{i=1}^{n} \sum_{i$

.

•	Rating Factor	Factor Rating (Q-3)	<u>Nultiplier</u>	Factor Score	Nexicum Possibio Score
•	If there is evidence of migration of hazardous 100 points for direct evidence or 80 points for then proceed to C. If no evidence or indirect	contaminants, ast indirect evidence evidence exists.	ign maximum fa W. If direct (proceed to B.	stor subscor svidence exi	e of sts
			5. S	ubscore	
i.	Rate the migration potential for three potential and ground-meter migration. Select the highest)] pethneys: surf ; reting, and proc	lees-weter algr leed to C.	stion, flood	ling,
	1. Surface-water migration				
	Distance to nearest surface water	1	8	8	24
	Het precipitation	0	. 6	0	18
	Surface orasion	0	8	. 0	24
	Surface permosbility	1	6	6	18
	Reinfall intensity	0	8	0	24
			Subtotals	. 14	1,08
	Subscore (100 × factor score subtotal/maximum a	(fatetdue encor			13
	2. Flooding	0	1	0	100
		Subscore	(100 × factor	score/3)	0
	3. Ground-water algration				
	Depth to ground water	1	8	8	24
	Net precipitation	0	6	0	18
	Soil permeability	2	. 8	16	24
	Subsurface flows	0	8	0	24
	Direct access to ground water	1	8	. 8	24
	·		Subtotels	32	114
	Subscore (100 × factor score subtotal/maximum a	wore subtotal)			28
,	Highest pathway subscore	- -			
	Enter the highest subscore value from A. 8-1. 1	1-2, or 8-3 above.	,		
		_	Pathways Sub	80070	28
,	WARTE MANAGEMENT DRACTICES				
•	August revenues relations for according	to observatoriation		1-	
	Average the three subscores for receptors, was	JE UNEFECTERISTIC	Bearston	••	**
			Neste Cherac Pathways Total 111 di	teristics vided by 3 =	40 28 37
	Analy factors for mathe containment for mathe	Management and the		GPL	
	repris restor for waste containment from waste (

37 x 1.0 =

37

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HAZARDOUS ASSESSMENT RATING FORM

E OF SITE: L-13 LOCATION George AFB, California DATE OF OPERATION OR OCCURRENCE: --OWNER/OPERATOR: George AFB, California COMMENTS/DESCRIPTION: Industrial, domestic fill SITE RATED BY: Michael Keep

12

I. RECEPTORS

. A.1 1.18

_	Reting Fector	Rating (0-3)	Multiplier	Factor Score	Possible Score
۸.	Population within 1,000 feet of site	1	4	•	12
8.	Distance to nearest well	1	10	10	30
C.	Land use/zoning within 1 mile redius	3	3	. 9	9
D.	Distance to reservation boundary	3	6	18	18
E.	Critical environments within 1 mile radius of site	0	10	0	30
F.	Nater quality of nearest surface-water body	0	6	0	18
G.	Ground-water use of uppermost aquifer	3	9	27	27
н.	Population served by surface-water supply within 3 miles downstream of site	0	6	0	18
1.	Population served by ground-water supply within 3 miles of site	3	61 - 1	18	18
			Subtote1s	86	180
	Receptors subscore (100 x factor score subtotal/maxis	num subtota	1)		48
п.	NASTE CHARACTERISTICS				
۸.	Select the factor score based on the estimated quant level of the information.	ity, the de	gree of hazard,	and the co	nfidence
	1. Waste quantity (S = amell, H = modium, L = large)			N
	2. Confidence level (C = confirmed, 5 = suspected)				c
	 Hezerd rating (H = high, H = medium, L = low) 				Μ.
	Factor Subscore A (from 20 to 100 based on factor so	ore metrix)			60
8.	Apply persistence factor Factor Subacore & x Persistence Factor = Subscore B		•		
	60 v 1.05 m 60				

Apply physical state multiplier с.

Subscore B x Physical State Multiplier = Waste Characteristics Subscore

60 x 1.0 = 60

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III. PATHMAYS

·	Rating Factor	Factor Rating (0-3)	<u>Hultiplier</u>	Factor Score	Naxi mum Possible <u>Score</u>
A.	If there is evidence of migration of hezerdous 100 points for direct evidence or 80 points for then proceed to C. If no evidence or indirect	contaminents, ass r indirect evidence evidence exists, p	ign meximum fac . If direct e proceed to B.	tor subscon widence exi	re of ists
	· · ·		Su	bscore	0
8.	Rate the migration potential for three potenti and ground-water migration. Select the highes	al pathways: surf t rating, and proc	ace-water migra med to C.	tion, flood	ting,
	1. Surface-water migration				
	Distance to nearest surface water	1	. 8	8	24
	Net precipitation	0	6	0	18
	Surface erosion	2	8	16	24
	Surface permaability	1	6	6	18
	Rainfall intensity	0	8	0	24
			Subtotals	30	108
	Subscore (100 x factor score subtotel/maximum	score subtotal)			28
	2. Flooding	0	- 1	0	100
		Subscore	(100 x fector s	core/3)	O
	3. Ground-water migration				
	Depth to ground water	2	8	16	24
	Net precipitation	0	6	0	18
	Soil permeebility	2	. 8	16	24
	Subsurface flows	0	8	0	24
	Direct access to ground water	_ 1	8	8	24
		-	Subtotels	40	114
	Subscore (100 × factor score subtotel/maximum a	score subtotal)			35
	Highest pathway subscore				
	Enter the highest subscore value from A, B-1, i	8-2, or 3-3 above .			
	•		Pathways Subs	core	35
1-	WASTE HANAGEMENT PRACTICES				<u> </u>
	Average the three subscores for recentors	te characteristics	, and nationave		
			Recentors		A R
			Weste Charact	eristics	60
			Total 143 div	ided by 3 +	48 148 148 Totol 5
	Apply factor for wests containment from wests		•	uri	19541 5
	Gross Total Soore v Maste Massaget Provide	Factor = Stant fr			
	Store for over a meste menegement prectices				
			TO X 1.0 .		

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HAZARDOUS ASSESSMENT RATING FORM

NME OF SITE: 8-2, Paint Drum Burial George AFB, California LOCATION DATE OF OPERATION OF OCCURRENCE: --

CHARR/OPENATOR: George AFB, California

CONVENTS/DESCRIPTION: --

SITE NATED BY: Hichael Komp

2.54

I. RECEPTORS

	Rating Factor	(0-3)	Multiplier	Score	Possible Score
A.	Population within 1,000 feet of site	1	tra i ng ang	•	12
8.	Distance to nearest well	1	10	. 10	30
c.	Land use/zoning within 1 mile redius	3	3	9	9
D.	Distance to reservation boundary	3	6	18	.18
E.	Critical environments within 1 mile radius of site	9	10	. 0	30
F.	Water quality of nearest surface-water body	0	6	0.	18
G.	Ground-water use of uppermost aquifer	3	9	27	27
H.	Population served by surface-water supply within 3 miles downstream of site	0	6	0	18
1.	Population served by ground-water supply within 3 miles of site	3	6	. 18	18
			Subtotal s	86	180
	Receptors subscore (100 × fastor score subtotal/maxis	nun aubtotai	D		
11.	NASTE CHARACTERISTICS		57. 		
A.	Select the factor score based on the estimated quant level of the information.	ity, the de	gree of hezerd,	end the co	n fidence
	1. Neste quantity (5 = small, H = modium, L = large,)			S
	2. Confidence level (C = confirmed, S = suspected)				5
	3. Hezard rating (H = high, H = modium, L = low)				Η.
	Factor Subscore A (from 20 to 100 based on factor so	ore metrix)	· ·		40
) .	Apply persistence factor Factor Subscore A × Persistence Factor = Subscore B				
	$40 \times 1.0 = 40$				
	Apply physical state multiplier				
	Subscore B × Mysical State Multiplier = Naste Chara	oteristics i	Subscore		

40 x 1.0 = <u>40</u>

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III. PATHWAYS

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	Rating Factor	Factor Rating (0-3)	<u>Nultiplier</u>	Factor Score	Meximu Possibi Score
١.	if there is evidence of migration of hezardous 100 points for direct evidence or 80 points for then proceed to C. If no evidence or indirect of	contaminants, ass indirect evidence widence exists.	ign maximum fac w. If direct a proceed to 8.	tor subscor widence exi	e of sta
	•		Su	bacore	. 0
•	Rate the migration potential for three potentia and ground-water migration. Select the highest	l pathways: surf rating, and proc	ace-water migra wed to C.	tion, flood	ing,
	1. Surface-water migration				
	Distance to nearest surface water	0	8	0	24
	Net precipitation	0	6	0	18
	Surface erosion	0	8	0	24
	Surface permeability	1	6	6	18
	Rainfall intensity	0	8	0	24
			Subtotals	6	106
	Subscore (100 x factor score subtotal/maximum so	core subtotal)			6
	2. Flooding	0	1	0	100
		Subscore	(100 × factor s	icore/3)	0
	3. Ground-water migration	۰.			
	Depth to ground water	· 1	8	8	24
	Net precipitation	0	6	0	18
	Soil permeability	2	8	16	24
	Subsurface flows	0	8	0	24
	Direct access to ground water	1	8	8	24
			Subtotals	32	114
	Subscore (100 × factor score subtotal/maximum s	core subtotal)			28
	Highest pathway subscore				
	Enter the highest subscore value from A, 8-1, 8	-2, or B-3 above.	,		
			Pathways Subs	core	28
	WASTE HANAGEMENT PRACTICES				
	Average the three subscores for recentors, wast	• characteristics	, and pathwave.		
			Receptors Waste Chersci Pathways Total 116 div	teristics /ided by 3 = Gro	48 40 28 39 ss Total
	Apply factor for waste containment from waste m	enagement practic	10 8		
	Gross Total Score × Waste Management Practices	Factor = Final Sc	:0 re		
	•	_	39 x 1.0 =		20

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HAZARDOUS ASSESSMENT RATING FORM

NAME OF SITE: B-8, Pesticide and Paint Burial LOCATION: George AFB, California DATE OF OPERATION OR OCCURRENCE: --OWNER/OPERATOR: George AFB, California COMMENTS/DESCRIPTION: --

SITE RATED BY: Michael Kemp

RECEPTORS ۱.

	Rating Factor	Rating (0-3)	<u>Multiplier</u>	Factor Score	Possible Score				
۸.	Population within 1,000 feet of site	0	•	0	12				
B.,	Distance to nearest well	1	10	10	30				
c.	Land use/zoning within 1 mile radius	3	3	9	9				
D.	Distance to reservation boundary	. 2	6	12	18				
ε.	Critical environments within 1 mile radius of site	0	10	0	30				
F.	Nater quality of nearest surface-water body	0	6	0	18				
G.	Ground-water use of uppermost aquifer	3	9	27	27				
н.	Population served by surface-water supply within 3 miles downstream of site	0	6	o	18				
1.	Population served by ground-water supply within 3 miles of site	3	6	18	18				
			Subtotais	86	180				
	Receptors subscore (100 x factor score subtotal/max1	mum subtota	1)		48				
11.	WASTE CHARACTERISTICS								
۸.	Select the factor score based on the estimated quantity, the degree of hazard, and the confidence level of the information.								
	1. Waste quantity (S = small, N = medium, L = large)								
	2. Confidence level (C = confirmed, S = suspected)				S				
	 Hezerd rating (H = high, H = medium, L = low) 		•		Н.				
	Factor Subscore A (from 20 to 100 based on factor so	ore matrix)			40				
8.	Apply persistence factor Factor Subscore A × Persistence Factor = Subscore B								
	40 x 1.0 = 40								
c.	Apply physical state multiplier								
	Subscore B × Physical State Multiplier = Waste Chara	cteristics	Subscore						

$$0 \times 1.0 = 40$$

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III. PATHMAYS

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	Rating Factor	Factor Rating (0-3)	Multiplier	Fector Score	Hexim Possil Score
•	if there is evidence of migration of hazardous 100 points for direct evidence or 80 points for then proceed to C. If no evidence or indirect	contaminants, ass indirect eviden evidence exists,	sign maximum fac ca. If direct of proceed to B.	ctor subsco widence ex	re of ists
			54	bscore	· •
•	Rate the migration potential for three potentia and ground-water migration. Select the highest	l pathways: surf ; rating, and pro	face-water migra	tion, floo	ding,
	1. Surface-water migration				
	Distance to nearest surface water	1	8	8	24
	Not precipitation	0	6	0	18
	Surface erosion	1	8	8	24
	Surface permosbility	· 1	6	6	18
	Rainfall intensity	0	8	0	24
			Subtotels	22	108
	Subscore (100 x factor score subtotal/maximum a	core subtotal)			20
	2. Flooding	0	\$	0	100
		Subscore	(100 x factor :	score/3)	0
	3. Ground-water migration				
	Depth to ground water	1	8	8	24
	Net precipitation	0	6	0	. 18
	Soil permeability	2	8	16	24
	Subsurface flows	0	8	0	24
	Direct access to ground water	1	8	8	24
			Subtotels	32	114
	Subscore (100 x factor score subtotal/maximum a	score subtotel)			28
	Highest pathway subscore				
	Enter the highest subscore value from A, 8-1, 8	3-2, or 8-3 above	•		
			Pethweys Sub	score	28
	WASTE MANAGEMENT PRACTICES				
	Average the three subscores for receptors, wast	te cheracteristic	s, and pathways		
			Receptors Waste Charac Pathways Total 116 di	teristics vided by 3	48 40 28 - 39 055 Tota
	Apply factor for waste containment from waste s	Anagement practi	•		
,	Gross Total Score x Vaste Hanagement Practices	Factor # Final S	000		
			19 - 1 0 -		30

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HAZARDOUS ASSESSMENT RATING FORM

NAME OF SITE: 8-9, Acid and Oil Burial LOCATION: George AFB, California DATE OF OPERATION OR OCCURRENCE: --OWNER/OPERATOR: George AFB: California COMMENTS/DESCRIPTION: --SITE RATED BY: Michael Kemp

I. RECEPTORS

	Rating Factor	Rating (0-3)	<u>Multiplier</u>	Factor Score	Possible Score			
۸.	Population within 1,000 feet of site	0	•	0	12			
8.	Distance to nearest well	1	10	10	30			
c.	Land use/zoning within 1 mile redius	2	3	6	9			
D.	Distance to reservation boundary	2	6	12	18			
E.	Critical environments within 1 mile radius of site	0	10	. 0	30			
F.	Water quality of nearest surface-water body	0	6	0	18			
G.	Ground-water use of uppermost aquifer	3	9	27	27			
н.	Population served by surface-water supply within 3 miles downstream of site	0	6	0	18			
1.	Population served by ground-water supply within 3 miles of site	3	6	18	18			
			Subtotals	73	180			
	Receptors subscore (100 x factor score subtotal/maxi	mum subtota	1)		41			
п.	WASTE CHARACTERISTICS							
۸.	Select the factor score based on the estimated quantity, the degree of hazard, and the confidence level of the information.							
	1. Waste quantity (S = small, N = modium, L = large)			5			
	2. Confidence level (C = confirmed, S = suspected)				5			
	3. Hezard rating (H = high, H = madium, L = low)				M s			
	Fector Subscore A (from 20 to 100 based on factor so	ore matrix)	1		30			
8.	Apply persistence factor Factor Subscore A x Persistence Factor = Subscore B							
	$30 \times 1.0 = 30$							
c.	Apply physical state multiplier							
	A.A		• • • •					

core B x Physical State Multiplier = Waste Characteristics Subscore

30 x 1.0 = 30

Rating Fector if there is evidence of migration of hezerdous of 100 points for direct evidence or 80 points for then proceed to C. If no evidence or indirect of	Factor Rating (0-3) oontaminants, ass indirect eviden evidence exists,	<u>Hultiplier</u> sign meximum fo be. If durect	Factor Score	Naxia Possi Scor
if there is evidence of migration of hezerdous of 100 points for direct evidence or 80 points for then proceed to C. If no evidence or indirect of the proceed to C.	contaminants, as indirect eviden evidence exists,	ign meximum fa be. If direct	ctor subsco	
•		process co o.	evidence ex	re of ists
		S	ubscore	C
Rate the migration potential for three potentia and ground-water migration. Select the highest	l pathways: sur rating, and pro	ace-water migr peed to C.	ation, floo	ding,
1. Surface-water migration				
Distance to nearest surface water	1	8	8	24
Not precipitation	0	6	0	16
Surface erosion	1	8	8	24
Surface permaability	1	6	6	18
Rainfall intensity	0	8	0	24
		Subtotal s	22	10
Subscore (100 × factor score subtotal/maximum s	core subtotal)			20
2. Flooding	0	1	0	10
	Subscore	(100 x factor	score/3)	(
3. Ground-water migration				
Depth to ground water	· 1	8	8	2
Net precipitation	O	6	0	1
Soft permaability	2	8	16	2
Subsurface flows	0	8	. 0	24
Direct access to ground water	1	8	8	2
		Subtote1s	32	11
Subscore (100 × factor score subtotal/maximum s	core subtotal)			20
Highest pathway subscore	· .			
Enter the highest subscore value from A, 8-1, 8	-2, or 8-3 above	•		
·		Pathways Sub	score	2
NASTE MANAGEMENT PRACTICES				_
Average the three subscores for receptors. wast	e characteristic	s, and pathways	•	
		Receptors Weste Charec Pathways Total 99 div	teristics ided by 3 = Gr	4 34 21 33 055 Tot
Apply factor for waste containment from waste m	enagement practi		2.	

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3.

HAZARDOUS ASSESSMENT RATING FORM

NAME OF SITE: B-10, Posticide and Oil Burial LOCATION: George AFB, California DATE OF OPERATION OR OCCURRENCE: --OWNER/OPERATOR: George AFB, California CONNENTS/DESCRIPTION: --SITE RATED BY: Hichael Kemp

I. RECEPTORS

	Rating Factor	Rating (0-3)	Multiplier	Factor <u>Score</u>	Possible Score
A.	Population within 1,000 feet of site	0	•	0	12
8.	Distance to nearest well	1	10	10	30
c.	Land use/zoning within 1 mile radius	2	. 3	- 6	9
D.	Distance to reservation boundary	2	6	12	18
E.	Critical environments within 1 mile radius of site	.0	10	0	30
F.	Nater quality of nearest surface-water body	0	6	0	18
G.	Ground-water use of uppermost aquifer	3	9	27	27
н.	Population served by surface-water supply within 3 miles downstream of site	0	- 6	0	18
1.	Population served by ground-water supply within 3 miles of site	3	6	18	18
-			Subtotals	73	180
	Receptors subscore (100 × factor score subtotal/mexi	mum subtota	1)		<u>41</u>
	WASTE CHARACTERISTICS				
۸.	Select the factor score based on the estimated quant level of the information.	ity, the de	gree of hezard,	and the co	n fide nc e
	1. Weste quentity (S = small, M = modium, L = large) .			S
	2. Confidence level (C = confirmed, S = suspected)				S
	3. Hezerd rating (H = high, H = medium, L = low)				H ·
	Factor Subscore A (from 20 to 100 based on factor so	ore matrix)			40
в.	Apply persistence factor Factor Subscore A × Persistence Factor = Subscore B				
	$40 \times 1.0 = 40$				
c.	Apply physical state multiplier				
			. .		

Easter

Subscore 8 x Physical State Multiplier = Waste Characteristics Subscore

 $40 \times 1.0 = 40$

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Rating Factor	Factor Rating (0-3)	<u>Multiplier</u>	Factor Score	Hexim Possil Score
If there is evidence of migration of hazardous of 100 points for direct evidence or 80 points for then proceed to C. If no evidence or indirect e	ontaminents, es indirect eviden widence exists,	sign maximum fac ce. if direct (proceed to B.	ctor subsco evidence ex	e of ists
		S	ubscore	0
Rate the migration potential for three potential and ground-water migration. Select the highest	pathmays: sur rating, and pro	face-water migra cood to C.	ation, floo	ding,
1. Surface-water migration				
Distance to meanest surface water	1	8	8	24
Not precipitation	0	6	0	10
Surface erosion	1	6	. 8	24
Surface permoability	1	6	6	18
Reinfall intensity	0	8	0	24
		Subtotal s	22	100
Subscore (100 x factor score subtotal/maximum si	ore subtotal)			- 20
2. Flooding	0	1	0	100
•	Subscore	(100 × factor	score/3)	(
3. Ground-water migration				
Depth to ground water	1	. 8	8	24
Not precipitation	0	6	0	14
Soil permeability	2	8	16	24
Subsurface flows	0	8	0	24
Direct access to ground water	1	8	. 8	2
		Subtotals	32	114
Subscore (100 x factor score subtotal/maximum se	core subtotal)			2
Highest pethney subscore	-			
Enter the highest subscore value from A, 8-1, 8	-2, or B-3 above	•		
-	-	Petimeys Sub		2
		J.		
		a and pathware		
Average the three subscores for receptors, west	F Characteristic	Receptors Waste Charac Pathways Total 109 di	• teristics vided by 3	41 44 21 - 34
Apply factor for mate contributed for with a			ur	
Apply Tactor for weste containment from waste m	in agement practi	C#\$		

36 x 1.0 =

<u>_36</u>

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HAZARDOUS ASSESSMENT RATING FORM

WWE OF SITE: S-1, POL Leach Field LOCATION: George AFB, California DATE OF OPERATION OR OCCURRENCE: --OWNER/OPERATOR: George AFB, California CONNENTS/DESCRIPTION: --SITE MATED BY: Hichool Kemp

1. RECEPTORS

	Rating Factor	Rating (0-3)	<u>Multiplier</u>	Factor Score	Possible Score
A.	Population within 1,000 feet of site	3	•	12	12
8.	Distance to nearest well	1	10	10	30
c.	Lend use/zoning within 1 mile redius	3	3	9	9
D	Distance to reservation boundary	2	6	12	18
E,	Critical environments within 1 mike redius of site	0	10	. 0	. 30
F.	Nater quality of nearest surface-mater body	0	6	Q	18
G.	Ground-water use of uppermost equifer	3	9	27	27
Η.	Population served by surface-water supply within 3 miles downstream of site	C	6	0	18
I.	Population served by ground-water supply within 3 miles of site	3	6	18	18
			Subtotels	88	180
	Receptors subscore (100 × factor score subtotal/maxis	num subtote	1)		49
11.	WASTE CHARACTERISTICS				—
۸.	Select the factor score based on the estimated quant level of the information.	ity, the de	gree of hezard,	end the co	nfidence
	1. Waste quantity (5 = small, H = modium, L = large)			\$
	2. Confidence level (C = confirmed, S = suspected)				S
	3. Hezard rating (H = high, H = medium, L = low)				N -
	Factor Subscore A (from 20 to 100 based on factor so	ore matrix)			30
B.	Apply persistence factor Factor Subscore A × Persistence Factor = Subscore B				
	30 x .8 = 24				

C. Apply physical state multiplier

Subscore & x Physical State Multiplier = Weste Characteristics Subscore

24 x 1.0 = _24

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	Rating Factor	Fector Rating (0-3)	<u>Multiplier</u>	Factor Score	Neximus Possible Score
A.	if there is evidence of migration of hezerdour 100 points for direct evidence or 80 points for then procued to C. If no evidence or indirect	s conteminents, se or indirect eviden t evidence exists,	sign meximum fa ce. If direct proceed to B.	ctor subsce evidence ex	re of lats
		-	\$	ubscore	0
B.	Rate the migration potential for three potent and ground-water migration. Select the higher	ial pathways: sur st rating, and pro	face-water migr cood to C.	ation, floo	ding,
	1. Surface-water migration				
	Distance to nearest surface water	0	.8	0	24
	Net precipitation	0	6	0	18
	Surface erosion	0	8	0	24
-	Surface permeability	1	. 6	6	18
•	Rainfall intensity	O	́	0	24
	•		Subtotals	6	108
	Subscore (100 × fector score subtotal/maximum	score subtotal)			6
	2. Flooding	0	1	0	100
		Subscore	(100 x factor	score/3)	•
	3. Ground-water migration			 	
	Depth to ground water	1	8	8	24
	Net precipitation	. 0	6	0	18
	Soil permeability	2	8	16	24
	Subsurface flows	0	8	0	24
	Direct access to ground water	1	8	8.	24
			Subtotals	32	114
	Subscore (100 x factor score subtotal/maximum	score subtotal)			28
c .	Highest pathway subscore				
	Enter the highest subscore value from A, 8-1,	8-2, or 8-3 above	•		
		·	Pathways Sul	18C0 F8	
IV.	WASTE HANAGEMENT PRACTICES				
	Average the three subscores for receptors, wa	ste characteristic	s. and pathways	•	
			Receptors Weste Charac Pathways Total 101 di	teristics vided by 3 Gr	49 24 28 = 34 oss Total S
B.	Apply factor for waste containment from waste	management practi	COS		
	Gross Total Score × Weste Henegement Prectice	s fector = final S	core		
			34 x 1.0 =		34

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HAZARDOUS ASSESSMENT RATING FORM

NAME OF SITE: S-3, POL Losh Field LOCATION: George AFB, California DATE OF OPERATION OR OCCURRENCE: --OWNER/GPERATOR: George AFB, California COMMENTS/DESCRIPTION: --SITE RATED BY: Michael Kemp

I. RECEPTORS

	Rating Factor	Rating (0-3)	<u>Multiplier</u>	Fector Score	Possible Score
٨.	Population within 1,000 fest of site	3	· •	12	12
B.	Distance to mearest well	1	10	10	30
c.	Lond use/zoning within 1 mile radius	3	3	·* 9	9
D.	Distance to reservation boundary	2	6	12	18
E.	Critical environments within 1 mile radius of site	0	10	0	30
F.	Nater quality of nearest surface-water body	0	6	0	18
Ģ.	Ground-water use of uppermost equifer	3	9	27	27
н.	Population served by surface-water supply within 3 miles downstream of site	0	6	0	18
1.	Population served by ground-water supply within 3 wiles of site	3	6	.18	18
			Subtote 1 s	58	180
	Receptors subscore (100 x factor score subtots)/maxis	num subtota	1)		49
п.	WASTE CHARACTERISTICS				
۸.	Select the factor score based on the estimated quant level of the information.	ity, the de	gree of hezard,	and the co	n fidence
	1. Waste quantity (S = small, H = modium, L = large)			ŝ
	2. Confidence level (C = confirmed, S = suspected)				5
	3. Hezard rating (H = high, H = modium, L = low)				N -
	Fector Subscore A (from 20 to 100 based on factor so	ore matrix)			30
8.	Apply persistence factor Fector Subscore A × Persistence Factor = Subscore B				

30 × .8 = 24

Apply physical state multiplier c.

Subscore B × Physical State Multiplier = Waste Characteristics Subscore

24. x 1.0 = _24

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AL STRATE STRAT

	Rating Factor	Factor Reting (0-3)	<u>Multiplier</u>	Factor Score	Neximu Poseibl Score	
•	If there is evidence of migration of hazardour 100 points for direct evidence or 80 points for then proceed to C. If no evidence or indirect	s contaminants, ass or indirect eviden t evidence exists,	sign maximum fa pe. If direct proceed to B.	ctor subsco evidence ex	re of ists	
		•	s	ubscore	0	
•	Rate the migration potential for three potent and ground-water migration. Select the higher	iel pathways: sur st rating, and pro	Face-water migr	ation, floo	ding,	
	1. Surface-water migration					
	Distance to nearest surface water	0	8	0	24	
	Not precipitation	0	6	0	18	
`	Surface erosion	0	8	0	24	
	Surface permasbility	1	6	6	18	
	Rainfall intensity	Ó	8	0	24	
			Subtotals	6	108	
	Subscore (100 x factor score subtotal/maximum	score subtotal)			6	
	2. Flooding	й О'	1	0	100	
		Subscore	(100 × factor	score/3)	0	
	3. Ground-water migration					
	Depth to ground water	1	8	8	24	
	Net precipitation	· 0	6	0	18	
	Soil permeability	2	8	16	24	
	Subsurface flows	0	8	0	24	
	Direct access to ground water	1	8	8	24	
			Subtotals	32	114	
	Subscore (100 × factor score subtotal/maximum	score subtotal)			28	
	Highest pathway subscore					
	Enter the highest subscore value from A, B-1,	8-2, or 8-3 above	•			
			Pathways Sub	score		
_	WASTE MANAGEMENT PRACTICES					
•	Average the three subscores for recentors, we	ste characteristic	. and pathwave	-		
	And the second of the second o					
			Waste Charac Pathways Total 101 di	teristics vided by 3 Gr	24 28 - 34 088 Total	
	Apply factor for waste containment from waste	management practic				
	Gross Total Score x Waste Management Practice	s Factor = Final S	:0 re			
			34 x 1.0 =		34	

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HAZARDOUS ASSESSMENT RATING FORM

NAME OF SITE: S-4, Fuel Oil Disposal LOCATION: George AFB, California DATE OF OPERATION OR OCCURRENCE: --OWNER/OPERATOR: George AFB, California COMMENTS/DESCRIPTION: --SITE RATED BY: Michael Kemp

RECEPTORS

	Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
Α.	Population within 1,000 feet of site	1	4	4	12
в.	Distance to nearest well	0	10	0	30
c.	Land use/zoning within 1 mile radius	3	3	9	9
D.	Distance to reservation boundary	3	6	18	18
ε.	Critical environments within 1 mile radius of site	0	10	0	30
F.	Water quality of nearest surface-water body	Ö	6	0	18
c.	Ground-water use of uppermost aquifer	3	9	27	27
н.	Population served by surface-water supply within 3 miles downstream of site	0	6	0	18
۱.	Population served by ground-water supply within 3 miles of site	3	6	18	18
			Subtotals	76	180
	Receptors subscore (100 x factor score subtotal/maxim	num subtotai	1)		42
11.	WASTE CHARACTER:STICS				,
Α.	Select the factor score based on the estimated quant level of the information.	ity, the dep	gree of hazard,	and the con	fidence
	1. Waste quantity (S = small, M = medium, L = large)			м
	<pre>2. Confidence level (C = confirmed, S = suspected)</pre>				c
	 Hazard rating (H = high, M = medium, L = low) 		-		N
	Factor Subscore Λ (from 20 to 100 based on factor sco	ore matrix)			60
в.	Apply persistence factor Factor Subscore A x Persistence Factor = Subscore B				
	60 × .9 = 54				
с.	Apply physical state multiplier				
	Subscore B x Physical State Multiplier = Waste Charac	teristics S	iubscore		
	60 × 1.0 = <u>54</u>				

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111. PATIMAYS

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	Rating Factor	Factor Rating (0-3)	Mu]tiplier	Factor	Naximum Possible Score
۱.	If there is evidence of migration of hezardous of 100 points for direct evidence or 80 points for then proceed to C. If no evidence or indirect e	ontaminents, es indirect eviden vidence exists,	sign meximum fa ce. If direct (proceed to B.	ctor subsco evidence exi	re of Ists
			s	ubscore	0
5.	Rate the migration potential for three potential and ground-water migration. Select the highest	pathways: sur rating, and pro	face-water migr cood to C.	ation, floo	ding,
	1. Surface-water migration				
	Distance to nearest surface water	0	8	0	24
	Not precipitation	0	6	0	18
	Surface erosion	0	8	0	- 24
	Surface permeability	1	6	6	18
	Rainfall intensity	. 0	8	0	24
			Subtotals	6	108
	Subscore (100 x factor score subtotal/maximum sc	ore subtotal)			6
	2. Flooding	0	1	0	100
		Subscore	{100 x factor	score/3)	0
	3. Ground-water migration	-			
	Depth to ground water	1	8	8	24
	Net precipitation	0	6	0	18
	Soil permeability	2	8	16	24
	Subsurface flows	0	8	0	24
	Direct access to ground water	1	8	8	24
			Subtotals	32	114
	Subscore (100 x fector score subtotal/maximum so	ore subtotal)			28
	Highest pathway subscore				
	Enter the highest subscore value from A, B-1, B-	2, or 8-3 above	•		
			Pathways Sub	score	28
v.	WASTE MANAGEMENT PRACTICES				
	Average the three subscores for recentors, waste	obaracteristic	s. and pathways	-	
			Receptors Waste Charac Pathways Total 124 di	teristics vided by 3 - Gr	42 54 28 41 Das Total S
5.	Apply factor for waste containment from waste ma	nagement practi	005		
	Gross Total Score × Waste Management Practices F	actor = Final S	9100		
	-		41 x 1.0 =		41

HAZARDOUS ASSESSMENT RATING FORM

NAME OF SITE: S-5, Fire Training Area LOCATION: George AFB, California DATE OF OPERATION OR OCCURRENCE: --OWNER/OPERATOR: George AFB, California CONMENTS/DESCRIPTION: POL, solvents SITE RATED BY: Michael Kemp

I. RECEPTORS

	Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Neximum Possible <u>Score</u>			
۸.	Population within 1,000 feet of site	1	4	•	12			
8.	Distance to nearest well	1	10	10	30			
c.	Land use/zoning within 1 mile radius	3	3	9	9			
.D.	Distance to reservation boundary	3	6	18	18			
E.	Critical environments within 1 mile radius of site	0	10	0	30			
F.	Water quality of nearest surface-water body	0	6	0	18			
G.	Ground-water use of uppermost aquifer	3	9	27	27			
н.	Population served by surface-water supply within 3 miles downs	0	6	0	18			
۱.	Population served by ground-water supply within 3 miles of site	3	6	18	18			
			Subtote 1 s	86	180			
н.	Receptors subscore (100 × factor score subtotal/maxis	un subtota	1)		46			
۸.	Select the factor score based on the estimated quantity, the degree of hazard, and the confidence level of the information.							
	1. Waste quantity (S = small, H = medium, L = large)							
	 Confidence level (C = confirmed, S = suspected) 							
	3. Hezard rating (H = high, H = medium, L = low)							
	Factor Subscore A (from 20 to 100 based on factor score matrix)							
8.	Apply persistence factor Factor Subscore A x Persistence Factor = Subscore B							
	60 × .9 = 54							
c.	Apply physical state multiplier							
	Subscore B × Physical State Multiplier = Weste Charac	teristics	Subacore					

54 x 1.0 = 54

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III. PATHWAYS

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	Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score				
A.	If there is evidence of migration of hazardous contaminants, assign maximum factor subscore of 100 points for direct evidence or 80 points for indirect evidence. If direct evidence exists then proceed to C. If no evidence or indirect evidence exists, proceed to B.								
			Su	ibscore	0				
8.	Rate the migration potential for three potential pathways: surface-water migration, flooding, and ground-water migration. Select the highest rating, and proceed to C.								
	1. Surface-water migration								
	Distance to nearest surface water	0	8	0	24				
	Net precipitation	0	6	0	18				
	Surface erosion	1	8	8	24				
	Surface permeability	1	6	6	18				
	Reinfall intensity	0	8	0	24				
			Subtotals	14	106				
	Subscore (100 x factor score subtotal/maximum sco	re subtotal)			13				
	2. Flooding	0 ·	1	0	100				
	Subscore (100 x factor score/3) 0								
	3. Ground-water migration								
	Depth to ground water	1	8	8	24				
	Net precipitation	0	6	0	18				
	Soil permeability	2	8	16	• 24				
	Subsurface flows	0	8	0	24				
	Direct access to ground water	1	8	8	24				
			Subtotal s	32	114				
	ubscore (100 × factor score subtotal/meximum score subtotal)				28				
c.	Highest pathway subscore								
	Enter the highest subscore value from A, 8-1, 8-2, or 8-3 above.								
			Pathways Subs	ICOFO	28				
ı v.	WASTE MANAGEMENT PRACTICES								
A.	Average the three subscores for receptors, waste characteristics, and pathways.								
	·		Receptors Waste Charact Pathways Total 128 div	46 54 28 • 43 •ss Total Score					
B.	Apply factor for waste containment from waste man	agement practic	708						
	Gross Total Score × Waste Management Practices Fa	ctor = Final Sc	9 70F						
			43 x 1.0 =		43				

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HAZARDOUS ASSESSMENT RATING FORM

NAME OF SITE: S-6, Abandoned Fire Training Area LOCATION: George AFB, California DATE OF OPERATION OR OCCURRENCE: --OWNER/OPERATOR: George AFB, California CONMENTS/DESCRIPTION: --

SITE RATED BY: Nicheel Kemp

I. RECEPTORS

	Rating Factor	Rating (0-3)	<u>Hultiplier</u>	Factor Score	Possible
۸.	Population within 1,000 feet of site	1	4 1	4	12
8.	Distance to nearest well	1	10	10	30
c.	Land use/zoning within 1 mile radius	3	3	9	9
D.	Distance to reservation boundary	2	6	12	18
ε.	Critical environments within 1 mile radius of site	0	10	0	30
F.	Water quality of nearest surface-water body	0	6	0	18
G.	Ground-water use of uppermost aquifer	3	9	27	27
н.	Population served by surface-water supply within 3 miles downstream of site	Ο.	6	0	18
ŀ.	Population served by ground-water supply within 3 miles of site	3	6	18	18
			Subtotals	80	180
	Receptors subscore (100 × factor score subtotal/maxis	num subtote	1)		<u></u>
п.	WASTE CHARACTERISTICS				
۸.	Select the factor score based on the estimated quant level of the information.	ity, the de	gree of hezerd,	and the co	en fidence
	1. Weste quantity (S = small, N = medium, L = large)			M
	2. Confidence level (C = confirmed, S = suspected)				c
	 Hezerd rating (H = high, N = medium, L = low) 				N ·
	Factor Subscore A (from 20 to 100 based on factor sc	ore matrix)			60
8.	Apply persistence factor Factor Subscore A × Persistence Factor = Subscore B				
	60 x .9 = 54				
c.	Apply physical state multiplier				

Subscore B x Physical State Multiplier = Waste Characteristics Subscore

54 x 1.0 = <u>54</u>

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I I F? PATIONYS

Factor Hex fami Rating Possible Factor Rating Factor (0-3) Hultfplfer Score Score if there is evidence of migration of hezardous contaminants, assign maximum factor subscore of 100 points for direct evidence or 80 points for indirect evidence. If direct evidence exists then proceed to C. If no evidence or indirect evidence exists, proceed to 8. Subscore B. Rate the migration potential for three potential pathways: surface mater migration, flooding, and ground-water migration. Select the highest rating, and proceed to C. 1. Surface-water migration Distance to nearest surface mater 24 Not precipitation 18 Surface erosion 16 **7**1 Surface permeability 18 1 Reinfall intensity Ô 24 btota la 22 108 rd -Subscore (100 x factor score subtate/maximum score subtotal) - 20 agaa inn na 👘 an an 🖓 Fleeding 100 2. Subscore (100 x fector score/3) ٥ . 3. Ground-water migration Depth to ground water 24 Net precipitation. Â 18 Soil permeability 16 24 Subsurface flows 24 Direct access to ground water 24 12 114 و (مان Subscore (100 x fector score subtotal/maximum score subtotal) 28 c. Highest pathway subscore Enter the highest subscore value from A, 8-1, 8-2, or 8-8 above. Pethneys Subscore 28 NINCEMENT PRACTICES Average the three subscores for receptors, waste characteristics, and petimizes. Receptors ste Cherecteristics 28 Total 126 divided by 3 -42 Gross Total Score Apply factor for weste containment from weste management practices Gross Total Score x Weste Menagement Practices Factor = Final Score 42 x 1.0 = 42

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HAZARDOUS ASSESSMENT RATING FORM

WHE OF SITE: S-7, Tip Tank Drainage Area DATE OF OPERATION OR OCCUMENCE: --OWNER/OFERATORs George AFB, California COMMENTS/DESCRIPTION: Fuel

SITE RATED BY: Michael Kemp

I. RECEPTORS

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	Rating Factor	Reting (0-3)	Hultiplier	Factor Score	Possible Score
۸.	Population within 1,000 feet of site	3	4	12	12
8.	Distance to mearest well	1	10	10	30
Ċ.	Land use/zoning within 1 mile radius	3	3	9	9
Ď.	Distance to reservation boundary	2	6	12	18
E.	Critical environments within 1 mile radius of site	0	10	0	30
F.	Nater quality of nearest surface-mater body	0	6	0	18
Ġ.	Ground-water use of uppermost equifer	3	9	27	27
Ĥ	Population served by surface-water supply within 3 miles downstream of site	0	6	0	18
Ļ	Population served by ground-water supply within 3 miles of site	3	6	18	18
.*			Subtotals	. 88 .	180
	Receptors subscore (100 × factor score subtotal/maxis	num subtota	1)	· · · *	_49
н.	NASTE CHARACTERISTICS		12 · ·		
A.	Select the factor score based on the estimated quantitievel of the information.	ity, the de	gree of hezard,	and the co	nfidence
	1. Weste quantity (S = small, H = modium, L = large))			N
	2. Confidence level (C = confirmed, S = suspected)				C
	3. Hazard rating (H = high, H = modium, L = low)				N.
	Factor Subscore A (from 20 to 100 based on factor so	ore metrix)			60
8.	Apply persistence factor Fector Subscore A:x Persistence Factor = Subscore B				
	60 x .8 + 48 -				
c.	Apply shysical state multiplier				

Subscore B x Mysical State Hultiplier - Waste Characteristics Subscore

48 x 1.0 = _48

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III. PATHWAYS

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	Rating Factor	Factor Rating (0-3)	<u>Multiplier</u>	Factor Score	Maximum Possibl Score
	If there is evidence of migration of hazardous cont 100 points for direct evidence or 80 points for in then proceed to C. If no evidence or indirect evidence	taminants, ass direct evidend dence exists,	sign maximum fa ce. if direct proceed to B.	ctor subsco evidence ex	re of ists
			\$	ubscore	0
	Rate the migration potential for three potential pand ground-water migration. Select the highest rate	athways: suri ting, and prod	face-water migr ceed to C.	ation, floo	ding,
	1. Surface-water migration				
	Distance to nearest surface water	0	8	0	24
	Net precipitation	0	[′] 6	. 0	18
	Surface erosion	0	8	0	24
	Surface permeability	1	6	6	18
	Rainfall intensity	0	8	0	24
			Subtotals	6	108
	Subscore (100 x factor score subtotal/maximum score	e subtotal)			6
	2. Flooding	0	1	0	100
		Subscore	(100 x factor	score/3)	0
	3. Ground-water migration				
	Depth to ground water	. 1	8	8	24
	Net precipitation	0	6	٥	18
	Sofl permeability	2	8	16	24
	Subsurface flows	0	8	0	24
	Direct access to ground water	1	8	8	24
			Subtotals	32	114
	Subscore (100 x factor score subtotal/maximum score	e subtotal)			28
	Highest pathway subscore				
	Enter the bighest subscore value from A, 8-1, 8-2,	or B-3 above	•		
			Pathways Sub	score	28
v.	WASTE MANAGEMENT PRACTICES				=
	Average the three subscores for recentors waste of	harmoteristic	e and nathways		1
			Receptors Waste Charac Pathways Total 125 di	• teristics vided by 3 :	49 48 28 42
۹.	Apply factor for write antisinment from white were	sement accelt		Gr	oss Total
•	Approvide to maste constitution from waste mana	gement practic	C 45		
3.	Apply factor for waste containment from waste management Practices Factors Total Score x Waste Management Practices Factors	gement practic	C 05		

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42 x 1.0 =

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HAZARDOUS ASSESSMENT RATING FORM

NAME OF SITE: S-12, Golf Course

Goorge AFB, California LOCATION

DATE OF OPERATION OR OCCURRENCE: --

OWNER/OPERATOR: Goorge AFB, California

COMMENTS/DESCRIPTION: Percolation pond effluent irrigation .

SITE RATED BY: Michael Kemp

RECEPTORS

-	Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	 Maximum Possible Score
Α.	Population within 1,000 feet of site	3	4	12	12
в.	Distance to nearest well	3	10	30	30
с.	Land use/zoning within 1 mile radius	3	3	9	9
D.	Distance to reservation boundary	3	6	18	18
ε.	Critical environments within 1 mile radius of site	0	10	0	30
F.	Water quality of nearest surface-water body	0	6	0	18
G.	Ground-water use of uppermost aquifer	3	9	27	27
н.	Population served by surface-water supply within 3 miles downstream of site	0	6	0	18
۱.	Population served by ground-water supply within 3 miles of site	3	6	18	18
			Subtotals	114	180
	Receptors subscore (100 x factor score subtotal/maxim	um subtota	I)		_63
н.	WASTE CHARACTERISTICS				
Α.	Select the factor score based on the estimated quanti level of the information.	ty, the deg	ree of hazard,	and the cor	fidence
	1. Maste quantity (S = small, M = medium, L = large)				
	2. Confidence level (C = confirmed, S = suspected)				
	3. Hazard Sating (H = high, M = medium, L = low)				
	Factor Subscore A (from 20 to 100 based on factor sco	re matrix)			но Но
в.	Apply persistence factor Factor Subscore A x Persistence Factor = Subscore B				+0
	40 x 1.0 ≠ 40				
c.	App y physical state multiplier				
	Subscore B x Physical State Multiplier = Waste Charac	teristics S	ubscore		
	$40 \times 1.0 = 40$				

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راي براي	Rating Factor	Fector Rating (0-3)	Huitfplier	Factor Score	Nextmu Peesibi Soore
•	If there is dvidence of migration of hezerdous cont 100 points for direct evidence or 80 points for ind then proceed to C. If no evidence or indirect evid	taminente, ese Hirect evidence lence exists,	ign maximum fo e. if direct proceed to 8.	ctor subsco svidence ex	re of ists
		5 (18) e	3	ubscore	0
•	Rate the migration potential for three potential pe	thways: surf	ace-water migr	ation, floo	ding,
	1. Surface-mater election				. Al
	Distance to nearest surface with	2	8	16	24
	Net precipitation	0	6	0	18
		ана стана 1911 г. – Стана 1911 г. – Стана	8	Ö	24
	Sunface permaabflity	1.	6	6	18
	Rainfall intensity	- 0		0	24
	đ		Subtotals	22	106
	Subscore (100 × factor score subtotal/maximum score	subtotal)	Agen a cos		20
ſ	2. Flopding		ant à là n t t	0	100
		Subscore	(100 x factor	score/3)	0
	3. Ground-water migration		n Alfa dha an an an an an an		
	Depth to ground weter	1	8		24
	Not presipitation	0	6.	0	18
•	Soft permability	2	8	16	24
	Subsurface flams	.0	8	0.0	. 24
	Direct access to ground water	1	8	8	24
			Subtotals	32	- 114 -
	Substore (100 x Tabler score subtots /maximum score	subtotal)		1 .	28
•	Highest pathway subscore	ко 1944 — П.	est, et .		
	Enter the highest subscore value from A, 8-1, 8-2,	or 8-3 above.		•	
		5 ° 2 ° 1	Pathings Sub	00010	_28
1.	WASTE MANAGEMENT PRACTICES				_
	Average the three subscores for receptors, waste of	maracteristics	, and pathways	•	
			Receptors Waste Charac Pathways Total 131 di	teristics vided by 3 - Gri	63 40 28 44 065 Total
•	Apply factor for weste containment from weste manag	pement prectic	68		
	Gross Total Score × Naste Management Practices Fact	or = Final So	010		
			44 x 1.0 =		*
	0 - 34				

HAZARDOUS ASSESSMENT RATING FORM

MAME OF SCIE: S-20, Industrial Outfall and Pipeline

COCATION: George AFB, California

DATE OF OPERATION OR OCCURRENCE: --

OWNER/OPERATOR: George AFB, California

COMMENTS/DESCRIPTION: --

SITE RATED BY: Michael Kemp

1. RECEPTORS

4

	Rating Factor	Rating (0-3)	<u>Multiplier</u>	Factor Score	Possible Score
Α.	Population within 1,000 feet of site	3	4	12	12
8.	Distance to nearest well	1	10	10	30
с.	Land use/zoning within 1 mile radius	3	3	9	9
D.	Distance to reservation boundary	3	6.	18	18
€.	Critical environments within 1 mile radius of site	0	10	0	30
F.	Water quality of nearest surface-water body	0	6	0	18
c.	Ground-water use of uppermost aquifer	3	9	27	27
Н.	Population served by surface-water supply within 3 miles downstream of site	0	6	0	18
۱.	Population served by ground-water supply within 3 miles of site	3	6	18	18
			Subtotals	94	180
	Receptors subscore (100 x factor score subtotal/maxi	num subtotal)		52
п.	WASTE CHARACTERISTICS				
à.	Select the factor score based on the estimated quant level of the information.	ity, the deg	pree of hazard,	and the co	onfidence
	1. Wasse quantity (S = small, M = medium, L = large)			L
	 Confidence level (C = confirmed, S = suspected) 				с
	3. Hemand rating (H = high, M = medium, L = low)				N -
	Factor Subscore A (from 20 to 100 based on factor sc	ore matrix)			80
з.	Apoly persistence factor Fostor Subscore A x Persistence Factor = Subscore B				
	80 x 1.0 = 80				
с.	Apply physical state multiplier				
	Subscore B x Physical State Multiplier = Waste Chara	oteristics S	Subscore		

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TO ILTO PATHEAVS

	Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Naximum Possible Score
A.	If there is evidence of migration of hezerdous o 100 points for direct evidence or 80 points for then proceed to C. If no evidence or indirect e	ontaminents, ass indirect evidence vidence exists,	ign maximum fac be. If direct o proceed to 8.	stor subscor Widence exf	e of sts
			Se	bscore	0
B.	Rate the migration potential for three potential and ground-water migration. Select the highest	pethweys: surf	ace-water migra	tion, flood	ing,
	1. Surface-water migration				
4. J. J.	Distance to nearest surface water	3	8	24	24
	Net precipitation	0	6 . ·	0	18
	Surfees eresten	2		16	24
	Surface permesbility	t	6	6	18
	Reinfall intensity	0	arty a s ∎er 1 a	0	24
	3		Subtotal s	46	106
	Subscore (100 × factor score subtotal/maximum so	ore subtotal)		•	43
	2. Flaoding		an ang t an '	0	190
		Subscore	(100 x factor s	core/3)	0
	3. Ground-water migration	·	na na sina sina sina sina sina sina sina	•	
	Depth to ground water	3.	8 999 - 19 19 Aliana - 8 9		24
	Nut precipitation	0 +	6	0	18
	Soft permeebility	2	8	16	24
t.	Subsurface flows the program are the state	ala a se t i se	8	8	24
	Direct access to ground water	2	. 8	16	24
	na se en		Subtotals	64	114
	Subscore (100 x factor score subtote)/maximum soc	re subtotal)		•	56
C.	Highest pething subscore				
	Enter the highest subscore value from A, $B^{\rm o} \Gamma_{\rm g} \to 2$; or 8-3 above,			
		. · · · · · ·	Pathways Suba	çore	_56
iv.	MASTE HAMAGEMENT PRACTICES		*. ·		
٨.	Average the three subscores for receptore, maste	chiracteristics,	, and pethneys.		
		• • •	Receptors Waste Charact Patiways Total 188 div	eristics Ided by 3 = Gree	52 80 96 63 10tal Soc
•	Apply factor for meste containment from meste men Gross Tutol Score × Meste Henegement Prectices Fe	egement prectico ctor = Finel Sci)5)/'e		

A STATISTICS

14. 13 G 12 1 G

63 x 1

63

1. 1. 10.75

HAZARDOUS ASSESSMENT RATING FORM

George AR # '2463' ''Page 298' of 310

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NAME OF SITE: S-21, WWTP Percolation Ponds LOCATION: George AFB, California DATE OF OPERATION OR OCCURRENCE: --OWNER/OPERATOR: George AFB, California COMMENTS/DESCRIPTION: Sanitary, industrial SITE RATED BY: Michael Kemp

RECEPTORS

******	Rating Factor	Factor Rating (0-3)	<u>Multipliwr</u>	Factor Score	Maximum Possible
۸.	Population within 1,000 feet of site	1	▲ ²	4	12
в.	Distance to nearest well	1		10	30
с.	Land use/zoning within 1 mile radius	3	3	9	9
D.	Distance to reservation boundary	2	6	12	. 18
Ε.	Critical environments within 1 mile radius of site	0	10	0	30
F.	Water quality of nearest surface-water body	0	6	0	18
с.	Ground-water use of uppermost aquifer	3	9	27	27
н.	Population served by surface-water supply within 3 miles downstream of site	, 0	6	0	18
Į.	Population served by ground-water supply within 3 miles of site	·· 3	6	18	18
		,	Subtotals	80	180
	Receptors subscore (100 x factor score subtotal/maxis	mum subtota	1)		
п.	WASTE CHARACTERISTICS				
Α.	Select the factor score based on the estimated quant level of the information.	ity, the de	gree of hazard,	and the co	nfidence
	1. Waste quantity (S = small, M = medium, L = large)			н
	 Confidence level (C = confirmed, S = suspected) 		•		с
	3. Hazard rating (H = high, M = medium, L = low)		· · .		Ν.
	Factor Subscore A (from 20 to 100 based on factor sc	ore matrix)			60
8.	Apply persistance factor Factor Subscore A x Persistence Factor = Subscore B				

 $60 \times 1.0 = 60$

C. Apply physical state multiplier

Subscore B x Physical State Multiplier = Waste Characteristics Subscore

60 x 1.0 = <u>60</u>

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III. PATHMAYS

Factor Naximum Possible Rating Factor (0-3) Rating Factor Multiplier Score Score If there is evidence of migration of hezerdous contaminents, assign maximum factor subscore of 100 points for direct evidence or 80 points for indirect evidence. If direct evidence exists ٨. then proceed to C. If no evidence or indirect evidence exists, proceed to B. Subscore 0 A. Rate the migration potential for three potential pathways: surface-water migration, flooding, and ground-water migration. Select the highest rating, and proceed to C. 1. Surface-water migration 0 24 Distance to nearest surface water 8 n Net precipitation n 6 18 n ۵ 24 Surface erosion 8 n Surface permeability 1 6 18 Rainfall intensity Δ 24 Subtotals 108 ंत Subscore (100 x factor score subtotal/meximum score subtotal) £ 2. Flooding 0 100 1 Subscore (100 x factor score/3) 0 etter fa electricitenter 3. Ground-water migration 1 10 Car 24 Depth to ground water 8 8 Not precipitation n 18 h ind Soil permeability 2 16 24 1.51.202.000 Subsurface flows A ۵ 24 Direct access to ground water 1 8 24 The second s Subtotals 32 114 Subscore (100 x factor score subtotal/maximum score subtotal) 28 1.19.25 Highest pathway subscore C., Enter the highest subscore value from A, B-1, B-2, or B-3 above. 102 Pathways Subscore 28 WASTE HANAGENENT PRACTICES IV. Average the three subscores for receptors, weste characteristics, and pathways. ħ. Receptors Naste Cheracteristics Pathways 60 28 Total 132 divided by 3 = 44 Gross Total Score Apply factor for weste containment from weste management practices Gross Total Score x Weste Menagement Practices Factor = Final Score 44 x 1.0 = 44 0 - 42

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HAZARDOUS ASSESSMENT RATING FORM

NAME OF SITE: S-22, French Drain LOCATION: George AFB, California DATE OF OPERATION OR OCCURRENCE: --CWNER/OPERATOR: George AFB, California COMMENTS/DESCRIPTION: Waste POL SITE RATED BY: Michael Kemp

I. RECEPTORS

	Rating Factor	Rating (0-3)	<u>Multipl(er</u>	Factor Score	Maximum Possible Score
Α.	Population within 1,000 feet of site	3	4	12	12
в.	Distance to nearest well	1	10	10	30
c.	Land use/zoning within 1 mile radius	3	3	9	9
D.	Distance to reservation boundary	2	6	12	18
ε.	Critical environments within 1 mile radius of site	0	10	0	30
F.	Water quality of nearest surface-water body	0	6	0	18
G.	Greend-water use of uppermost aquifer	3	9	27	27
н.	Po-plation served by surface-water supply within 3 miles downstream of site	0	6	0	- 18
1.	Pcpulation served by ground-water su ply within 3 miles of site	3	6	18	18
			Subtotals	88	180
	Remptors subscore (100 x factor score subtotal/maxim	num subtota	1.)		49
п.	WAT E CHARACTERISTICS				
Α.	Select the factor score based on the estimated quanti level of the information.	ty, the de	gree of hazard,	and the co	nfidence
	1. Waste quantity (S = small, M = medium, L = large)) 			N
	2. Confidence level (C = confirmed, S = suspected)				C
	3. Hazard rating (H = high, H = medium, L = low)				N -
	Factor Subscore A (from 20 to 100 based on factor sco	re matrix)			60
Β.	Apply persistence factor Factor Subscore A x Persistence Factor = Subscore B				

60 x .9 = 54

C. Apply physical state multiplier

Subscore 3 x Physical State Multiplier = Waste Characteristics Subscore

54 x 1.0 = <u>54</u>

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. PATHNAYS				
Rating Factor	Factor Rating (0-3)	<u>Multiplier</u>	Factor Score	Haximum Possibi Score
if there is evidence of migration of hezerdous com 100 points for direct evidence or 80 points for im then proceed to C. If no evidence or indirect evidence	teminents, es direct eviden dence exists,	sign meximum fa ce. If direct proceed to B.	ctor subsco evidence ex	re of ists
		5	ubscore	0
Rate the migration potential for three potential p and ground-water migration. Select the highest ra	athmays: sur ting, and pro	face-water migr ceed to C.	ation, floo	ding,
1. Surface-water migration	•			
Distance to nearest surface water	0	8.	0	24
Not precipitation	0	6	0	18
Surface erosion	0	8	0	24
Surface permeability	1	6	6	18
Rainfall intensity	0	8	0	24
	ана се	Subtotals	6	108
Subscore (100 x factor score subtotal/maximum scor	e aubtotal)			6
2. Flooding	0	1	0	100
	Subscore	(100 x fector	score/3)	0
3. Ground-water migration				
Depth to ground water	. 1	.	8	24
Not precipitation	0	6	0	18
Soft permaability	2	. 8	16	24
Subsurface flows	сан на О логи	8	0 0 C	24
Direct access to ground water	. 1	8	8	24
ې د د د د د د د د د د د د د د بې د و رو هم د ورو د ورو د ورو د د ور د د ورو د ورو د ورو د د ورو ورو		Subtotals	32	115
Subscore (100 x factor score subtotal/meximum scor	e subtotal)			28
Highest petimey subscore	ant and and a second		· · ·	
Enter the highest subscore value from A, 8-1, 8-2,	or 5-3 above	•		
		Pethneys Sub	97908	_28 .
WASTE HUNGENENT PRACTICES	9		10 - 10 - 10 - 10 - 10 - 10 - 10 - 10 -	_
Average the three subscores for receptors a weste a	hereoteri stia	a, and pathways	•	
		Receptors	•	49
		Neste Cherec Petimeys	teristics	54 28
白代ななみ ふなん しゅうえ 建築本 また しゃん しゅう		Totel 131 d	vided by 3 Gr	= 44 tes Total
Apply factor for weste conteinment from weste mana	gement precti	C08		
Green Total Supro x Weste Hanagament Practices Fac	tor - Final S	0100		•

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HAZARDOUS ASSESSMENT RATING FORM

MANE OF SITE: S-23, French Drein LQCATION: George AFB, California DATE OF OPERATION OR OCCUMMENCE: --OWNER/OPERATOR: George AFB, California CONNENTS/DESCRIPTION: Jet fuel, POL SITE RATED BY: Michael Keep

L. RECEPTORS

	Rating Factor	Rating (0-3)	Multiplier	Fector Score	Possible Score
A. , /	Population within 1,000 fest of site	3	•	12	12
8.	Distance to nearest well	1	10	10	30
C.	Land use/zoning within 1 mile radius	3	3	9	9
D.	Distance to reservation boundary	2	6	12	18
ε.	Critical environments within 1 mile radius of site	0	10	0	30
F.	Water quality of nearest surface-water body	0	. 6	0	18
G.	Ground-water use of uppermost aquiter	• 3	9	27	27
н.	Population served by surface-water supply within 3 miles downstream of site	0	6	0	18
1.	Population served by ground-water supply within 3 miles of site	3	6	18	18
			Subtotals	68	180
	Receptors subscore (100 x factor score subtotal/maxis	num subtota	1)		49
п.	WASTE CHARACTERISTICS		•		
A.	Select the factor score based on the estimated quant level of the information.	ity, the de	gree of hezard,	and the co	nfidence .
	1. Waste quantity (S = small, H = medium, L = large)			M
	2. Confidence level (C = confirmed, S = suspected)				S
	3. Hezard rating (H = high, H = modium, L = 1ow)				H ·
	Factor Subscore A (from 20 to 100 based on factor so	ore metrix)			40
8.	Apply persistence factor Factor Subscore A x Persistence Factor = Subscore B				
	40-x .9-*36				
c.	Apply physical state miltiplier				
	Subscore & x Physical State Multiplier - Waste Chara	teristics	Subscore		

36 x 1.0 = 36

IFI. PATHIAYS

Page 2 of 2

	Rating Factor	Fector Rating (0-3)	<u>Multiplier</u>	Factor <u>Score</u>	Naximu Possibi Score
•	If there is evidence of migration of hezerdous 100 points for direct evidence or 80 points for then proceed to C. If no evidence or indirect	contaminants, as indirect eviden evidence exists,	sign meximum fac os. if direct of proceed to 8.	ctor subsco evidence ex	re of ists
			S	ubscore	0
•	Rate the migration potential for three potentia and ground-mater migration. Select the highest	l pathways: sur rating, and pro	face-water migra	ation, floo	ding,
	1. Surface-water migration				
	Distance to nearest surface water	0	8	0	24
	Het precipitation	0	6	0	18
	Surface erosion	0	8	0	24
	Surface permeability	1	6	6	18
	Rainfall intensity	. 0	8	0	24
	•		Subtotals	6	106
	Subscore (100 × factor score subtotal/maximum a	core subtotal)			6
	2. Flooding	0	1	0	100
		Subscore	(100 x factor a	score/3}	0
	3. Ground-water migration				
	Depth to ground water	1	•	8	24
	Not precipitation	0	. 6	0	18
	Soil permeability	2	8	16	24
	Subsurface flows	0	•	0	24
	Direct access to ground water	1	8	8	24
			Subtotals	32	114
	Subscore (100 x factor score subtots]/maximum s	core subtotal)	r		28
,	Highest pathway subscore				
	Enter the highest subscore value from A, B-1, B	-2, or 8-3 above	•		
			Pathways Sub		28
,	MARTE MANAGEMENT BRACTICES		-		=
•	Autors the three subsectors for examples, with		and anthrony		
•	worage the three subscores for receptors, west	e dheregteristig	s, and perimoya	•	
			Nasto Cherod Pethweys Total 113 div	boristics rided by 3	36 28 - 38
	· · · · · · · · · · · · · · · · · · ·				062 (9CE)
!	Apply Testor for Weste conternant from weste a	enagement practi	D86		

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38 x 1.0.=

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HAZARDOUS ASSESSMENT RATING FORM

S-25, Sludge Drying Beds F SITE: LOCATION Gaorge AFB, California DATE OF OPERATION OR OCCURRENCE: ---! OWNER/OPERATOR: George APB; Cettfornia COMMENTS/DESCRIPTION: Senitary, some industrial SITE RATED BY: Michael Komp

I. RECEPTORS

200 A

5 30

	Rating Føctor	Rating (0-3)	<u>Nultiplier</u>	Factor Score	Possible Score	
۸.	Population within 1,000 feet of site	1		•	12	
8.	Distance to meanest well	1	10	10	30	
c.	Land use/zoning within 1 mile radius	3	3	9	9	
D.	Distance to reservation boundary	2	6	12	18	
ε.	Critical environments within 1 mile retifies of site	O	tÖ	0	30	
F.	Noter quality of nearest surface-water body	0	6	0	18	
G.	Ground-water use of upperhost squffler	. 3	9	27	27	
н.	Population served by surface-water supply within 3 miles domistreem of site	0	6	0	18	
1.	Population served by ground-water supply within 3 miles of site	3	6	18	18	
	r,		Subtotals	80	180	
11.	Receptors subscore (100 x factor score subtotal/maxis MASTE CHARACTERISTICS Release the factor score based on the estimated quest	num subtota	1)		<u></u>	
	level of the information.					
	1. Waste quantity (S = small, H = modium, L = large)			. · · N	
	2. Confidence level (C = confirmed, S = suspected)					
	De Hasard rating (H = high, H = modium, L = 1cm)					
	Factor Subscore A (from 20 to 100 based on factor so	ore metrix)			40 -	
8.	Apply persistence factor Factor Subscore A × Persistence Factor = Subscore B					
	B ¹ 40 ⁵ ≵: 130° ∞040 ⁴ - 952° × 88					
C. 4.46	Apply physical south miltipiter					
· .	AL - TE - 10	. 99735779	20030019			
	TV X //J = _2V					

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PLL. PATHEAVS

Page 2 of 2

5 5 5 V

	Rating Factor	Factor Rating (0-3)	Hultiplier	Factor Score	Maximum Possible Score		
•	if there is evidence of migration of hazardous of 100 points for direct evidence or 80 points for then proceed to C. If no evidence or indirect e	ontaminents, es indirect eviden vidence exists,	sign meximum fe pe. If direct (proceed to 5.	ctor subsco evidence ex	re of ists		
			s	ubscore	0		
•	Rate the migration potential for three potential and ground-water migration. Select the highest	pathways: sur rating, and pro	face-water migrated to C.	ation, floo	ding,		
	1. Surface-water migration	• •					
	Distance to nearest surface water	0	8	0	24		
	Net precipitation	0	6	0	18		
	Surface erosion	2	8	16	24		
	Surface permability	1	6	. 6	18		
	Rainfall intensity	0	· 8	0	24		
			Subtotels	22	108		
	Subscore (100 × factor score subtotal/maximum sc	ore subtotal)	•		20		
	2. Flooding	0	1	0	100		
•.		Subscore	(100 x factor	score/3)	. 0		
	3. Ground-water migration						
	Depth to ground water	1	8	8	24		
	Net precipitation	0.	6	0	18		
	Soil permeability	2	. 8	16	24		
	Subsurface flows	0	8	0	24		
	Direct access to ground water	1	8	8	24		
	•		Subtotals	32	114		
	Subscore: (100 × factor score subtotal/maximum sc	ore subtotal)			28		
	Highest pathway subscore						
	Enter the highest subscore value from A, B-1, B-	2, or 8-3 above	•				
		·	Pathways Sub	score			
_	WASTE HANAGEMENT PRACTICES			•			
•	Average the three subscores for receptors, weste characteristics, and pathwave.						
			Receptors Weste Characteristics Pathways Total 102 divided by 3		44 30 28 - 34 055 Total		
ĸ	Apply factor for muste conteinment from weste me	negement precti	006				
	Gross Total Score x Waste Henegement Practices F	actor = Finel S	•100				
	······································		14 - 1 0 -				

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HAZARDOUS ASSESSMENT RATING FOR

C-1, Landfill NAME OF SITE: LOCATION cor**Grorge AFB, Celifornia** DATE OF OPERATION OR OCCURRENCE: --

OWNER/OPERATOR: George AFB, California

COMMENTS/DESCRIPTION: Domestic, industrial, munitions

SITE MATED BY: Michael Kemp 1.51.11

I. RECEPTORS

	Rating Factor	Reting (0-3)	Huitigiler	Fector Score	Possible Score
A.	Population within 1,000 feet of site	2	•	8	. 12
B.	Distance to nearest well	2	10	20	30
c.	Land use/zoning within 1 mile radius	2	3	6	. 9
D.	Distance to reservation boundary	2	6	12	18
E.	Critical environments within 1 mile redius of site	Q	10	• •	30
F.	Nater quality of nearest surface-water body	0	6	0	18
G.	Ground-sater use of uppermost aquifer	3	9	27	27
н.	Population served by surface-water supply within 3 miles downstream of site	0	6	0	18
1.	Ropulation served by ground-water supply within 3 miles of site	· · · 1	6	6	18
			Subtotels	79	180
	Receptors subscore (100 x factor score subtotal/maxis	num subtota	1)		. 🗮
11.	WASTE CHARACTERISTICS				
A.	Select the factor score based on the estimated quant level of the information.	ity, the de	gree of hezerd,	and the co	nfidence
. •	1. Maste quantity (S = small, H = medium, L = large)		•	5 M - 5
	2. Confidence level (C = confirmed, S = suspected)		C		
	3, Hezard rating (H = high, H = medium, L = 1cm)				1 N -
	Fastor Subscore A (from 20 to 100 based on factor so	ore metrix)			60
8.	Apply persistence factor Factor Subscore A × Persistence Factor = Subscore B				
	60 x 1.0 = 60				
c.	Apply physical state dultiplier				
n Natio	Subscore . S x Physical State Hultiplier - Naste Chare	steristics	Subscore		
	an an an an 60 x 1.0 ≠ <u>.00</u> a n an				

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III. PATHMAYS

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C.

Factor Hex† ma Rating Pessible Faster Rating Factor (0-3) Multiplier Score Seore if there is evidence of migration of hezardous contaminants, assign maximum factor subscore of 100 points for direct evidence or 80 points for indirect evidence. If direct evidence exists then proceed to C. If no evidence or indirect evidence exists, proceed to B. Subscore Rate the migration potential for three potential pathways: surface-water migration, flooding, and ground-meter migration. Select the highest rating, and proceed to C. 1. Surface-weter migration Distance to nearest surface water 0 24 n Net presipitation 18 ۵ Surface erosion 2 16 24 Surface permeability 6 18 1 Rainfall intensity n 24 Subtotals 22 108 Subscore (100 x factor score subtotal/maximum score subtotal) 20 2. Flooding 0 ٥ 100 Subscore (100 x factor score/3) ۵ 3. Ground-weter migration Depth to ground water 24 1 £ Net precipitation n 18 Soil permeebility 2 16 24 Subsurface flows 24 A Direct access to ground water 1 24 Subtotals 32 114 Subscore (100 x factor score subtotal/maximum score subtotal) 28 Highest pathway subscore Enter the highest subscore value from A, B-1, B-2, or B-3 above. **Pathneys Subscore** <u>.</u>28 . IV. WASTE HANAGENEUT PRACTICES Average the three subscores for receptors, weste characteristics, and pathways. Receptors Weste Characteristics Total 132 divided by 3 Gross Total Score

Apply factor for weste containment from weste management practices

16

Gross Total Score x Weste Management Practices Factor = Final Score

44 x 1.0 =

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HAZARDOUS ASSESSMENT RATING FORM

C-6, Miscellaneous Burial

LOCATHON George AFB, California

DATE OF OPERATION OR OCCURRENCE: --

OWNER/OPERATOR: Coorge AFB, California

CONNENTS/DESCRIPTION: Possible industrial, domestic, munitions

SITE NATED BY: Michael Kemp

RECEPTORS ۱.

NNE OF SITE:

	Retine Restor	Rating (0-3)	Multiplier	Factor Score	Possible Score	
۸.	Population within 1,000 feet of site	2	4	8	12	
8.	Distance to nearest well	2	10	20	30	
c.	Land use/zoning within 1 mile radius	2	3	6	9	
D.	Distance to reservation boundary	2	6	- 12	18	
E.	Criticel environments within 1 mile redius of site	0	10	0	30	
F.	Noter quality of nearest surface-water body	0	6	. 0	18	
G.	Ground-water use of upgermost equifer	3.	9	. 27	27	
H.	Population served by surface-meter supply within 3 miles domnstream of site	0	6	0	- 18	
1.	Population served by ground-mater supply within 3 miles of site	1	6	19 - Autoria - 6 - 1	18	
			Subtotels	79	180	
	Receptors subscore (100 × factor score subtotal/maxis	nın subtota	1)		44	
	MASTE CHARACTERISTICS		•			
٨.	Select the factor acore based on the estimated quant level of the information.	ity, the de	gree of hezard,	and the co	nfidence	
	1. Waste quantity (S = small, N = modium, L = large) S					
	2. Confidence level (C = confirmed, S = subposted)	•	•		C	
	3. Hezard rotting (H + htigh, H = modium, L = low)				Н.,	
	Factor Subscore A (from 20 to 100 based on factor set	ore metrix)			50	
₿.	Apply persistance factor Factor Subscore A x Persistance factor = Subscore B					
	50 x 1.0 - 50					
C.	Apply physical state multiplier					
54 ° 6	Subserv & x Physical State Multiplier - Heste Charee	storistics	Subecore			
	50 x 1.0 = <u>10</u>					

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III. PATHMAYS

	Rating Factor	Factor Rating (0-3)	<u>Nultiplier</u>	Factor Score	Nexiaun Possible Score
A.	If there is evidence of migration of hezerdous, 100 points for direct evidence or 80 points for then proceed to C. If no evidence or indirect	contaminants, as indirect eviden evidence exists,	sign maximum fac ce. If direct (proceed to B.	ster subsco rvidence ex	re of ists
			· • 5	becore	0
B.	Rate the migration potential for three potentia and ground-water migration. Select the highest	l pathways: sur rating, and pro	face-water migra cood to C.	tion, floo	ding,
	1. Surface-water migration				
	Distance to nearest surface water	0		0	24
	Not precipitation	. 0	6	0	18
	Surface erosion	2	- B	16	24
	Surface permosbility	1	. 6	6	16
	Reinfall Intensity	0		0	24
		•	Subtotals	22	108 - 1
	Subscore (100 x fector score subtotal/maximum a	core subtotal)		· · · · · ·	20
-	2. Flooding	0	1.	0	100
		Subscore	(190 x fector	sápre/3)	. 0
	3. Ground-water migration	•			
	Supth to ground mator	1	8		24
	Not prosipitation	0	6	0	18
	Soll permedility	2	8	16	24
	Subourface figms	0	8	0	24
	Direct access to ground mater	1		8	24
			Subtotals	32	114
	Subscore (100 x factor score subtets)/maximum s	core subtots])			28
	Highest pethney subscore				
	Enter the highest subscore value from A. B-1. B	-2. or 8-3 above	-		
			Pathneys Sub-		28
IV.	MASTE HANAGEMENT PRACTICES				
	Average the three subsceres for receptors, wast	e cherecteristic	s, and pathways.	•	
			Receptors Weste Characteristics Pathways Total 122 divided by 3 =		44 50 28 41
h	Apply factor for moste containment from meste m	enegement precti	005		
	Grees Total Soure x Weste Henagement Practices (Factor - Final S	907 0		
		-	41 x 1.0 -		<u>+1</u>

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ADMINISTRATIVE RECORD

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ADMINISTRATIVE RECORD COVER SHEET

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